

UNDERSTANDING AUTISM THROUGH INTERVENTION PROGRAMS

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ABSTRACT

Autism in Malaysia is growing but the level of understanding of this real yet complicated spectrum of disorders is at a critical stage. Many children who are diagnosed with Autism or Asperger Syndrome are left in the hands of caregivers and teachers who have yet to understand this disorder from the perspective of developmental psychology. It is through the theories of developmental psychology that many intervention programs are devised as it represents the window to overcome behavioral issues which is the key deficit in autism. The identified missing links in an autistic child are targeted in the intervention programs which requires patience, repetition and consistency in its use before changes are seen in the child. Many parents do not realize this and intervene in a rigid manner, or give up and sometimes resort to alternative medicine or methods which are not in synch to the actual development of the child. The understanding of cognitive, physical as well as language development of a child, will initiate spontaneous collaborative efforts amongst all caregivers especially parents who will comprehend the actual reasons behind persevering in the use of intervention programs in order to help their child overcome autism. Hence, this paper aims to reveal the importance of knowing through the understanding of developmental psychology in intervention programs that nurture the child to be socially functional and fit into society.

Key words: autism; aspergers; cognitive; intervention;

INTRODUCTION

Autism is a cognitive neurodevelopmental disorder found on a spectrum that shows differences in the manner in which children start to develop before eventually moving into adulthood (Lord,2007). According to the (APA2013) the term “spectrum” refers to series of deficits which associates individuals who are diagnosed with ASD. The DSM-IV/DSM-IV-TR (APA, 1994/2000) has identified five broad areas within (i.e., Pervasive Developmental Disorder) which encompasses five specific diagnoses (i.e., Autistic Disorder, Pervasive Developmental Disorder-Not Otherwise Specified, Asperger’s Disorder, Rett’s Disorder, and Childhood Disintegrative Disorder). Within the DSM V, Asperger’s Syndrome relates to individuals that have age appropriate language as well as intelligence but deficit in socialization and adaptive skills. The common denominator among those with Aspergers and autism within Kanner is a deficit in social communication, social interaction and social imagination. (Ghaziuddin, M., 2008). These deficits are visible in early childhood and negate social integration and learning. Therefore, it has been a norm for the past two decades to use behavioral and developmental interventions that have been specifically designed to correct the various symptoms that are linked to ASD. These interventions are vital in addressing social deficits, basic communication skills and incorporating pragmatically acceptable behavior that would bring improvement in education among children with ASD. (National Research Council, 2001).

GRAVITY OF AUTISM GLOBALLY

Autism is growing so rapidly that there is an increase from 50% to 2000% in cases of Autistic Disorder. (Centers for Disease Control and Prevention, 2011). The breakdown as analyzed by (Wong,2007) is shown below:

COUNTRY	PERCENTAGE
AUSTRALIA	6.25 in 1000
CHINA	1.1 in 1000
DENMARK	9 in 1000
INDIA	1 in 250
JAPAN	3 in 1000
MEXICO	2 - 6 per 1000
CANADA	1 in 154
SWEDEN	1 in 188
FINLAND	1 in 833

The United States based on a recent report by the (Centers for Disease Control and Prevention) indicated 1 per 68 children with 1 in 42 boys and 1 in 189 girls have ASD.

In Malaysia there is a smaller scale of study conducted by the Ministry of Health on children who were between the ages of 18 to 26 months and it was shown that there was a rate of 1.6 in 1000 children or at least 1 in 625 children who were affected by autism.

IDENTIFICATION OF AUTISM THROUGH DSM 5

It has been recorded by the DSM5 that the signs of autism are seen in the second year of life between 12 and 24 months and sometimes there are delays and signs that may be vivid as early as 12 months in some children. These visible signs are apparent at the age of 3 or even younger which adversely affects symbolic or imaginative play, pragmatic language in social communication and social interactions.

The accurate diagnosis of Autistic Disorder can be confirmed if two or more items within the section on impairment in social interaction is observed. Consequently, at least one item extracted from DSM V on restricted, repetitive and stereotyped patterns of behaviour, interests and activities are another scale of confirmation.

