KNOWLEDGE AND USE OF VISUAL SUPPORTS AMONG SPEECH-LANGUAGE PATHOLOGISTS FOR CHILDREN WITH AUTISM SPECTRUM DISORDER

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19SLP020

A Dissertation Submitted in Part Fulfillment for the Degree of

Master of Science (Speech-Language Pathology)

University of Mysore, Mysuru

ALL INDIA INSTITUTE OF SPEECH AND HEARING

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MYSURU – 570006

SEPTEMBER 2021

CERTIFICATE

This is to certify that this dissertation entitled **"Knowledge and Use of Visual Supports among Speech-Language Pathologists for Children with Autism Spectrum Disorder)"** is a bonafide work submitted in part fulfillment for the degree of Master of Science (Speech- Language Pathology) of the student (Reg. No.: 19SLP020). This has been carried under the guidance of a faculty of this institute and has not been submitted earlier to any other University for the award of any other Diploma or Degree.

Mysuru

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DECLARATION

This is to declare that this dissertation entitled **"Knowledge and Use of Visual Supports among Speech-Language Pathologists for Children with Autism Spectrum Disorder"** is the result of my own study, under the guidance of Dr. Anjana B Ram, Assistant Professor in Speech Pathology, All India Institute of Speech and Hearing, Mysuru. I further declare that this work has not been submitted earlier to any other University for the award of any other Diploma or Degree.

Mysuru Reg. No.: 19SLP020

8th September 2021

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The past year and a half have been a blur, with ups and downs (more downs than ups). Everything changed within a span of weeks, and that sense of normalcy disappeared. Completing a Master's degree is stressful enough, and it was even worse in the midst of a global pandemic.

I would like to thank the Director, staff and support staff at AIISH for their efforts in the transition to a different style of learning.

I would like to especially thank Dr K Yeshoda, Dr Jayashree Shanbal, Dr Abhishek and Dr. Rajasudhakar for fostering a great learning environment and for patiently answering the multiple questions I've had in your classes

I would like to express my gratitude to the people who have played a significant part in my life.

To my parents, Trisha, Inez and Rekha, Leah, I am grateful I get to call you "home". Thank you for the support, encouragement and for playing a huge role in who I am and the values I hold close to me. A big thank you to my extended family for always having me in your thoughts and prayers.

To my support system back home: Erin, John, Lino, Pearl, Shreya, I don't know where I'd be without you all. I owe much of my sanity to the lot of you. Thank you for the conversations, memes, laughs and love.

To my Sethu family: Anjali, Aileen, Mahera, Shenessa, Andre, Dr. Nandita and Rani. Thank you for reviving the spark of passion I have for this field. I am forever grateful to have been able to be part of the Sethu team. Thank you, Dr. Nandita for the Visual Supports training workshop, which provided the basis for this dissertation. A special thank you to Dr. Giselle Lobo for her suggestions while I was making this questionnaire.

To Faheema, Adhvika, Nadia, Chanchal, thank you for the continuous support and

ACKNOWLEDGMENT

encouragement through every phase.

To the incredible life-long friends I have made here: Mansi, thank you for helping me more than I can ever thank you for. I'm glad we found each other. Thank you for completing my sentences, and understanding me with just eye-contact/eye rolls. I have learned so much from you. Zainab, thank you for being my sunshine and personal cheerleader; Thirumanjari, thank you for all the long conversations and our shared love food; Siddhi, thank you for being the sweetest, most caring person I have met. Sushmitha, thank you for making Mysore feel like home. Pradyumna, for formatting help and edible reinforcements. Niranjana, Yaazhini, Abu, Tanvi, Rushali, Syam, Akshit, thank you for all the fun times, laughter and hugs. Each one of you is special to me and I am grateful to have met you.

To SLP19B, thank you for making these 2 and a half years fly by so quickly. I am grateful for the amount of support and encouragement I have received as your class representative. I will miss all the laughter, panicked presentations, gif wars, class lunches and every single one of you.

To the children and families I have worked with, thank you for your trust and allowing me space to learn with each one of you.

Finally, I want to thank the people without whose efforts, this dissertation would not have been possible. I would like to thank Dr. Anjana B Ram, for guiding my dissertation. Thank you for your kindness, patience and encouragement, ma'am. Thank you to Vasanthalaxmi ma'am, and Srinivas Sir for their time and patience in guiding me through the statistical analysis involved.

Chapter 1

Introduction

Autism Spectrum Disorder (ASD) is a spectrum of neurodevelopmental disorders. The most recent version of the Diagnostic and Statistical Manual (DSM) condenses the traditional triad of autism seen in DSM-IV symptoms — deficits in communication, problems with social reciprocity, and rigid thoughts and behavior — into just two classes: social communication and interaction; and repetitive and restricted behavior" (Doernberg & Hollander, 2016).

India is a vast country with nearly 1.38 billion people, 41% of whom are under 18 years (Census 2011). There has been no consensus among researchers regarding the epidemiologic estimates of developmental disabilities such as ASD in India. The discrepancy could be due to multiple factors like primary care providers being inadequately trained about ASD, insufficient referrals to specialized medical professionals, limited screening and diagnostic facilities (Chauhan et al., 2019). A review by Gaikwad and Lagala (2021) showed that ASD prevalence in children aged 1 to 10 years old ranged from 0.9 per 1000 in Himachal Pradesh to 12 per 1000 in children aged 2 to 9 years old in four Indian states (Haryana, Odisha, Telangana and Goa).

When working with children with autism, any skilled professional needs to understand the diagnostic criteria and their correlation to common psychological characteristics as well as how learning is affected in people on the spectrum. The term learning styles refers to "the view that different people learn information in different ways" (Pashler et al., 2009). Proponents of learning-style assessment contend that optimal learning is facilitated by crafting instruction based on understanding an individual's learning style. Individuals with autism may struggle within the everyday and academic settings, and thereby accommodations need to be made to create a learning environment that supports students who learn differently (Zenko, 2014).

With the rapid increase in the number of children diagnosed with ASD, there is a need to explore various intervention strategies further to support the development, communication needs,

and learning of children with ASD.

Visual strategies and supports have been encouraged and are among the most frequently researched intervention strategies for individuals on the autism spectrum. Comprehensive intervention programs like Picture Exchange Communication System (PECS), Treatment and Education of Autistic and Related Communication Handicapped Children (TEACCH), other augmentative and alternate forms of communication like speech generating devices and computer-based instruction systems incorporate visual strategies. The most recent review by Hume et al. (2021) lists visual supports under empirically supported evidence-based practices for children with autism.

Visual supports refer to using a concrete prompt or cue such as real objects, pictures, drawing, or written word to support skill demonstration, establish expectations, and provide information about a routine. Visual supports can be used instead of or paired with a verbal cue. Visually cued instructions, visual teaching aids, visual approaches, visual strategies, and visual representations are a few synonyms used in research to outline and describe visual supports (Hume et al., 2014). In her book "*Thinking in Pictures and Other Reports from My Life*", Temple Grandin, a well-known public speaker with autism and an acclaimed professor, highlighted the value of visuals to understand abstract concepts and offered insight into information processing for individuals with ASD (Grandin 2010). In conjunction with recent neuroimaging research (Cooperrider et al., 2011), her work has indicated that certain individuals with ASD have a relative aptitude for visual detail processing and visual scanning skills compared to typically developing individuals (Kaldy et al., 2011).

Visual supports can serve different functions and can have many forms. An inexhaustive list includes photographs, drawings, icons, written words, objects, furniture arrangements, organizational systems and schedules, maps, labels, timelines, and scripts. Visuals help to organize learning environments, establish expectations, encourage communication attempts. They also provide children with predictability and structure within and across domains and

encourage children to be more independent in their life activities (Hodgdon, 1995). Visual supports can also be used as transition cues to signal an upcoming change within and in between activities, tasks, events (Dettermer et al., 2000). Visual supports act as a medium for communication in unpredictable and stressful contexts for a child with ASD (Green et al., 2006). Visuals can aid the communicative interactions between the child with ASD and their communication partners as well. These include but are not limited to improving receptive abilities and providing a mode to express needs and wants, request and provide information, reflexive language or self-talk, sensory preferences, and emotional and behavioural regulation (Rutherford, 2020). Using a symbol system that is dynamic and individualized, children with ASD are provided with opportunities to initiate communicative interaction, respond to communication attempts by communication partners around them in various contexts. Visual supports can also help in reducing frustration and repairing communication in situations that may lead to an escalation of challenging behaviors (Kidder and McDonnell, 2017)

Navigating the complexities of day-to-day life is made more accessible by using some form of visual strategy or support. Accommodations should be made to promote accessibility and inclusivity to individuals with disabilities. There is a demand for verbal communication with the myths surrounding alternate forms of communication means (Smith et al., 2016). The insistence for a child to depend solely on verbal communication increases the possibilities of challenging behaviors, missed learning opportunities, and helplessness. Instead, incorporating alternate forms early in the intervention process might avoid or reduce these problems (Iacono et al., 2016).

Need for the study

The scope of practice of the professionals involved in the assessment, diagnosis, and rehabilitation of children with autism has widened. It has grown with the recent increase in the number of children with autism worldwide. Much of the literature surrounding the assessment of children with ASD indicates that robust intervention services should include detailed assessments

of speech, language, social communication, pragmatics, play, sensory modulation, psychological, psychosocial, and academic abilities. Given the diversity of autism, assessment should utilize a team approach to address various areas of development that might be affected. Such a team could include but is not limited to psychologists, physicians, special and general educators, occupational therapists, and speech-language pathologists (SLP).

The clinical presentation of autism and current research trends indicate that speech-language pathologists are vital in assessing, diagnosing, and holistic intervention of children with ASD. Knowledge of the diagnostic criteria and features of autism, selecting an appropriate and individualized intervention strategy, referring to and collaborating with other professionals and caregivers is under the scope of an SLP (Ehren, 2006).

With disproportionate number of clients and only a limited number of clinicians to provide service to children with autism and their families, there is a challenge in executive effective intervention for large and diverse caseloads. With the current rise in the prevalence of autism, there is an increased need for training SLPs to update their knowledge about the identification and intervention services for children with autism. There is a dearth of research regarding the understanding, training, and proficiency of SLPs in managing children with autism in India. “While several research studies address the knowledge, belief, and practices in several health professionals and parents of children with autism, studies targeting SLPs’ knowledge, belief, and practices regarding children with autism are limited.” (Mendonsa & Tiwari, 2018).

Aim of the study

This study aims to highlight the knowledge and use of visual supports among SLPs for children with ASD.

Objectives of the study

1. To investigate the present status of the knowledge of visual supports among SLPs for the intervention of children with autism

2. To investigate the use of visual supports by SLPs

3. To outline the opinions and challenges faced by SLPs in the implementation of visual supports.

Chapter 2

Review of Literature

2.1 Understanding Autism Spectrum Disorder

ASD is a behaviourally defined disorder that may be differentiated from other childhood disorders based on observations of the child and accounts from parents. The DSM-V has been updated from its previous edition to maximize diagnostic sensitivity and specificity of ASD. (Wiggins et al., 2019). Social connection, communication, and restricted interests or repetitive behaviours are all hallmarks of ASD. Revisions to the diagnostic criteria have currently excluded language difficulties from the latest edition of the DSM-V. A significant percentage of children with ASD experience difficulties in acquiring and using verbal language; there is a variation in the severity of these difficulties. Although most children with ASD acquire and establish language skills during the preschool years, up to 30% of children with ASD fall short of their language milestones. They may not develop any functional verbal language or remain minimally verbal (Brignell et al., 2018). Language difficulties in children with ASD may exacerbate behavioural difficulties and impairments in social skills and adaptive functioning. As a result, engagement and participation within the community and quality of life may be hindered (Williams et al., 2020).