A concrete foundation with accurate, and precise reflection of ASD is found in the DSM – 5 (APA, 2013) which is the view of several researchers (Baron-Cohen, Golan, Wheelwright, & Hill, 2004; Huerta et al., 2012).

The contentious issue is that high functioning individuals may find themselves excluded as a consequence of the rigid diagnostic scales in DSM V (Compart 2012). However, a recent review after DSM V from 2000 to 2010 indicates the importance of early interventions and developmental intervention as a drive to improve early intensive behavioral and developmental intervention in language skills and cognitive performance of children who have ASD. (Warren et al., 2011).

IMPAIRMENTS LINKED TO AUTISM

Social interaction is the crux of development but sometimes it does not get identified as cause for concern unless social demands exceed limited capacities. Therefore, the failure of it being identified early leaves these individuals unattended to until it manifests later in their life (Wing et al., 2011).

The other prevalent deficit is weak and atypical social responses with the inability to recognize the salient social stimuli is visible as a consequence of poor attention. This was observed in about 50% of children with ASD who showed short attention span, in comprehending the needs of the social environment. (Aman 2009).

Therefore, children with ASD should be attended to promptly in accordance to the developmental milestone identified by a child of that age in order to arrest the deficit before it gets overlooked and results in meltdowns or temper tantrums. The lack of concrete communication and social interaction eventually results in severe tantrums, aggression and self – injurious behaviour (Souders, Freeman, DePaul, & Levy, 2002, Bromley, Hare, Davison, & Emerson, 2004; Koydemir-Özden & Tosun 2010).

It was further emphasized that children who are short of communication skills were easily intimidated or even petrified by surrounding situations in their immediate environment which manifests through their maladaptive behaviours (Browne, 2006).

It was envisaged that these impairments if corrected through early intervention programs cuts down excessive costs of approximately one million even before the person attains 55 years of age (Columbia Pacific Consulting, 1999).

CLINICAL PRESENTATION OF ASD

The impairments that are manifested have been described as onset, development and phenotypic presentations that permeate into two main types. These two main types are early identification that can be seen from the expected development with an eventual regression. This can be also triggered by environmental factors like poor immunity arising from potent toxic exposures. It was observed that even in these situations there is a series of some anomalies or delays that are apparent much later (Kim SH, Macari S, Koller J, Chawarska K.,2015).

There are some visible signs that can pose a risk for autism like slight physical anomalies for example ears anomalies, muscular hypotonia in new-born macrocephaly, the style and abnormal facial expression and motor function. Besides that, there are difficulties with or non -existent symbolic play or apparent odd play habits like obsessive interest in parts of toys or objects instead of proper functional uses of the whole object (Coleman & Gillberg, 2012).

The existence of one or more additional co – existing behavioural psychiatric or developmental disorders like anxiety and depression (Cath, Ran, Smit, van Balkom, & Comijs, 2008) are contributing to the seriousness of ASD which impedes their regular functioning (Bellini, 2004).

There are other regular co-occurring disorders that is evident in late childhood are oppositional defiant disorder (ODD) attention deficit hyperactivity disorder(ADHD) (Skokauskas & Gallagher, 2010; Van Steensel, Bögels, & de Bruin, 2013 ; Mazefsky et al. 2008; Simonoff et al., 2008).

UNDERSTANDING OF AUTISM IN MALAYSIA

The National Autism Society of Malaysia (NASOM) approximated 9000 children trapped within the definition of ASD each year. This prevalence of ASD stands at 1 case in every 600 births in Malaysia with an escalating number each year. (NASOM 2014).

With this rise, one would expect awareness as well as intervention to be very intent and persistency to overcome this disorder be ongoing. However, the understanding of autism in Malaysia shows many parents do not understand autism (Dolah, Yahaya & Chong, 2011). This is evident for example among one, the Chinese culture where the construction of autism is being disabled (chan) and useless (fei) which leaves a stigma on these children within this community (Coon, Cook, Tran & Tu, 1997). The heightened stress level that are prevalent amongst the primary caregivers which are parents of children with ASD coupled with depression are at an increasing level. (Zasmani S.,1993).