The social, communicative, and cognitive problems linked with autism have dominated most of the study. However, the recent modification of the diagnostic criteria has called attention to another important aspect of autism: sensory processing. (Robertson & Baron-Cohen, 2017) Sensory symptoms have been reported in autism spectrum disorders since the early reports, but they were previously considered to be secondary effects of abnormalities in social-cognitive processing (Pastor-Cerezuela et al., 2020) Sensory symptoms appear early in development and add a distinctive variation to the diagnostic criteria for autism.

Figure 2.1

Learning strengths, personality traits and deficits in ASD

Learning Strengths

The ability to:

- Take in chunks of information quickly—the whole thing
- Remember information for a long time
- Learn to use visual information meaningfully
- Learn and repeat long routines
- Understand and use concrete, context-free information and rules
- Concentrate on narrow topics of specific interest

Personality Traits

The following traits are often associated with individuals who have ASD:

- Perfectionistic
- Righteous
- Honest
- Concrete/literal
- Naïve
- Gullible

Deficits

An inability or decreased ability to automatically, consistently, and/or independently:

- Modulate and process or integrate sensory stimulation
- Control attention, scan to identify, and focus on important information (overfocuses on irrelevant details)
- Analyze, organize, and integrate information to derive meaning (memorizes details, rote responses, and rules rather than concepts)
- Retrieve information in sequential order (interferes with learning cause/effect relationships and ability to predict and prepare for future events)
- Perceive and organize events in time and understand language related to time (leads to confusion and time-related anxiety)
- Understand the complex and changing meanings and nuances of the language (understands and uses the language literally)
- Integrate auditory information efficiently (leads to delays in response time and information gaps)
- Generate alternatives or solve problems that involve hypothesis testing and social judgment (often repeats the same responses over and over)
- Modify or generalize information from one situation to another (learns and uses concepts and skills exactly as taught)
- Control thoughts, movements, and responses (perseverates and gets stuck in motor and verbal routines or responses; may seem driven and compulsive)
- Adjust to new or novel information and events (leads to extreme anxiety associated with change and trying new things)
- Initiate communication to ask for assistance or clarification (leads to confusion, frustration, anxiety, and ineffective behavioral responses)
- Perceive social/cultural rules and the perspective of others (leads to confusion, misunderstandings, and unexpected and ineffective responses)

In summary, individuals with autism are unable to independently integrate bits and pieces of information to make meaning, to expand, or to use information flexibly.

Note. reprinted from "Practical Solutions for Executive Function Challenges Created by the Unique Learning Styles of Students with Autism Spectrum Disorder (ASD)" by Zenko, C., 2014, Perspectives on School-Based Issues, 15(4), 141. https://doi.org/10.1044/sbi15.4.141

2.2 Visual Supports for ASD

The use of visual supports for young children with ASD is crucial, given the characteristics of ASD (Hodgdon, 1999). Visual strategies also support the underlying cognitive aspects of ASD, such as “enhanced perceptual functioning, weak central coherence, and executive dysfunction” (Hume et al., 2014) and impairments in theory of mind (Reynhout & Carter, 2011).

When people with ASD are engaged in visual processing, research shows that they have better perceptual functioning (Dakin and Frith 2005; Mottron et al., 2006; Samson et al. 2013; Kopec et al., 2020; Kaplan-Kahn et al., 2021). According to neuroimaging studies and higher performance on visual tasks, individuals with ASD have improved visual mental imagery or "visual thinking" than typically developing peers (Cooperrider, 2011; Chung and Son, 2020).

Individuals with ASD have described their reasoning processes as consisting of a succession of images, or that they "think in pictures" when engaged in problem-solving behaviours, rather than in words (Grandin 2010; Kunda and Goel 2011; Fama, 2018). As a result, visual strategies might be used to take advantage of this skill.

Students with ASD have weak central coherence, meaning they can identify details easily but have a hard time understanding how the details come together to form a larger, more general concept (Fitch et al., 2015). They can take in large chunks of information at one time making them a gestalt learner, but cannot automatically sort the chunks of information into smaller, more meaningful pieces; meaning they are not gestalt thinkers (Janzen & Zenko, 2012)

Several studies have shown that individuals with ASD perform better on tasks that rely on local processing of stimuli rather than those that depend on global processing of stimuli, supporting the theory that people with ASD have a more challenging time extracting the overall meaning or "big picture" while focusing on specific details (Booth, 2006; Nayar et al., 2017; Booth & Happe, 2018)

While visual supports are more global as they represent pieces of information, their non-

transient properties help children with ASD to assimilate information more slowly (Johnston et al., 2003).

According to research, people with ASD have problems with executive functions, making planning and organising difficult (Demetriou et al., 2018; Demetriou et al., 2019). However, executive function evaluations frequently rely on language abilities and verbal working memory, which may limit the capacity of people with ASD to thrive at such tasks (Joseph et al., 2005; Kaushanskaya et al., 2017). Thereby, individuals with ASD should be given visual assistance to help them carry out activities that require executive functioning (Zenko, 2014).

By making abstract concepts more concrete, enhancing communication, and increasing independence, visual supports can help with these issues (Hodgdon 1999; Meadan et al., 2011; Hume et al., 2014, Rutherford et al., 2020).

Theory of mind (ToM) is the ability to reason about the mental states of self and others, thereby allowing for prediction and explanation of behaviour (Bennett et al., 2013). "ToM is a meta-representational skill dependent on general domain cognitive skills or even other deficient processes in ASD, such as executive functions" (Rosello et al., 2020). TOM may be an important mediator in the association between early language abilities and later developmental outcomes in ASD. "Theory of mind can be predicted by visual-spatial abilities in children and adolescents with ASD" (Nejati et al., 2021).

Deficits in TOM may lead to issues with adaptive and social skills, pragmatic skills and social adjustment leading to idiosyncratic, repetitive and restricted behaviours and poor social functioning. Visual supports like social stories or scripts can be used to aid in these difficulties (Reynhout & Carter, 2011; Pellegrino 2018).

2.3 Specific Visual Supports

There are several visual supports described that serve a variety of functions. The categorization includes "environmental supports; visual supports used to establish expectations, visual cues, and video-based visual supports" (Hume et al., 2014).

2.3.1 Visual Supports to Organize Learning Environments. In early childhood settings, visual aids play an essential role in organizing the environment and provide clarity to young children. They indicate to young children what activity will occur and what behavioural expectations are expected in each activity space. Engagement in young children is more likely to be promoted and sustained in a setting that gives functional cues regarding the activities in each area and the behavioural expectations for those activities (Norquist & Twardoz 1990; Martin & Wilkins, 2021).

Working with young children with difficulties, including those with ASD, in a structured intervention setting is a commonly recommended and well-studied technique (Buysse & Hollingsworth, 2009; Gagnon et al., 2017; Xu et al., 2017). Individuals with ASD may benefit from visually structured training in multiple skill areas at various ages and developmental stages (Ganz 2007). Several learning features of young children with ASD, such as distractibility and difficulties in processing environmental cues, can be aided by a thoughtfully constructed intervention area, according to the literature (Anaby et al., 2013; Martin & Wilkins, 2021).

Sandall et al. (2005) advocated for clearly defined learning centres in early childhood settings and visual cues like vinyl flooring, coloured rugs, masking tape, or even furniture arrangements to help segregate the area. Rearranging low furniture and materials, which acted as a physical and visible limit for a student and lowered staff attention to inappropriate behaviour, reduced self-injurious behaviour in an adolescent with autism (Hirasaw et al.,2009).

2.3.2 Visual Supports Used to Establish Expectations. Children's expectations during activities can be concretely set via visual supports like pictures, objects, or written words; these visual supports explain or depict how to complete an activity/task and the child's behavioural expectations. They are given to children before and during activities to help them engage in and complete them successfully.

There are several specialised strategies within the general category of establishing expectations, such as “visual schedules, visual instructions, structured work tasks, scripts, social

narratives, and power cards" (Hume et al., 2014).

2.3.2.1 Visual Schedules. Visual schedules are a type of visual support that allows young children with autism to "see" forthcoming events or activities using items, images, icons/line drawings, written words, or any combination of the above forms (Mesibov et al. 2005). Visual schedules are used to orient students and provide a sense of predictability by notifying them of an expected sequence of events through pictures, symbols, and written language.

Various researchers have studied visual schedules and report that they are beneficial in improving on-rask behaviour, facilitating independent transitions, and lowering problematic behaviour (Cuhadar and Diken 2011, Lequia et al., 2012; Mcdonald et al., 2018). Van Dijk and Gage (2018) found that utilising a visual schedule increases involvement and independence in children with ASD. In the research and practice, the words visual schedule and activity schedule have become equivalent. They facilitate transitions between and within activities by supporting the independent performance of a series of actions, tasks, or activities. Predictable transitions are thought to alleviate anxiety in individuals with autism (Sterling-Turner and Jordan, 2007).

2.3.2.2 Visual Instructions. Visual supports for individuals with ASD effectively support academic instruction, though research for young children is limited. This is likely due to a focus on non-academic curriculum areas for young children with ASD, such as play, social, and communication skills.

Several of the visual supports utilised to improve participation and engagement with elementary-aged students, on the other hand, are likely to be transferable to early intervention and early childhood curriculum/settings. During the completion of play-based and pre-academic tasks, visual instructions can include interactive two- and three-

dimensional images, product samples, and image dictionaries (Carhan et al., 2009).

2.3.2.3 Structured Work Systems. A work system is a visual-based organisational system that gives people visual instructions on what they should perform. Division TEACCH created work systems as a component of structured instruction (Schopler et al., 1995), but they can also be used individualistically (Hume & Odom, 2007). A structured work system informs the individual about what they are expected to perform, how many tasks to complete, how long the activity or task will take, signal task completion, and what they have to do after the task is over (Hume & Reynolds 2010).

When three students were introduced to work systems, Hume and Odom (2007) observed an increase in on-task behaviour and a decrease in prompting. According to Hume et al., (2012), adopting a work system increased task accuracy and less teacher prompting.

Based on the developmental and cognitive level of the child, those who are more concrete learners, information in a structured word system can be conveyed visually in the form of pictures or objects, and written lists for those who have adequate comprehension and reading skills.

Work systems have traditionally served as a time/space for mastered abilities to be exercised independently (Hume & Odom, 2007; Mavropoulou et al., 2011; Bennett et al., 2011). However, Hume et al. (2012) highlighted that a structured work system could also help people learn new skills.

A recent study by Macdonald et al. (2018) replicated previous research findings and highlighted the use of work systems to increase students' on-task behaviour of students on the autism spectrum in mainstream classrooms.

2.3.2.4 Scripts. Children are taught created phrases or scripts to equip them with the language they need to participate in discussions. Modeling, prompting, reinforcing, and role-playing are all common methods for teaching scripts (Ganz & Flores 2010). In addition, most scripts incorporate a fade-out mechanism to encourage natural language use and reduce perseverative speech (Ganz et al., 2008; Akers et al., 2016). Scripts have been proven to be particularly successful in developing social and communication skills in children with ASD, enhance conversational interactions and aid in play among children with ASD and their peers (Ganz & Flores, 2008; Barnett, 2018; Scheibel et al., 2021), and are best suited to children that have some verbal skills rather than those who are preverbal (Ganz and Flores 2010).

Although there is little research on visual scripts for younger children, one can extrapolate data from studies with older children to show that they could be helpful for young children with ASD. Because many young toddlers do not read, scripts that include or are entirely made up of visuals may be the most effective. Pellegrino (2018) reported the use of scripts to promote sociodramatic play, increase engagement in young children with ASD.

2.3.2.5 Social Narratives and Social Stories. Social narratives and social stories are short descriptions of social situations that use pictures or other visual aids to highlight significant cues and provide examples of proper reaction. Social narratives and social stories, tailored to the needs of children with ASD, can help them learn social skills and improve interaction, communicate effectively, engage in appropriate behaviour and adapt to changes in their routines. (Gray, 2010; Karkhaneh et al. 2010; Coogle et al., 2017; Karal and Wolfe, 2018). Several research studies involving the effectiveness of social stories for people with ASD. (Gray and Garand, 1993; Ozdemir, 2008; Saad, 2016; Qi et al., 2018; Aldabas, 2019, Meister, 2020) have showed positive outcomes in promoting

social awareness, building social communication, teaching socially appropriate behaviours.

2.3.2.6 Power Cards. Gagnon (2001) first described Power Cards as visually based support that explicitly teaches an individual with autism how to behave or respond in a specific situation, often social." When teaching the required behaviour, the Power Card utilizes a specific interest or favourite character as a prominent component of the story, which serves as motivation. A Power Card describes a scenario's rules and contains a tailored story and a unique interest/hero picture. Once the communication deficit or target behaviour and the main character of interest are identified, a story is created based on the child's reading level and comprehension abilities. The scenario, written in the first person, explains the child's hero or special interest and describes possible solutions or tactics to overcome problems that a child might have.

Power Cards were utilised by Spencer et al. (2008) to help a 5-year-old child with autism spend more time on the playground. The research team reported increased time spent with peers on the playground after utilising a Power Card with a story about a favourite animated movie character, 'Lightning McQueen'.

Several studies show that the use of Power Cards has positive impacts on improving vocabulary (Ahn and Park, 2019), following direction (Campbell and Tincani 2011), transition latency (Angell et al. 2011), turn-taking and social commenting (Daubert et al., 2015), social skills (Spencer et al., 2008) and sportsmanship (Keeling et al., 2003) in children with ASD. A review by Olçay et al. (2020) delineated the steps in implementation and compared its efficacy across various studies. Further research is required into the use and efficacy of this visual support with children with ASD.

2.3.3 Visual Cues. Visual cues serve as reminders of what should be done before, during, and

after an activity. Visual cues can have many forms. Following is a list of visual supports for initiating conversation, making choices, completing tasks and timers.

2.3.3.1 Conversation and Initiation Cues. Supports that indicate how or when to begin discussions or join play activities are generally beneficial to children with autism. Pictorial representations of what the child wants to accomplish or say are frequently used as signals.

The Picture Exchange Communication System (PECS) programme and scripts have dominated research on visual communication initiation cues. (Ganz et al., 2008; Sulzer-Azaroff et al., 2009; Lerna et al., 2012; Doherty et al., 2018), there is a need to research further this type of visual support as only a few studies have evaluated the use of non-PECS cues for communication initiation (Johnston et al., 2003; Thiemann and Goldstein, 2013).

2.3.3.2 Visual Supports for Choice Making. Providing choices is a well-established intervention in a variety of disability areas, including autism. Even if they are not a significant component of choice-making therapy, visual supports can assist individuals with autism to participate in and comprehend choice-making possibilities.

According to several instances from the literature, visual aids can be utilised in conjunction with choice-making interventions with young children with ASD. According to research, visuals supports that encourage the use of a child's choice enhances academic achievement (Moes, 1998), promotes adaptive behaviour (Dyer et al., 1990; Dunlap et al., 1994), increases compliance and reduces challenging behaviours (Harding et al., 2002; Harding et al., 2009), and improves on-task behaviour (Ulke-Kurkcuoglu & Kircaali-Iftar 2010; Howell et al., 2019).

2.3.3.3 Visual Timers. People with ASD may have a more challenging time

switching their focus from one task to another or changing their routine. This could be related to a greater demand for predictability and difficulties anticipating what activity would follow (Flannery and Horner, 1994; Mesibov et al., 2005), or difficulty when a behaviour pattern is broken. Children with autism are more sensitive to time-based predictability (Kunchulia et al., 2020).

Individuals with ASD may find it beneficial to "see" how much time is left in an activity before they are asked to shift to a new place or event. Time concepts are complex and abstract and are challenging to understand, especially if time-telling is not a learned ability. Using visual representations of temporal information can help to make topics more understandable. Individuals with ASD can use a visual timer to forecast when an activity will be completed and when reinforcement will be provided. A visual timer acts as a reminder of how much time is left in an activity or until the reinforcement is given (Dettmer et al., 2000).

The use of a visual timer helps to reduce overall aggressive behaviour (Zamfir et al., 2012), facilitates transition (Dettmer et al., 2000; Hume, 2008; Nikrahi, 2019), increases predictability, reduces reliance on adult prompting, and increases participation in a community setting (Hume, 2008). More research is needed to determine when visual timers are most beneficial and how they affect behaviour or skill development.

2.3.4 Video-based Visual Supports. Video-based instruction (VBI) has become a popular technique of teaching new skills to people with autism, because of substantial advances in these issues and accessibility of technology. VBI, as defined by Rayner et al. (2009), is any teaching methodology that utilizes video footage to deliver instruction. The different types of VBIs include "video modeling, video self-modeling, video feedback, video prompting, video priming, and computer-based video instruction" (Hume et al., 2014).

VBI is thought to be helpful for the same reason that other visual support treatments are: children with ASD's visual-spatial skills are often a relative strength. (Rayner et al., 2009). VBI enables information to be structured visually and can enhance significant visual stimuli, similar to other visual supports (Sherer et al. 2001). Children with ASD may be more likely to attend to the relevant stimuli when video is utilised as a medium for training (Sturmey 2003). VBI is a tool that both supports and provides cues for expectations. When VBI is used to offer information, ASD can master a broader range of abilities. Children with ASD can learn several adaptive behaviours, such as social behaviours and communication skills, using video-based training, which is an empirically established method (Ayres and Langong, 2005; Banda and Okungu, 2011; Ayres et al., 2017; Keenan et al., 2021).

2.3.4.1 Video Modeling. Video modeling has the highest empirical support of all the video-based instruction strategies (Ayres and Langone, 2005; Keenan & Nikopoulos, 2006; Lindsay et al., 2013; Laver and Wilkes-Gillan, 2018; Keenan et al., 2021).

Video modeling has been used to initiate communicative interactions (e.g. requesting for desired object or activity), build expressive vocabulary, teach academic and social skills, improve on-task behaviour, as well as to teach daily life skills to children with autism (Keenan & Nikopoulos, 2006; Rayner, 2010; Plavnick & Ferreri, 2011; Wilson, 2013; Alzyoudi et al., 2015; Ozcan & Merdan, 2020; Keenan et al., 2021). In several literature reviews, video modeling has been listed as an evidence-based practice for children with autism (Reichow & Volkmar, 2010; Hume et al., 2021).

2.3.4.2 Video Self-modeling. The premise behind video self-modeling (VSM) is that the participant will most likely identify with a model with similar or the same traits as the observer. Possible advantages of using video self-modeling are that children may be more driven to watch videos of themselves and hence more inclined to increase

specific habits due to viewing their own favourable performances. The most common application of video self-modeling is when a child can already do a behaviour but does not do it frequently or under the right set of circumstances (Rayner et al., 2009).

For children with autism who only made a few spontaneous requests, Wert and Neisworth (2003) used video self-modeling to increase requesting during the school day. Video self-modeling can help with various behaviours, including linguistic and social initiations, tantrums, and aggression in a school setting as well as at home (Buggey, 2005; Buggey 2007). Video self-modeling was used with elementary-aged children with autism to reduce task avoidance behaviours. (Ohtake et al., 2013). Researchers have also used video self-modeling to improve social communication skills, promote social initiation and interaction, increase compliance in a classroom set-up, advance functional play skills; as well as to decrease challenging behaviours (Litras et al., 2010; Lee et al., 2017; Kabashi and Epstein, 2017; Andrade, 2018; Diorio et al., 2019; Chi, 2019).

Although direct comparisons of video modeling and video self-modeling do not show that one is more advantageous than the other, video self-modeling has improved learning outcomes in some children with autism (Marcus & Wilder 2009). Unfortunately, no clear study shows why video self-modeling is sometimes more effective or which children benefit the most from it.

The treatment, maintenance, and generalization effects of video modeling and VSM were similar, and the results were consistent across outcome factors. There were no substantial variances in the outcomes of intervention fidelity studies. Future research should focus on the effectiveness and social validity of video modeling and VSM strategies, as well as the elements that influence their efficacy (Bellini & Akullian, 2007)

2.3.4.3 Video Feedback, Prompting, and Priming. Researchers have begun to

consider incorporating video-based components into other sorts of instructional processes often utilised for children with autism. “Video feedback, video prompting, and video priming” are all examples of this (Rayner et al., 2009). Despite their similarities to video modeling, these strategies are distinguished as independent interventions based on the information supplied and the timing of the video presentation (Schreibman et al., 2000).

Video feedback is an approach comparable to video self-modeling wherein the child watches themself perform a specified behaviour. An instructor records many films of the target child participating in a particular behaviour and shows both positive and negative instances of the performance to the youngster when employing video feedback (Rayner et al., 2009).

The use of video feedback has demonstrated an increase in communication skills, self-management for generalization of social skills and peer-directed social language use, and to improve conversational fluidity among communication partners (Thiemann and Goldstein, 2001; Maione and Mirenda, 2006; Deitchman et al., 2010; Tagavi et al., 2020). Visual feedback has been shown to decrease challenging behaviours and enhance positive desired behaviour in children with autism (Keenan et al., 2021). The use of video prompting via parent delivery showed a promising effect in promoting daily living skills for adolescents with ASD (Domire and Wolfe, 2014; Cruz-Torres et al., 2020).

Video prompting is similar to video modeling; however, it is more commonly used to teach behavioural chains rather than single behaviours. A comparison drawn by the use of video prompting via parent delivery showed an effect in promoting daily living skills for adolescents with ASD (Domire and Wolfe, 2014; Cruz-Torres et al., 2020).

Video priming differs from video modeling in that it may limit the length of the video to show the learner the steps needed to begin the work before allowing the

youngster to complete the task independently. The second difference between video priming and video modeling is that video only shows the environment or related tangible cues, not other people executing target behaviours. Video priming is hypothesised to increase the predictability of specific events, allowing for a proper response when the real circumstance arises and reduced disruptive transition behaviour in children with autism. (Schreibman et al., 2000).

2.3.4.4 Computer-based Video Instruction. Using a computer to impart instruction and include video as part of the overall procedure is an emerging way of VBI. VBI technique integrates video technology with computer-assisted technology to teach new abilities. (Mechling 2005). The learner is not reliant on another person to enable the use or presentation of the video display, as is the case with most other VBI tactics; instead, the youngster controls the multimedia. This provides the child with more independence and allows them to go through each operation step as many times as they like.

Computer-based video instructions have been used to enhance communicative functions, social skills, literacy and academic performance, social behaviour (Simpson et al., 2004; Ramdoss et al., 2011; McCoy et al., 2016, Kaur & Pany, 2017). If young children with autism can study independently through a computer or other technology device, it may be a viable lifelong learning method for them although the bulk of studies studying computer-based video instruction have involved older students with autism. There is need to evaluate the effectiveness of computer-based interventions.

It has been noted that this technique has the least empirical support and evidence base of all the VBI procedures for young children with autism, implying that further research is needed in this area. (Kaur & Pany, 2017; Groskreutz & Groskreutz, 2021).