The latest report is, many Malaysians have insufficient knowledge and insights into autism which is a setback that can direct negative sentiments among autistic individuals and families (Mohd .Zuri Che Ahmad Ghani, 2011). According to (Hew 2000) as a consequence of ignorance and poor understanding of this disorder by the public at large, both children and adults who face issues from this developmental disorder are considered people with mental issues.

In addition, the actual cause of this disorder is yet to be identified though billions of dollars have been spent on research (Newschaffer et al., 2006; Rao & Gagie, 2006; Huang & Wheeler, 2006). Besides that, interpretation of child development varies from culture to culture where symptoms that appear to be overwhelming in one culture may not be overwhelming in another (Daley,2004).

In a nutshell, autism spectrum disorder (ASD) have been due to various contributing factors that encompass the environment as well as developmental factors without a specific etiology. As a consequence of inadequate measures or cure to treat autism, early intervention programmes are the key to reduce behaviors that are delayed within this population. (Boyd et al., 2010).

The reasoning behind the use of intervention programmes is that children's brains are consistently blooming and are porous which makes it easy for the child to work on areas that are hampered due to autism (Landa, 2007). In a study to substantiate this theory, parents participated in a therapy that touched on the environment, with effort to participate in an activity by the child, through well-defined routines, facilitating and maintaining states that range from joint attention, communication and language before generalizing to other routines. (Wong & Kwan, 2010).

The outcome showed children with autism making improvements in language, communication, reciprocal social interaction and symbolic play. There was also a marked improvement in the child's language with parents managing their own stress level." (Wong & Kwan, pg 677, 2010).

The initiation by the Malaysian Psychiatric Association (2010) has enunciated the importance of tackling autism within the local context with concrete interventions that best fits the needs of children.

However, in Malaysia, the lack of knowledge on ASD as well as late diagnosis leaves autism fixated and not attended to at an early age (Dolah, Yahaya, & Chong, 2011). Efforts by the Ministry of Education through the screening program known as the Literacy and Numeracy Screening (LINUS) which opens the doors for early identification through medical professionals has faced a stumbling block. This is due to late diagnosis of a child with ASD which makes intervention a challenge as it is identified at a later age.

Overall, the status of autism awareness and understanding of children with ASD is lacking amidst the public at large in Malaysia (Jin and Chin 2012). Additionally, in Malaysia these children are refrained from having a good education as knowledge of autism among parents and society is limited. (Azizan, H.,2008).

GLOBAL PERCEPTION OF AUTISM

The general population are repulsive towards a person that displays autistic behaviours (Butler 2011). Autism has reached an alarming rate of 8% of children to 1.4% in six years with an approximate number of students standing at 1: 68 on the spectrum expecting a greater percentage of adults on the spectrum in the near future (Data and Statistics, 2014).

In order to overcome this epidemic, many researchers universally viewed parental involvement in early intervention programs that incorporated principles of psychologists like Skinner, Vygotsky, Urie Bronfenbrenner, Bandura, Erik Erikson and Jean Piaget (Boyd, B, Hume, K, McBee, M et al 2014).

The famous psychologist, Skinner's (1957) perspective of verbal behaviour operates as the conceptual framework to ignite communication skills for children with ASD and other developmental disabilities (Sautter & LeBlanc, 2006; Sundberg & Michelle, 2001).

It is acknowledged that verbal behavior acts as a strong base for Alternative Augmentative Communication (AAC) intervention programs for children with ASD (Bondy, Tincani, & Frost, 2004). Another framework that supports parental involvement in intervention programmes is through the Ecological Framework, that was extended by Urie Bronfenbrenner.

The emphasis in this framework is parental involvement in ASD intervention programs represented by the micro- system, one of the elements in the Ecological Framework. The micro system comprises family, peer and caregivers who influence social skills and behavior of the child afflicted with autism. According to Urie Bronfenbrenner, this connection is then established through the 'meso' system which represents interactions amongst the line of people identified in the microsystem chain. Therefore, parents are empowered as they participate which is the objective of the Ecological Model.