2.4 Role of SLPs in ASD Intervention

The American Speech-Language-Hearing Association (ASHA) released recommendations for SLPs, including duties and responsibilities for the identification and intervention of ASD (ASHA, 2006). SLPs play various roles, including diagnosing and managing ASD, providing information to individuals and groups known to be at risk for ASD and their caregivers and guiding other professionals regarding the needs of persons with ASD. SLPs profile the communication characteristics and determine the necessity for alternative forms of communication. Given the various domains of development and functioning that may be affected in autism, SLPs also determine the need for further referrals to other professionals. SLPs also play a role in the identification and resolution of any feeding problems that may occur (Ehren et al., 2006). A bulk of school SLPs will have children with autism on their caseloads due to the rising prevalence of autism. Understanding the particular learning methods associated with ASD and using that information to bridge the gap between intellect and good grades is one of the duties of the school-based SLP (Zenko & Hite, 2013; Janzen & Zenko, 2012).

Mendonsa and Tiwari (2018) conducted a study with a moderate sample size to assess SLPs' training, knowledge, attitudes, and beliefs towards children with autism in the Indian scenario. A web-based online survey with 219 SLPs was completed using a cross-sectional observational research design. According to the findings, around 43% of all SLPs scored well on the knowledge component, and 27% rated the belief section positively. SLPs' knowledge and opinions regarding autism were also influenced by factors like "educational qualification," "clinical experience," and "caseload of children with autism." According to the findings, SLPs in India have average and below-average scores on a questionnaire testing knowledge and views about autism. This further strengthens the need for future research and trainings relating to ASD.

Chapter 3

Method

The primary aim of this study was to highlight the knowledge and use of visual supports for SLPS for children with ASD

The objectives of the study were as follows:

1. To investigate the present status of knowledge of visual supports among SLPs for the intervention of children with autism

2. To investigate the use of visual supports by SLPs

3. To outline the opinions and challenges faced by SLPs in the implementation of visual supports.

Principles of the study

The survey was carried out while adhering to the AIISH ethical committee guidelines for Bio-behavioural Sciences for human subjects (AEC, 2009):

Phase 1: Development of the survey tool

Phase 2: Validation of the tool

Phase 3: Administration of the survey

Participants

The survey participants were categorized into two groups –

1. Students (undergraduate and postgraduate) who are in the process of completing their formal education in Speech-Language Pathology
2. Working Professionals across various settings and years of experience in working with children with ASD.

Phase 1: Development of the survey tool

The survey tool was developed after referencing relevant literature. The survey tool consisted of 5 sections (included in the Appendix)

i. Demographic Details
ii. Knowledge of Visual Supports for children with ASD
iii. Use of Visual Supports for children with ASD
iv. Opinions
v. Challenges

Section I had 4 questions that documented demographic information. This information highlighted SLP's settings (student or working professional), years of experience, autism specific training received if any, and confidence in providing intervention services to children with ASD. An open-ended option was included to specify the name of training received.

Section II consisted of 2 questions investigating the knowledge about the characteristics of ASD and knowledge surrounding the types of visual supports. Participants had to check all applicable items from a list provided.

Section III consisted of 3 questions relating to the use of visual support for children with ASD - use of visuals for specific functions, use of visual supports for non-verbal/ minimally verbal/highly verbal children, and factors attributed to the use of visual supports.

Section IV had 12 opinion statements (labelled from O1 to O12) surrounding ASD and visual supports. The participants had to rate themselves as either "agree", "disagree" or "cannot say" for each statement.

Section V included a list of possible practical challenges that an SLP might face in the implementation of visual supports for children with autism. Participants had to check all applicable options from a list provided. An open-ended option was provided to include other challenges that may have not been included in the list.

Ethical considerations: Consent for participation in the study was taken.

Phase 2: Validation of the tool

Validation of the questionnaire was done by two Speech-Language Pathologists, one Special Educator, and one Clinical Psychologist with at least five years of experience in the field.

The validators were asked to check for simplicity, appropriateness and relevance of each item to the objective of the study. The item pool was modified based on the feedback and suggestions received from the judges.

The finalized tool was then circulated for data collection.

Phase 3: Administration of the survey

The finalized survey tool was converted into a Google form for ease of access to the participants. The participants were accessed through personal contacts, social media and national/state school associations via email.

Phase 4: Scoring & Analysis

Once the entries were obtained, all the responses were documented to obtain the overall frequency and percentage of responses.

Statistical Analysis was carried out using SPSS- Statistical Package for Social Sciences Version 21.0 (IBM Corp., Armonk, NY, USA). Descriptive and inferential statistics were done. The following analysis was done:

1. The overall investigation and comparison of the knowledge of ASD characteristics among students and working professionals.
2. The overall investigation and comparison of the knowledge of visual supports among students and working professionals.
3. The overall investigation and comparison of the use of visual supports for children with ASD among students and working professionals.
4. Overall investigation of the opinions surrounding ASD and visual supports
5. Overall investigation of the challenges faced while implementing visual supports for children with ASD.

Chapter 4

Results

The primary aim of this study was to highlight the knowledge and use of visual supports among SLPs for children with ASD. The objectives were to investigate the present status of knowledge of visual supports among SLPs for the intervention of children with autism and to outline the opinions and challenges faced by SLPs in the implementation of visual supports. The questionnaire had 5 sections and was divided into Demographic details (Section I), Knowledge of ASD and Visual Supports (Section II), Use of Visual Supports (Section III), Opinions (Section IV) and Challenges (Section V). A total of 85 participants completed this survey questionnaire voluntarily. Total scores were calculated for each section and subjected to quantitative analysis using the Statistical Package for Social Sciences (SPSS) Version 21.0 (IBM Corp., Armonk, NY, USA).

The statistical analysis of the data was done using the following statistical procedures:

a) Descriptive statistics was carried out to obtain frequency and percentage values for questions in each section.
b) Mann Whitney test was used to compare the knowledge of ASD characteristics across students and professionals.
c) Independent t-test was used to compare the knowledge of visual supports between students and working professionals.
d) Independent t-test was used to compare the use of visual supports between students and working professionals.

The results of the current study are described under the following sections:

4.1 Demographic details

4.2 Comparison of SLPs knowledge of ASD characteristics and visual supports

4.3 Comparison of SLPs' use of visual supports

4.4 Overall investigation of SLP's opinions on ASD and visual supports

4.5 Overall investigation of challenges faced by SLPs in the implementation of visual supports.

4.1 Demographic details

Table 4.1

Demographic details

	Students		Working Professionals	
	n	%	n	%
Years of experience				
0-5 years	25	65.8	27	57.4
5-10 years	13	34.2	10	21.3
>10 years	0	0.0	10	21.3
Received ASD specific training	1	2.6	11	23.4
Confidence				
Confident	12	31.6	33	70.2
Not confident	26	68.4	14	29.8

Note. n= no. of participants.

Of the 85 participants, 38 were students and 47 were working professionals. Descriptive statistics from Table 4.1 indicate that majority of the participants in this study had under 5 years of experience in working with children with autism. Among working professionals, 42.6% (n=20) had more than 5 years of experience in the field. While 23.4% (n=11) working professionals reported receiving some sort of autism specific training, only 1 (2.6 %) of students reported the same. The trainings include Hanen Programs, certificate course on PECS,

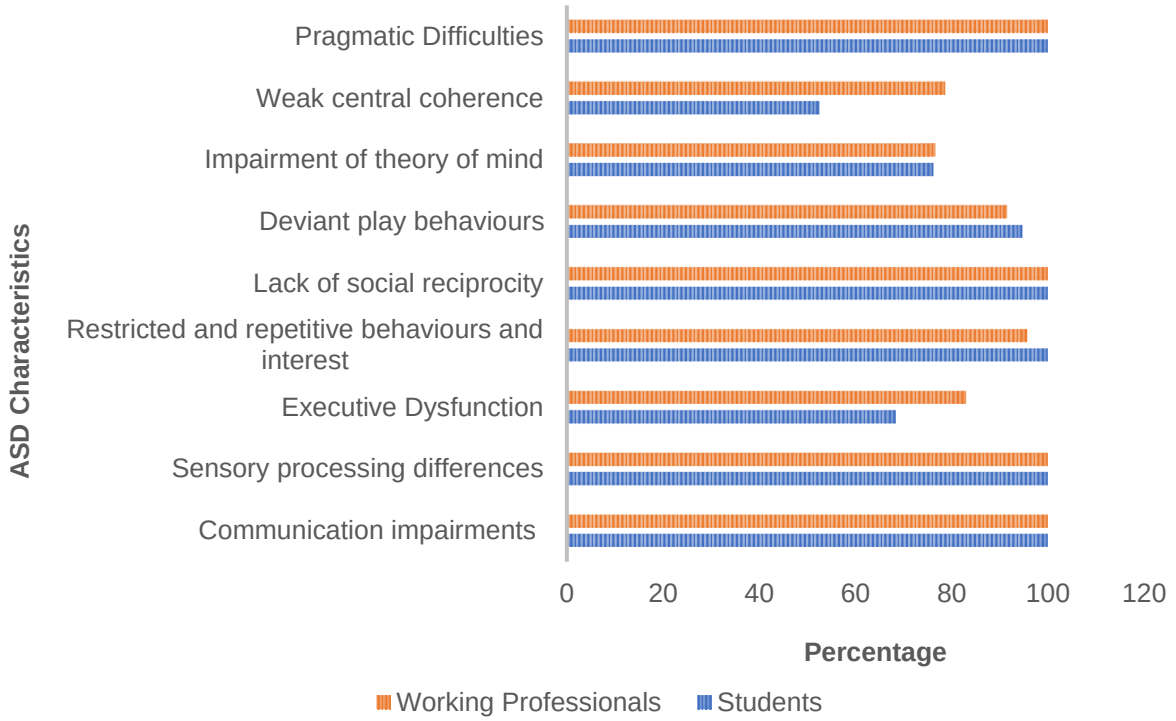
Sensory integration program, Applied Behaviour Analysis (ABA) workshops, Avaz software training and Oral Placement Therapy. 29.8 % (n=14) of working professionals and 68.4% (n=26) students reported that they did not feel confident in planning intervention for children with ASD. Overall, only 52.9% (n=45) reported confidence in planning ASD intervention.

4.2 Comparison of SLPs knowledge of ASD characteristics and visual supports.

4.2.1 Knowledge of ASD characteristics

Figure 4.1

Knowledge of ASD characteristics



As evident in Figure 4.1, both groups scored high on knowledge of ASD characteristics. All SLPs (n=85) had knowledge of "communication (verbal or nonverbal) impairments", "sensory processing differences", "lack of social reciprocity", and "pragmatic difficulties" as characteristics of ASD. The knowledge of "executive dysfunction", "weak central coherence" and "theory of mind" as ASD characteristics was reported less frequently among both groups. Among these domains, 31.6% (n=12) and 17% (n=8) of students and working professionals,

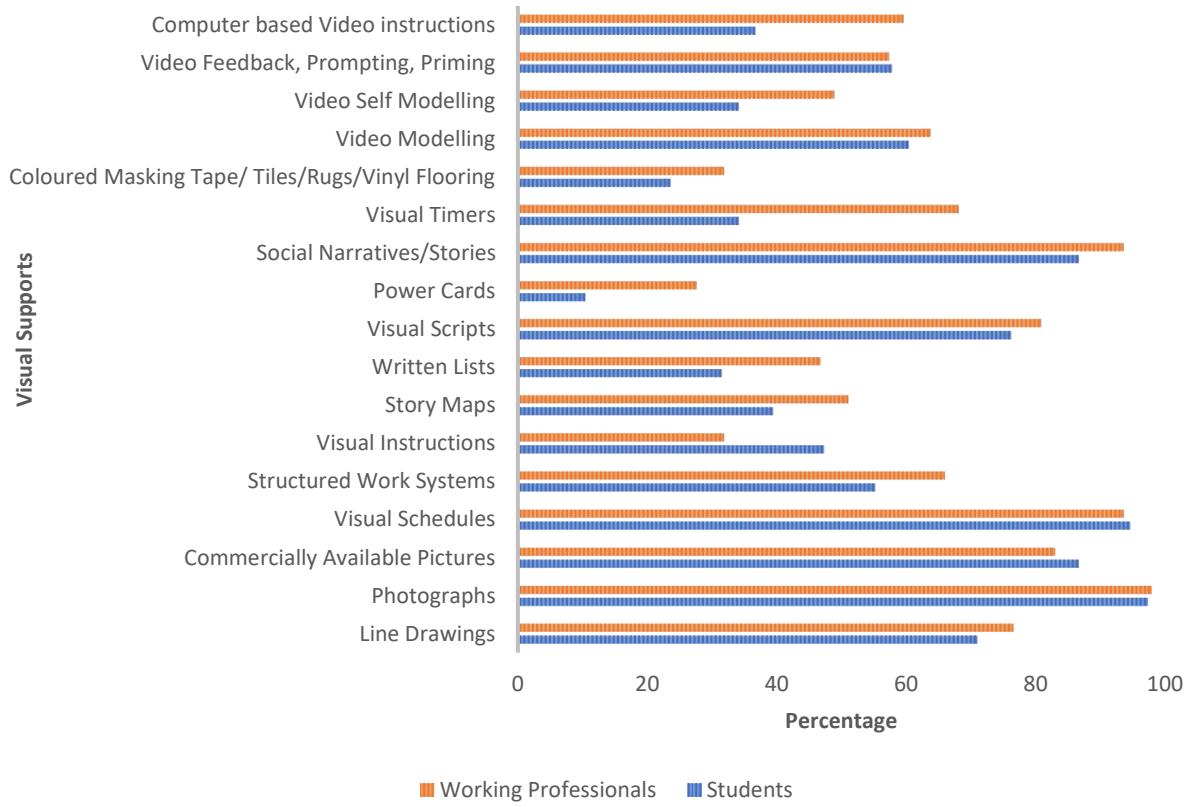
respectively, did not indicate "executive dysfunctions" as characteristic of ASD. Knowledge of "weak central coherence" was higher in working professionals (78.7%, n=37) as compared to students (52.6%, n=20). "Impairment of theory of mind" as characteristic of ASD was not indicated by 23.7% (n=9) of students and 23.4% (n=11) working professionals. 2 students (5.3%) and 4 working professionals (8.5%) did not indicate their knowledge of "deviant play behaviour".

Shapiro Wilk's test for normality suggested the data is skewed ($p<0.05$). Hence a non-parametric test (Mann Whitney test) was used to analyze the data. $|z| = 1.856$ with associated significance $p=0.63$ indicated no significant difference between groups on the overall knowledge of ASD characteristics.

4.2.2 Knowledge of visual supports

Figure 4.2

Knowledge of visual supports



As seen in Figure 4.2 "photographs" were the most commonly known visual support in

both the groups. Power cards were the least commonly known with only 27.7% (n=13) of working professionals being aware of them, compared to 10.5% (n=4) of students. “Photographs”, “visual schedules” and “social narratives” were the most used by both populations. Knowledge of “structured work systems”, “visual timers”, “social narratives/stories”, “computer-based video instructions”, “story maps”, “written lists”, “video self-modelling” and “coloured masking tape/tiles/rugs/vinyl flooring” was higher in working professionals than in students.

Table 4.2 lists the more commonly known and less commonly known visual supports among both groups.

Table 4.2

Visual supports known

More commonly used (>50%)	Less commonly used (<50%)
Photographs (97.6%)	Computer-based video instructions (48.2%)
Visual schedules (94.1%)	Story Maps (45.9%)
Social narratives/stories (90.6%)	Video self-modelling (42.4%)
Commercially available pictures (84.7%)	Written list (40%)
Visual scripts (78.8%)	Visual instructions (40%)
Line drawing (74.1%)	Coloured masking tape/tiles/rugs/vinyl flooring (28.2%)
Structured work systems (61.2%)	Power cards (20%)
Video modelling (60%)	
Video feedback, prompting and priming (56.5%)	
Visual Timers (52.9%)	

Note. Calculated from overall frequency of responses.

Shapiro Wilk’s test of normality indicates that the data follows a normal distribution ($p>0.05$), hence independent t-test used to compare the overall knowledge of visual supports across students and working professionals. The results shows that there is no significant difference ($p=0.089$) between students and working professionals on the overall knowledge of visual supports.

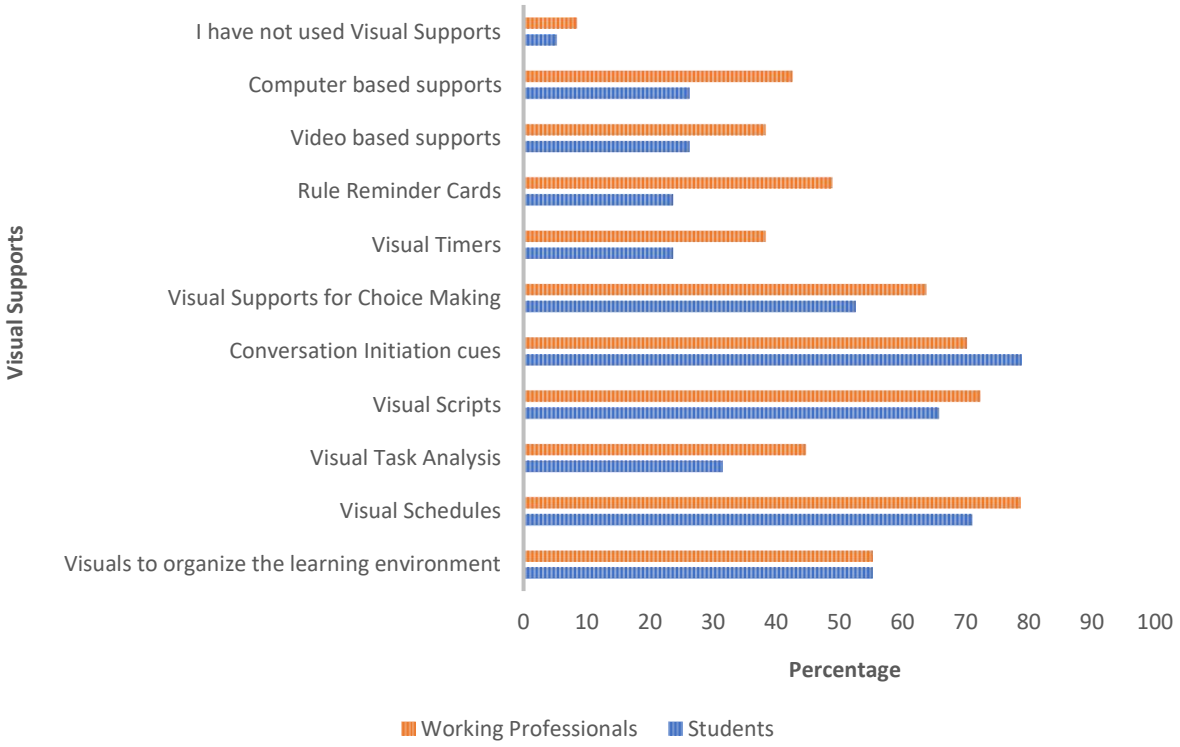
4.3: Comparison of SLPs' use of visual supports

4.3.1 Types of Visual Supports used

While a majority of working professionals have used some kind of visual supports for children with ASD, 8.5% (n=4) along with 5.3% (n=2) of students reported to have not used visual supports at all. As indicated in Figure 4.3, "visual schedules", "conversation initiation cues" and "visual scripts/narratives" were the most commonly used visual support by both groups. Working professionals reported higher use of "computer-based supports", "video-based supports", "rule reminder cards", "visual timers", "visuals for choice making", "visual scripts", "visual task analysis" and "visual schedules". Students reported higher uses of "communication initiation cues".

Figure 4.3

Types of Visual Supports used



Shapiro Wilk's test of normality indicates that the data follows a normal distribution ($p>0.05$) hence independent t-test used to compare the overall use of visual supports across students and working professionals. The results shows that there is no significant difference ($p=0.103$) between students and working professionals on the overall use of visual supports.

4.3.2 Use of visuals for children with ASD

94.7% (n=36) of students responded affirmatively to had used visual supports with non-verbal children, while only 44.7% (n=17) had used visual supports with highly verbal children. Although 63.8% (n=30) of working professionals used visual supports with highly verbal children, 14.9% (n=4) reported not using visual supports even with nonverbal children with autism.

Table 4.3

Use of visual supports for children with ASD

	Student				Working Professionals			
	No		Yes		No		Yes	
	n	%	n	%	n	%	n	%
Non-verbal	2	5.3	36	94.7	4	14.9	40	85.1
Minimally verbal	6	15.8	32	84.2	6	12.8	41	87.2
Highly verbal	21	55.3	17	44.7	17	36.2	30	63.8

Note. n=no. of participants.

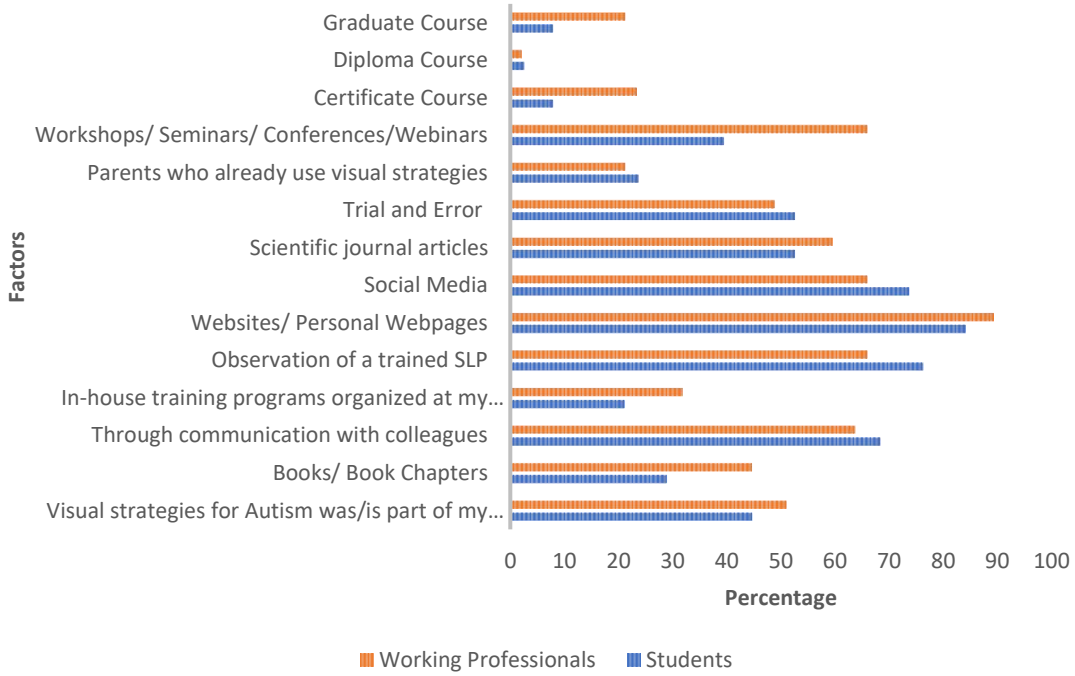
4.3.2 Factors attributed to the use of visual supports.