Another conceptual framework by Erik Erikson relates to independent variables where cooperative learning, peer tutoring, consulting experts and the role of the teacher and parent is instrumental in bringing changes. This social emotional development through nurturing represents the dependent variable that acts as the basis which needs to be ignited before actual positive results can be gained in using the intervention programs.

A key missing link in children who are autistic is the insight to acknowledge that others have their own perceptions and beliefs that is different from their own which is known as the theory of mind (Boucher, 2009; Frith & Happé, 1994).

The other missing theory is executive functioning which is the ability in planning, reasoning, memory, impulse control, inhibition, cognitive flexibility, initiation and monitoring of action, problem-solving, the ability to sustain attention and the ability to deal with novelty (Elliott, 2003; Hill, 2004; Chan, Shum, Touloupoulou & Chen, 2008).

Central coherence is the inbuilt ability to interpret incoming information based on its context without accounting too much for details (Happé, 1999). The Weak Central Coherence theory states that individuals with ASD tend to process information with intricate details that overshadow the wider perspective of interpretation. (Frith, 1989; Frith & Happé, 1994).

One such intervention that strengthens these theories is Child Centred Play Therapy (CCPT) which derives its principles from Erik Erikson's psychosocial stages (Erikson, 1968), Piaget's cognitive theories (Piaget 1962) and attachment theories that are developed by Ainsworth (Ainsworth & Bell, 1970).

The child is nurtured based on the stages of developmental milestones which exposes the child to the existence of "others" perspective. This awareness is developed with the help of the therapist who "holds" the child with a step by step approach strengthening their theory of mind. Through this development, the eventual realization of self will prompt children to correlate their skills and knowledge to contemporary situations. This will lead to the formulation of new behavioral schemas that are the pinnacle for social and emotional growth (Bandura, 1977).

The use of CCPT steers forward by using the developmental milestones as a gauge in monitoring the child (Cicchetti & Beeghly, 1987). Thus, progress is reflected by assessing the child in totality and not on any one identified symptom (McGuire & McGuire, 2001; Ryan, 1999; Wilson & Ryan, 2005).

There is strong evidence that supports better outcome in children with ASD through the participation and involvement of parents in intervention programs that measure non-verbal communication (Anderson & Romanczyk, 1999). Besides that, verbal communication (Stahmer & Gist, 2001), behaviour management (Lutzker & Steed, 1998) are achieved with exceedingly higher scales of appropriate play skills (Stahmer, 1995) through joint attention (Vismara & Lyons, 2007), as well as imitation and social responsiveness (Ingersoll & Schreibman, 2006). There is evidential support through play that endorses marked progress through positive parent- child engagement (Mahoney & Perales, 2003).

The failure in understanding autism and using the intervention programs without reflecting the psychological principles triggers stress. In a study by Roberts et al., (2011), it was seen that parental involvement in the intervention program showed a better understanding of autism with parents witnessing changes in their child's life (Ozonoff & Cathcart, 1998; Schultz et al. 2011).

In a broad context, stress that is faced by parents of children with ASD was the main trigger for divorce (Hartley et al., 2010). In addition, it was indicated that parents whose children had ASD were more likely to show stress like symptoms i.e. negativity in parenthood are easily tensed with their children and inclined to be easily depressed (Lai, Goh, Oei, and Sung 2015).

Many studies that targeted mothers of children with ASD were seen to have a high level of psychological distress and parenting stress than mothers of children with Development Delay (Estes et al., 2009). This is the same situation in relation to children with another developmental disorder that is connected to mental health issues and coping strategies. It was found that the stress level of parents with ASD were higher in contrast to parents of children with other disabilities. (Estes, et al., 2009; Greenberg et al., 2004).

The level of satisfaction amongst primary givers of children with ASD indicated that they disapproved the help they had received since diagnosis was made (Siklos & Kerns, 2006). It was noted that approximately 93% of parents of ASD were unhappy with the financial allocation to support their child's therapy (Siklos & Kerns, 2006).

There was also depreciation in the quality of life of parents with ASD in comparison to primary givers of children with ADD/ADHD in areas of care, job security and showed that they opted out of community services (Lee et al. 2008). In order to curb and control this, one of the visionary steps is to empower parents with the skills to understand and use the intervention programs through psychologists (Kabot et al., 2003).