Among the factors listed in Figure 4.4, websites and webpages along with social media were ranked the highest among both groups. Only 51.1% (n=24) of working professionals along with 44.7% (n=17) of students reported that "visual strategies was/is part of their curriculum". Only 28.9% (n=11) of students compared to 44.7% (n=21) of working professionals rated "books/book chapters" as a factor. "Communication with colleagues", "observation of a trained SLP" and "social media" were ranked higher by students than working professionals, while more

working professionals rated “certificate course” and “scientific journal articles” and “in-house training programs organized at my workplace”. 66% (n=31) of working professionals rated “workshops/seminars/conferences” compared to only 39.5% (n=15) students. 52.6% (n=20) of students and 48.9% (n=23) of working professionals reported their use of visual supports was through “trial and error”. Less than 30% of the participants scored specific courses like diploma, graduate, certificate courses. More working professionals rated self-learning factor rather than being explicitly taught about visual supports.

Figure 4.4

Factors attributed to the use of visual supports



4.4 Overall investigation of SLP's opinions surrounding ASD and visual supports

Table 4.4

Opinions of SLPs on visuals and ASD

	Students						Working Professionals					
	Agree		Disagree		Cannot Say		Agree		Disagree		Cannot Say	
	n	%	n	%	n	%	n	%	n	%	n	%
O1	3	7.9	26	68.4	9	23.7	2	4.3	34	72.3	11	23.4
O2	38	100	0	0.0	0	0.0	44	93.6	2	4.3	1	2.1
O3	5	13.2	31	81.6	2	5.3	2	4.3	41	87.2	4	8.5
O4	28	73.7	5	13.2	5	13.2	37	78.7	6	12.8	4	8.5
O5	34	89.5	3	7.9	1	2.6	44	93.6	3	6.4	0.0	0.0
O6	35	92.1	2	5.3	1	2.6	45	95.7	0	0.0	2	4.3
O7	34	89.5	3	7.9	1	2.6	39	83.0	1	2.1	7	14.9
O8	34	89.5	1	2.6	3	7.9	45	95.7	0	0.0	2	4.3
O9	19	50	5	13.2	14	36.8	24	51.1	11	23.4	12	25.5
O10	30	78.9	2	5.3	6	15.8	42	89.4	2	4.3	3	6.4
O11	29	76.3	3	7.9	6	15.8	38	80.9	3	6.4	6	12.8
O12	35	92.1	1	2.6	2	5.3	42	89.4	3	6.4	2	4.3

Note. O1 to O12 represents the opinion statements listed below

O1: "Children with ASD process verbal information the same as their neurotypical peers".

While 68.4% (n=26) of students and 72.3% (n=34) of working professionals disagreed with the statement, 5.9% (n=5) of the participants agreed that children with autism process verbal information the same as their peers. 23.5% (n=20) of the participants remained undecided.

O2: "Identifying a child's learning style is as important as identifying how they express themselves"

All students (n=38) agreed that identifying a child's learning styles is as important as identifying how they express themselves while 4.3% (n=2) of working professionals disagreed. Overall, 96.5% (n=82) agreed that identifying a child's learning style is important.

O3: "Introducing visual supports hinders the development of verbal communication"

Although 84.7% (n=72) of all the participants agreed that visual supports do not hinder the development of verbal communication, a total of 8.2% (n=7) of all participants disagreed. 7.1% (n=6) of the participants remained undecided.

O4: "Visual support should be used with children with ASD who have fair expressive verbal skills"

Although over 70% of both students and working professionals agreed that visual supports should be used even with students who are fairly verbal, 12.9% (n=11) of the overall participants opined that visual supports should not be used with verbal children.

O5: "Visual supports like social stories are useful especially when targeting pragmatic goals in children with ASD"

91.8% (n=78) of all the participants agreed on the use of social stories, 7.1% (n=6) reported that social stories do not help target pragmatic goals in children with ASD.

O6: "Visual supports have an effect on social, behavioural, and communication skills of a child with ASD"

Although 94.1% (n=80) of all participants reported that visual supports have an effect on the social, behavioural communication skills of a child with ASD, 5.3% (n=2) of the students reported contradictory responses.

O7: "Visual Supports can be adapted for any age group/severity"

Although 85.9% (n=73) of all participants positively rated this statement, 7.9% (n=3) of students and 2.1% (n=1) working professionals disagreed and overall, 9.4% (n=8) of the

participants were undecided.

O8: "Visual Supports aid in the inclusion and integration of children with ASD

92.9% (n=79) of all participants agreed that visual supports aid in the inclusion of children with ASD, 1 student disagreed, while 7.9% (n=3) students and 4.3% (n=3) working professionals remained undecided.

O9: "It is a lot of work to plan and implement client specific visual supports"

50.6%(n=43) of all participants agreed that it was a lot of work to plan and implement client specific visual supports, while only 18% (n=16) of the overall participants disagreed. 30% (n=26) of the participants remain undecided.

O10: "Visual supports can be used for other children with different diagnoses"

78.9% (n=30) and 89.4% (n=42) of students and working professionals respectively opined that visual supports can be used for other children with different diagnosis. Overall, 4 participants (4.7%) disagreed with the statement and 9 (10.6%) participants remained undecided.

O11: "There is a lack in accessible training programs for visual supports in the Indian scenario"

78.8% (n=67) of the overall participants agreed on the limited training programs for visual supports in the Indian scenario. 7.1% (n=6) of the participants reported that access to training was not lacking

O12: "I want to seek more training on how to use visual supports with my cases"

90.6% (n=77) of all the participants reported that they would like to be trained in implementing visual supports for their cases. 4.7% (n=4) differed in their choice, while 4.7% (n=4) remained undecided.

4.5 Overall investigation of challenges faced by SLPs in the implementation of visual supports

Table 4.5

Challenges in the implementation of Visual Supports for children with ASD

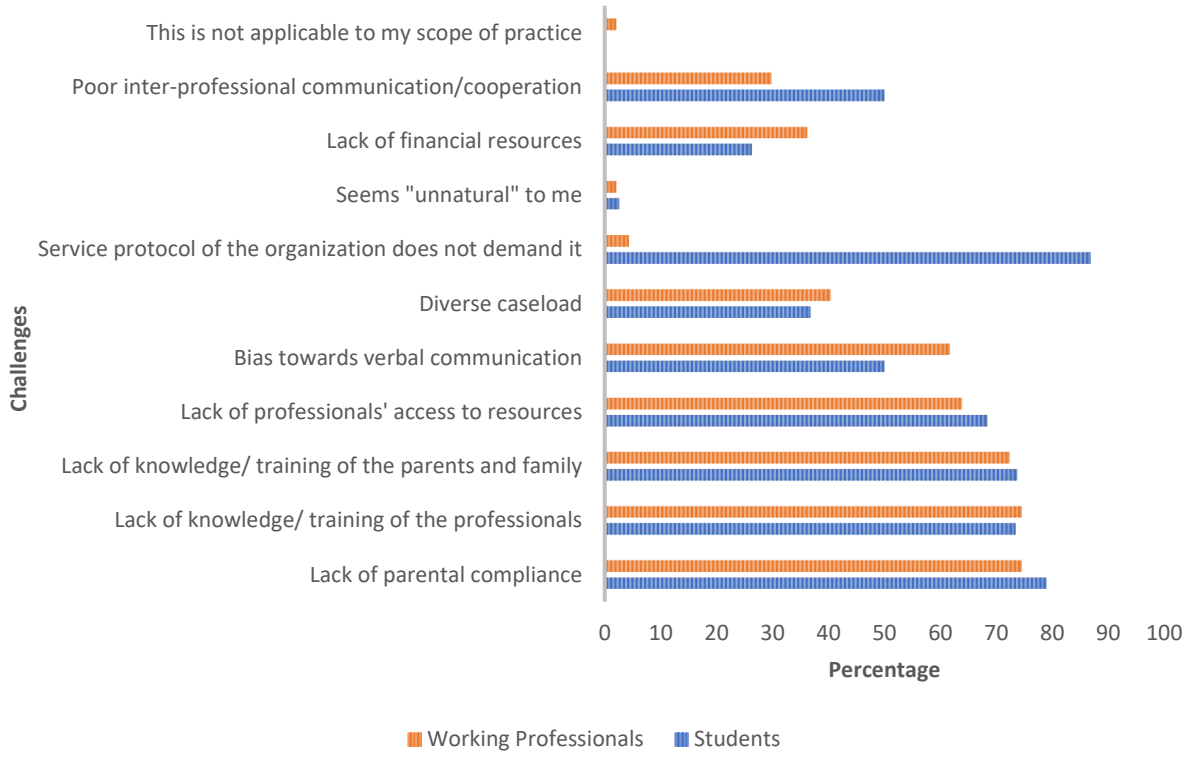
	Students				Working Professionals			
	Yes		No		Yes		No	
	n	%	n	%	n	%	n	%
Lack of parental compliance	30	78.9	8	2.1	35	74.5	12	25.5
Lack of knowledge/ training of the professionals	28	73.4	10	26.3	35	74.5	12	25.5
Lack of knowledge/ training of the parents and family	28	73.7	10	26.3	34	72.3	13	27.7
Lack of professionals' access to resources	26	68.4	12	31.6	30	63.8	17	36.2
Bias towards verbal communication	19	50.0	19	50.0	29	61.7	18	38.3
Diverse caseload	14	36.8	24	63.2	19	40.4	28	59.6
Service protocol of the organization does not demand it	33	86.8	5	13.2	2	4.3	45	95.7
Seems "unnatural" to me	1	2.6	37	97.4	1	2.1	46	97.9
Lack of financial resources	10	26.3	28	73.7	17	36.2	30	63.8
Poor inter-professional communication/cooperation	19	50.0	19	50.0	14	29.8	33	70.2
This is not applicable to the scope of my practice	0	0.0	38	100	1	2.1	46	97.9

Note. n = no. of participants

Table 4.5 is represented graphically in Fig. 4.5.

Figure 4.5

Overall Challenges in the implementation of Visual Supports for children with ASD



Majority of the challenges reported by both working professionals and students alike were related to lack of training of the professional and family, and lack of access to resources. 78.9% (n=30) of students and 74.5% (n=12) of working professionals reported that lack of parental compliance was a major challenge while implementing visual supports. 61.7% (n=29) of working professionals and 50% (n=19) of students reported a bias towards verbal communication. 36.8% (n=14) of students and 40.4% (n=19) of working professionals stated a diverse caseload as a challenging factor. 86.8% (n=33) of students reported that the service protocol of the organization does not demand the use of visuals, this was much higher compared to the 4.3% (n=2) working professionals that reported the same. Higher number of working professionals listed lack of financial resources as a challenge. 50% (n=19) of students and 29.8% (n=14) of working listed "poor inter-professional communication/cooperation" as a challenge. Among all the participants, 2.4% (n=2) reported that the use of visual supports seems "unnatural" to them. Out of the 85

participants, only 1 working professional reported that visual supports did not apply to the scope of their practice. Other challenges reported were “sensory issues of ASD that affect learning”, “other SLP’s advice against the use of visuals” and “parents understand the child’s communication as it is, hence do not find the need for visuals”. Only one working professional reported no challenges in the implementation of visual supports in their practice.

Chapter 5

Discussion

The findings of the present study are explained under the following headings

5.1 Demographic details

5.2 Comparison of students and working professionals' knowledge of characteristics of ASD and visual supports

5.3 Comparison of students and working professionals' use of visual supports

5.4 Overall investigation of SLP's opinions on ASD and visual supports

5.5 Overall investigation of challenges faced by SLPs in the implementation of visual supports

5.1 Demographic Details

Of the 85 participants in this study, just over 50% of the participants reported being confident in planning intervention for children with ASD. Working professionals in this study felt more confident as compared to students. Plumb and Plexico (2013) compared the experience, training and confidence levels of school-based SLPs and concluded that SLPs could have benefitted from additional training and clinical experience in working with young children on the spectrum. In the current study, less than 15% of the SLPs reported to have received autism specific training, even though some SLPs have been in the field for over 5 years. Although trainings reported by the participants intervention programs like Hanen Programs, PECS, Avaz software training and Oral Placement Therapy, there were hardly any specific training programs on the use of visual supports for autism. The complexity and diversity of ASD can be challenging for those new to the field. With lack of resources and inadequate training, an SLP may not be confident in providing robust, evidence-based practice for children with ASD. A lack of autism-specific training as highlighted by this study in conjunction with previous research (Mendonsa and Tiwari, 2018) indicates scope for further such training to enhance the SLP's skill set.

5.2 Comparison of students and working professionals' knowledge of characteristics of ASD and visual supports

Although both students and professionals in this study scored high on knowledge of certain characteristics of ASD relating to communication impairments, sensory processing differences and social-pragmatic skills, there were discrepancies in the knowledge of certain characteristics like "weak central coherence", "executive dysfunction" and "theory of mind" among students and working professionals. As stated by Demetriou et al. (2018), poor executive functioning can lead to issues in planning and organizing information. Weak central coherence is linked to the processing of stimuli and research has shown a difference in global and local processing of information in children with autism compared to their peers (Nayar et al., 2017). The knowledge of these characteristics is critical for understanding how children with autism learn and process their environment. Multiple studies have documented the role of an SLP in managing executive function deficits to promote literacy and academic functioning in children with autism by introducing visual strategies (Lanter & Watson, 2008; Dodd 2010; Fahy 2014; Zenko 2014; Sun et al., 2017; Prath, 2019). It is not enough to be aware of the typical language and communication impairments in a child with autism, rather it is imperative for professionals to thoroughly understand the characteristics of ASD so as to improve the way they teach specific skills across developmental domains, regulate behaviour and foster independence (Prizant, 2017).

In this study SLPs were evaluated on their knowledge of the kinds of visual supports. SLPs scored averagely across this domain, with some visual supports being more familiar than others. Common visual supports known to SLPs in this study included photographs and commercially available pictures, visual schedules, scripts, and social narratives/stories.

Less than 50% of students in this study were aware of the use of visual timers as a visual support. Extrapolating from the characteristics of ASD, since children with ASD may exhibit difficulties in transitions between and within activities leading to a higher demand for

predictability, a visual timer helps to establish expectations by providing visual information to communicate time, thereby making the concept of time more concrete. All these can help reduce and potentially avoid adverse behaviours that may occur, facilitate transitions and increase predictability (Hume 2008; Nikrahi, 2019). For these reasons, SLPs should be aware of such tools.

Visual supports like colour coded materials including masking tape, rugs, tiles and other furniture modifications were less familiar to both students and professionals of this study. Although this method is most commonly utilized in classrooms, visual supports to organize the environment can be modified for early intervention settings. These supports can help children be more autonomous in key activities, and have greater access to and understanding of their surroundings (Welterlin et al., 2012). Further exploration of the visual supports to organize the environment is needed to be able to better identify which type of visual supports are likely to be most effective for certain children on the spectrum.

Power cards were the least known visual support by the participants of this study. Although research reviews indicate its use (Olçay et al., 2020), there is limited research of power cards and its use in the Indian scenario. Furthermore, other visual supports like social narratives, scripts, and power cards have a lot of traits in common. This is one of the reasons why it is critical for researchers to precisely define the components of their visual support treatments and to closely monitor their implementation. This will aid practitioners and family members in determining what intervention is being used and what aspects of the intervention contribute to its efficacy, therefore improving the likelihood that practitioners and family members will be able to carry out the intervention effectively (Hume et al., 2014).

Visual supports incorporating technology like computer-based and video-based systems are on the rise in research and practice. Video modelling has been listed as an evidence-based practice (Hume et al., 2021). Young children with ASD find technological visual aids particularly appealing since they may be used at their own speed (Blake & Izumi-Taylor, 2009). From the

present study, it was found that less than 50% of the overall participants had knowledge of computer and video based visual supports. However, working professionals had better knowledge of these digital visual supports compared to students. Since the student's knowledge in this area was lacking, they should be made aware of these strategies as a viable option for intervention. Future research and training can highlight technological advances in visual supports.

5.3 Comparison of students and working professionals' use of visual supports

Out of the 85 participants in this study although most reported that they had used some form of visual support, 6 SLPs reported that they had never used visual supports for children with autism. This study found that the most commonly used visual supports were visual schedules, conversation initiation cues and visual scripts/narratives. A larger percentage of students reported using conversation cues. The use of conversation initiation cues like PECS is highly prevalent in both research and practice (Sulzer-Azaroff et al., 2009; Doherty et al.,2018; Lam 2020). PECS is a common evidence-based practice often incorporated in different graduate program curriculums as an intervention strategy for children with autism. In this study, working professionals reported a higher use of computer-based and video-based aids, rule reminder cards and visual schedules as compared to students, though the overall frequency of use was less than 50%. High-tech devices can be expensive and complex to learn. A trained speech language pathologist who is experienced in supporting families in accessing this technology is critical to ensuring that it is adequately incorporated into the child's communicative repertoire. (Bottema-Beutel, 2020). Therefore, training of SLPs on computer-based visual supports is imperative. If children with autism are able to learn efficiently and effectively using computers or other such technological aids, this can be considered as a viable method of long-term learning for them (Hume et al., 2014). Although the use of computer-based instruction with older children with autism has been reported in literature, further investigation is needed to test its efficacy with younger children.

With regards to the actual use of visual supports for different children with autism, 10.6% (n=9) and 14.1% (n=12) of the SLPs in this study reported that they had not used visual supports for both nonverbal children and minimally verbal children respectively. The findings are in congruence with those stated by Smith et al. (2016) who highlighted the apprehension in introducing alternative forms of communication for young children with autism. Visual supports can greatly augment verbal information and may be beneficial for a child who is nonverbal or has limited vocabulary, in terms of increasing engagement, communication interactions, on-task behaviour and reducing challenging behaviours (Rutherford, 2020).

Less than 50% of students in this study used visual supports for highly verbal children. Although highly verbal children may not require visual supports to meet basic communication needs, visual supports can still be used to aid verbal children with autism in transitions, social skills, behavioural regulation, literacy and academic skills, understanding abstract concepts and fostering independence (Rutherford et al., 2020). SLPs can use these to aid in higher-language learning, cognitive and social skills.

Among the factors that SLPs attributed to their use of visual supports for children with ASD, websites and webpages and social media were rated high by both students and working professionals. In the recent years, SLPs have used social media and websites as a platform for information sharing (Merkel-Walsh & Moore 2018). This platform is especially popular among the students who are getting into the field as indicated by this study. This has implication in tailoring information sources to suit different demographics.

In this study, only 44 SLPs have reported that visual strategies for autism was/is part of their curriculum and 29 SLPs listed book/book chapters as a factor. As stated by Mendonsa & Tiwari (2018), despite the fact that autism is taught at both the undergraduate and graduate levels of SLP school, the extent and scope of course content and clinical experience may differ across institutions. With the surging increase in evidence-based practices for autism, amendments and updates to the current academic curriculum is vital to keep students updated.

A large majority of students in this study reported using visual strategies in their practice after observing a trained SLP. This further strengthens the need for training among SLPs, not only for the clinical interventions, but to also share knowledge and train students. In this study, compared to students, it was seen that working professionals had more access to in-house trainings, certificate courses and scientific journal articles. Plumb and Plexico (2013), highlighted the need for autism-specific training among SLPs. Lack of accessible trainings is discussed in Section IV and V.

Around 50% of the SLPs in this study stated that their use of visual strategies for children with autism was by "trial and error" (used visuals with ASD which "seemed to work"). Although "trial and error" is not a scientific method of intervention delivery, it is important for the SLP to find the "right" intervention strategy that is individualized for the particular child with autism (Vivanti and Paragas, 2020).

5.4 Overall investigation of SLP's opinions on ASD and visual supports.

The overall opinions gathered were largely positive regarding ASD and the use of visual supports. Overall, only 60 out of the 85 (75%) participants in this study feel that verbal information processing is not the same for children with ASD and their neurotypical peers. Multiple studies that have been done support this fact and state that children with autism process auditory verbal information differently than their peers (Quill, 1997; Ganz et al, 2011; O'Connor 2012). This is important for an SLP to know so as to plan effective intervention. Visual strategies can be used to supplement auditory information for those who have difficulty in processing verbal information (Zenko, 2014).

Overall, 96.5% of the participants in this study agreed that identifying a child's learning style is as important as identifying how they express themselves. This is in accordance with previous research that states that children with ASD have various learning strengths, requirements, and preferences, and different intervention methods have distinct teaching procedures, the best results will be achieved when the proper match between the child's learning

profile and treatment teaching techniques is found (Vivanti and Paragas, 2020). Understanding the specific learning styles associated with ASD and using that information to bridge the gap between intellect and academic performance is one of the responsibilities of the school-based SLP (Janzen and Zenko, 2012). Although all students in this study positively rated this statement, 4.3% of working professionals disagreed. The scope of autism-specific training should include information relating to learning styles and practical solutions to approach the same.

Majority of the participants in this study (87.4%, n=72) agreed that verbal development is not hindered by the introduction of visual supports. This is in consensus with findings of multiple studies which aim to dispel myths surrounding the use of alternate forms of communication and visual strategies (Kasari et al, 2014; Smith et al, 2016; Burch, 2020) Some parents and professionals may be apprehensive or hesitant in adopting an alternative form of communications, (in this case, visual supports) over concerns that verbal development may be further delayed. These misconceptions surrounding visual supports and their uses should be corrected through adequate teaching and training of SLPs.

Although a majority of SLPs in this study agreed that visual supports should be used with children with ASD who are fairly verbal, 12.9% (n=11) of SLPs disagreed. Visual supports to initiate communication might not be as beneficial to fairly verbal children as they are to nonverbal or minimally verbal children. Other visual supports like scripts, social stories, visual timers and computer-based instructions can be used for children with ASD that have a fair verbal repertoire. In a review done by Rutherford (2020), visual supports were used for a variety of purposes including organizing the learning environment, establishing expectations between and within activities, improving on-task behviour, reducing the need for adult prompting, enhancing academic and literacy skills, fostering independence and building social skills and discourse.

A large majority of the participants in this study (91.8%) agreed that certain visual supports like social stories are helpful in targeting pragmatic goals. This is in consensus with the extensive literature surrounding the use of visual supports to build social skills and discourse in

children with ASD (Gray, 2010; Ozdemir, 2008; Leaf et al., 2015; Balakrishnan & Alias, 2017; Lau & Win, 2018; Karal & Wolfe, 2018).

94.1% of the SLPs in this study opined that visual supports have an effect on social, behavioural and communication skills of a child with ASD. A most recent review (Rutherford, 2020) reiterated the fact that the use of visual supports is a well-researched intervention strategy that has a positive impact and is beneficial in targeting the social, communication and behavioural skills.