THE NEED FOR PARENT PARTICIPATION

According to Yeo et.al. (2012), the job of parenting autistic children is not a career of choice to anyone. The emotions, behaviours thoughts of parents, especially mothers can be affected if anything happens to their children. Therefore, according to (Volkmar, 1997) it is not surprising in the absence of a cure there are literally hundreds of therapeutic interventions, which claim to help children with autism to function as normal individuals by overcoming their inherent deficits.

It is clear that these programs prompt the need of the parent involvement as it ensures that behaviours procured in the structured program can easily be generalized to the home environment (Ryan et al., 2011). A recent prompt is for health professionals to help parents by empowering them with sufficient knowledge to manage their children effectively (Amar, 2008).

It is therefore essential for parents to be equipped in managing overwhelming behaviours (Benson & Karlof, 2009; National Research Council, 2001, p. 153). As a consequence of this observation, it can be seen that many ASD programs empower parents by encouraging them to learn and practice specialized skills to help their children with ASD by participating in the intervention programs (National Research Council, 2001, p. 153).

It is vital for parents to collaborate with educators and other professionals to help the child overcome autism (Reich, Bickman, & Heflinger, 2004; Renty & Roeyers 2006; Stoner & Angell, 2006).

OVERCOMING AUTISM THROUGH INTERVENTION PROGRAMS

The current solution to overcome autism shows that on early prognosis together with an early intervention programme (EIP) namely in behaviour modification, would be the key to increase the child's cognitive level (Dawson et al., 2010).

These programs will help parents and caregivers manage the developmental issues of children with autism at home. Each autism intervention program requires collaborative efforts of caregivers if positive results are to be attained. As mentioned by (Locke, J., Ishijima, E. H., Kasari, C., & London, N. 2010) this is aligned with Vygotsky's theory where collaboration through able peers or mentors complement learning in education.

In the article written by Amar (2008), he indicated that many studies have concentrated mainly on interventions used at autism centres and hospitals which use expensive tools and intervention methods. Unfortunately, these methods or interventions were not suitable or inappropriate for Malaysian parents and caregivers to conduct intervention at their own home based on the cost incurred in procuring these tools or instruments.

He mentioned that most of the autism centres and services provided in Malaysia have adopted models from industrialized countries and this may not be suitable or applicable to meet the vast needs of autistic children in Malaysia. He further emphasized that most of the service providers for autism are currently fragmented, hospital based, inadequate and many parents have opted from using these services.

In Malaysia, a study done by Ting and Chuah (2010) on parents' recognition of autistic behaviours reported that parents had noticed the behavioural differences of their children but did not know that it was symptoms of autism. It was observed that based on a study done by (Siklos and Kerns 2007) parents found it difficult in obtaining a diagnosis and had to wait for 3 years in getting a diagnosis on discovering behavioral issues related to autism.

The change that is visualized to occur is both at preschool (Salleh & Yasin, Razali, Toran, Kamaralzaman, 2013) and primary school levels (Lee & Low, 2013), students with ASD are assimilated into mainstream education on reaching a consensus between the school administration and the parents.

It is envisaged that this situation is going through a transition with 30% of children with special needs to be enrolled in classes that are the mainstream by 2015, with 75% to be placed by 2025 under the National Education Blueprint (The Ministry of Education Malaysia, 2012).

UNDERSTANDING DEVEVELOPMENT IN CHILDREN WITHOUT DISABILITIES THROUGH LEARNING THEORIES

A child goes through development that overlap and change over time. These changes vary from biological processes which dictates changes in the body and cognitive processes that relate to thought, intelligence and language. The understanding of socioemotional processes is the display of changes in an individual's relationship with other people, emotions and personality. (Bransford, J. D., Brown, A. L., & Cocking, R. R., 2000).

Erik Erikson's psychosocial theory of development looks at the effect of external influences, parents and society that affect the development of personality from childhood to adulthood. He connects this flight of development sailing through eight interrelated stages over the entire life cycle. (Erikson, E. H.,1993).