Although 85.9% of all the SLPs in this study felt that visual supports can be adapted for any age group/severity, an equal number of participants disagreed or were undecided. Research has shown that visual supports can be used for various age groups, although a majority of the literature focuses on elementary and school age children as well as adolescents with ASD. There is a need for further research on the use of visual supports for toddlers and preschool age children. Additional considerations are needed when adapting these visual supports for very young children, including carefully choosing the type of visual representation and format of the visual support corresponding to the young child's developmental level and functioning (Hume et al., 2014).

Majority of the SLPs (92.9%) in this agreed that visual supports aid in the inclusion and integration of children with ASD. Correlating with findings by Lindsay et al. (2012) that stated that teachers/instructors need to use supportive strategies and have special training as well as access to resources to optimize the successful inclusion of children with ASD within a classroom set up. Visual supports like conversation initiation cues and scripts can aid a child with autism if there is an event of a communication breakdown. Visual supports to organize the environment and to establish expectations like visual schedules, visual timers, can help provide structure and predictability to child with autism and thereby reduce anxiety as well as the dependence on adult prompting (Sterling-Turner and Jordan, 2007).

50% of the SLPs in this study reported that it was difficult to plan and implement client

specific intervention, while only 18% (n=3) of the overall SLPs in this study reported that they did not have any difficulty. This could be due to a variety of factors like lack of training and knowledge of evidence-based practices for ASD, lack of resources like time, materials, lack of funding. The complexity and heterogeneity of ASD characteristics can make it difficult to plan a "one size fits all" intervention program. SLPs' skill level and poor confidence needed to plan and implement specific intervention can also be a barrier. (Turner-Brown & Sandercock, 2020).

Overall, 84.7% (n=72) of the SLPs opined that visual supports are not exclusively used for children with autism, but can be used for children with different diagnoses as well. Although the use of visual supports for autism has been extensively researched, they can benefit children with and without impairments. provided the strategy is adapted to the child's developmental, cognitive and functioning level (Hume et al., 2014). The use of visual supports for individuals (children and adults) with a range of other disabilities like Down syndrome, intellectual disability, developmental coordination disorder, auditory processing disorder (APD), specific learning disability and Attention Deficit/Hyperactivity Disorder (ADHD) has been documented by various researchers (Izzo, 2012; Foster-Cohen & Mirfin-Veitch, 2015; Cohen & Demchak, 2018; McCollow & Hoffman, 2019).

Majority of the participants in this study (78.8%) agreed that there is a dearth in training programs in the Indian scenario currently. 90.6% (n=77) of the SLPs from this study have indicated that they want to seek training in the implementation of visual supports.

5.5 Overall investigation of challenges faced by SLPs in the implementation of visual supports

In this study, SLPs reported lack of training and knowledge among professionals as well as families, lack of access to resources, poor parental compliance as major challenges they faced while implementing visual supports. Among SLPs of this study, working professionals had better access to training, and resources. Other challenges included poor inter-professional coordination

and consensus on the effective treatment strategies for children with ASD. These findings were supported by previous studies on challenges faced while using visual supports and alternate forms of communication. (McNaughton et al., 2008; Arthur-Kelly et al., 2009; Moorcroft et al., 2019).

A significant number of SLPs (56.4%) in this study reported a bias towards verbal communication and 2 SLPs reported that using visual supports felt "unnatural" to them. The hesitancy to use alternate forms of communication, as previously discussed is a barrier in the successful implementation of these strategies (Smith et al., 2016). As the severity of language impairments ranges from mild to severe across the autism spectrum, it is well documented that "students with ASD are more successful when visual information is provided" (Zenko, 2014).

86.8% (n=33) of students in this study compared to 4.3% (n=2) of working professionals reported that the service protocol of their organization does not recommend the use of visual supports for children with ASD. Implications of this relate to updating academic curriculum and service protocols across various settings including institutions, work set-ups and community levels.

Out of the 85 participants in this study, only 1 reported that they did not face any challenges and was currently implementing visual strategies effectively. This calls for increase in training to build confidence and stronger beliefs towards the use of visuals supports as a viable and reliable intervention strategy for ASD.

Chapter 6

Conclusion & Summary

The present study aimed to highlight the knowledge and use of visual supports among SLPs for children with ASD. A survey questionnaire was developed. 85 participants consented to participate in this study, out of this, 47 were working professionals from various settings and 38 were students studying at undergraduate and post-graduate levels. Majority of the SLPs had not received any autism specific training and reported feeling “not confident” while planning intervention for children with ASD.

The findings of this current study revealed that SLPs had knowledge of common characteristics of ASD according to the DSM-5 criteria, but were less familiar with characteristics like executive dysfunction, impairments of theory of mind, and weak central coherence. The characteristics along with sensory processing differences are critical to understand how a child with ASD learns. The was no significant difference between the students and working professionals on the overall knowledge of ASD characteristics

The knowledge of visual supports was compared between students and working professionals. SLPs overall knowledge of visual supports was fair. The most commonly known visual supports include photographs, visual schedules and social stories. Some visual supports like Power Cards and supports to organize the learning environment was familiar to less than 20% of the SLPs. Working professionals reported higher knowledge of digital based video supports. Though students and working professionals differed on their knowledge of few specific visual supports, there was no significant difference between the groups on the overall knowledge of visual supports. The findings of this study indicate that there is much scope to improve knowledge of various visual supports for ASD intervention. SLPs need to be trained in various evidence-based practices to enhance their skill set.

The use of visual supports was compared between students and working professionals.

While most of the participants reported to have used some sort of visual support, 6 SLPs reported to have not used visuals at all. This study's findings indicate that the most commonly used visual supports included visual schedules, conversations initiation cues and visual scripts/narratives. Though students and working professionals differed on their use of few specific visual supports, there was no significant difference between the groups on the overall use of visual supports. The findings of this study indicate that there is much scope to research the efficacy of use of specific kinds of visual supports for children with ASD in an Indian scenario. The findings of this study indicate that there were discrepancies in the use of visual supports with both non-verbal and highly verbal children. Visuals have been shown to be effective with both these groups, thereby indicating a need for better and more refined education on autism for both students at professionals at various levels.

From the present study, majority of SLPs rated social media and other online sites highest among the factors attributed to their use of visuals for children with ASD. Implications of this include building better online resources for both students and working professionals to access. Just about 50% of the participants in this study reported that visual supports were part of their curriculum. This reiterates the need for changes and updates to the current academic curriculum to incorporate a broader range of evidence practices for ASD.

Overall, most of the SLPs positively rated the opinions surrounding the use of visuals and ASD. Majority of the SLPs reported that they would like to seek more training in the use of visuals. A major challenge reported by the SLPs in this study was the lack of training and access to resources as well as misconceptions about visual supports. The findings of this study indicate that there is a dire need to bust the myths, misconceptions and stigma associated with the use of alternate forms of communication and supports.

Implications of the Study:

- The findings of the study have implications for academic curriculum refinement, as well as the introduction of more regular autism-specific training workshops, conferences, seminars, and webinars for both working professionals and students.
- Implications are also suggested for professionals to thoroughly understand the characteristics of ASD so as to improve the way they teach specific skills across developmental domains, regulate behaviour and foster independence
- The findings of this study have implications for future research on the use and efficacy of specific visual supports for different age groups and severity of ASD.
- The study also highlights the use of visuals supports for children with other disabilities.
- Instructional activities should be structured to ensure that appropriate accommodations, such as visual aids, are in place to suit the specific learning requirements of children.
- Further research is implicated on parent perspectives of visual supports and the use of visual supports in community and home setting.

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APPENDIX

QUESTIONNAIRE:

Knowledge and Use of Visual Supports among SLPs for children with ASD

This questionnaire aims to highlight the SLPs knowledge and use of visual supports for the intervention of children of children with autism spectrum disorder (ASD) as well as opinions and challenges that they might face.

Demographic details

Q1 What is your capacity as an SLP

Student ☐
Working Professional ☐

Q2 Number of years in the field

- 0-5 years ☐
- 5-10 years ☐
- >10 years ☐

Q3 Have you received any ASD specific training? (If yes, please specify)

- No ☐
- Yes ☐
- _____

Q4 Given the diversity of ASD, how confident do you feel in planning intervention for children with ASD?

Confident ☐
Not confident ☐

Knowledge of ASD and Visual Supports

Q5 What characteristics of ASD are you aware of? (Check all that apply)

- Communication impairments (verbal/nonverbal) ☐
- Sensory processing differences ☐
- Executive Dysfunction ☐
- Restricted and repetitive behaviours and interest ☐
- Lack of social reciprocity ☐
- Deviant play behaviours ☐
- Impairment of theory of mind ☐
- Weak central coherence ☐
- Pragmatic Difficulties ☐
- Other_____ ☐

Q6 Select from the list below the visual supports you are aware of. (Check all that apply)

- Line Drawings ☐
- Photographs ☐
- Commercially Available Pictures ☐
- Visual Schedules ☐
- Structured Work Systems ☐

- Visual Instructions
- Story Maps
- Written Lists
- Visual Scripts
- Power Cards
- Social Narratives/Stories
- Visual Timers
- Coloured Masking Tape/Tiles/Rugs/Vinyl Flooring
- Video Modelling
- Video Self Modelling
- Video Feedback, Prompting, Priming
- Computer based Video instructions

Use of Visual Supports

Q7 Types of Visual Supports used. (Check all that apply)

- Visuals to organize the learning environment
- Visual Schedules
- Visual Task Analysis
- Visual Scripts
- Conversation Initiation cues
- Visual Supports for Choice Making
- Visual Timers
- Rule Reminder Cards
- Video based supports
- Computer based supports
- I have not used Visual Supports

Q8 Which group have you used visual supports for? (Check all that apply)

- Non-verbal children with ASD
- Minimally verbal children with ASD
- Highly verbal children with ASD

Q9 What has made you use visual supports in your practice? (Check all that apply)

- Visual strategies for ASD was/is part of my curriculum
- Books/ Book Chapters
- Through communication with colleagues
- In-house training programs organized at my workplace
- Observation of a trained SLP
- Websites/ Personal Webpages
- Social Media
- Scientific journal articles
- Trial and Error
- Parents of children with ASD who already use visual strategies
- Workshops/ Seminars/ Conferences/Webinars
- Certificate Course

- Diploma Course
- Graduate Course
- Other

Opinions

Q10 Opinions: (Read the following statements and indicate your response)

		Agree	Disagree	Cannot Say
O1	Children with ASD process verbal information the same as their neurotypical peers			
O2	Identifying a child's learning style is as important as identifying how they express themselves			
O3	Introducing visual supports hinders the development of verbal communication			
O4	Visual support should be used with children with ASD who have fair expressive verbal skills			
O5	Visual supports like social stories are useful especially when targeting pragmatic goals in children with ASD			
O6	Visual supports have an effect on social, behavioural, and communication skills of a child with ASD			
O7	Visual Supports can be adapted to any age group/severity			
O8	Visual Supports aid in the inclusion and integration of children with ASD			
O9	It is a lot of work to plan and implement client specific visual supports			
O10	Visual supports can be used for other children with different diagnoses			
O11	There is a lack in accessible training programs for visual supports in the Indian scenario			
O12	I want to seek more training on how to use visual supports with my cases			

Challenges

Q11 What challenges have you faced in the implementation of visual supports for children with ASD? (Check all that apply)

- Lack of parental compliance
- Lack of knowledge/training of the professionals
- Lack of knowledge/training of the parents and family
- Lack of professional's access to resources
- Bias towards verbal communication
- Diverse caseload in terms of severity and age range
- Service protocol of the organization does not demand it
- Seems "unnatural" to me
- Lack of financial resources
- Poor inter-professional communication/cooperation
- This is not applicable to the scope of my practice
- Other: _____