Vygotsky singles out language as the most important factor that contributes to the development of human mental activities, direct social interaction and independent problem solving. His theory relates development and language as the socio- cultural theory (Vygotsky, 1962; Vygotsky, 1978: 56-57; Vygotsky & Luria, 1994: 99-174).

The well know behaviorist B. F. Skinner founded the reinforcement theory as one of the most ancient theories of motivation as a means to explain behavior and its consequences. His theory is referred to as Behaviorism or Operant conditioning which states that “an individual’s behavior is a function of its consequences” (Banaji, 2011).

Albert Bandura’s Social learning theory is floating on several presumptions that aggression is learned. Secondly, that it is through observation of a model that learning occurs and thirdly symbolic modeling through the media accommodates the dissolution of ideas, values and behaviors (Eyal & Rubin, 2003).

Arnold Gessell’s research had constructed a trend in four areas of growth and development, which is motor, adaptive (cognitive) language and personal- social behavior. These developmental schedules are updated in 2010 to serve as a guide for pediatricians and psychologists globally.

The importance of early screening and intervention is imperative for children with autism (Franklyn-Banton & Samms-Vaughan, 2008). There are developmental charts that serve as a guide to monitor language, physical, motor, emotional, gross and fine motor skills. These charts allow parents to identify and monitor development of their children before proceeding to raise red flags that may concern them (Ivrendi, 2011).

THE LEARNING THEORIES UNDER PSYCHOLOGY IN INTERVENTION PROGRAMS

Early intervention is the key to enter into the world of children with multiple disabilities (Almsbhiien, 2016; Goode, Diefendorf, & Colgan, 2011; Guralnick, 1997). The impact created by early intervention has sparked learning and development in children with neurodevelopmental disorders Alzyoudi, Sartawi, & Almuhi, 2015; Bauer & Jones, 2015; Biederman, Stepaniuk Davey, Raven, & Ahn, 1999; Bushwick, 2001; Cebula, Moore, & Wishart, 2010; Clore, 2006; Foti et al., 2014; Hahn, Fidler, Hepburn, & Rogers, 2013; Hudson, Nijboer, & Jellema, 2012; Jing & Fang, 2013; Parish-Morris, Hennon, Hirsh-Pasek, Golinkoff, & Tager-Flusberg, 2007).

There is a plateau of intervention programs that have their learning theories rooted in theories of developmental psychologists.

The behavioral model Applied Behavior Analysis (ABA) is a systematic approach in increasing desired behaviors and decreasing undesired behaviors. To date it is the most sought out program in tackling autism. It is based on Skinner; the well-known child psychologist’s (1957) view that language needs to be directly shaped and reinforced. Behavioral approaches are based on the theory of Skinner (1957) whose belief was learning is a process of development and therefore behavior is learned.

There are a series of intervention strategies that are incorporated within the ABA approach, including discrete trial training; verbal behavior training; pivotal response training; structured teaching; visual schedules; incidental teaching; peer-mediated instruction; video modeling; and the Picture Exchange Communication System (PECS) (Liddle, K., 2001).

The flow of communication initiated through Discrete Trial Training nurtures specific skills by analyzing impairments in child’s functioning. The Picture Exchange Communication System (PECS) devised by Bondy and Frost (1994) is an augmented alternative communication (AAC) system targeted to teach functional communication to children with limited speech.

PECS is based on behavioral principles following Skinner (1957) and the purpose of PECS is a functional non-verbal 17 communication system based on initiation of communicative interactions (Bondy & Frost ,2001).

The advantages of these developmental – interactive approaches encourage interpersonal processes and openings that are visualized to trigger social, communicative and cognitive outcomes in children with autism especially in social settings (Trevanthen,2001). This mode of teaching creates consistency and predictability in an environmental setting (Golan & Baron-Cohen, 2006).

There are a host of therapies that are based on the ‘Piagetian’ framework where cognitive development occurs as a consequence of biological maturation and interaction with the environment. This is applicable especially to persons with high functioning autism where therapies that encourage social stories is an important core of social skills that is aimed in addressing the challenges encountered by them (Baron-Cohen, Richler, Bisarya, Gurunathan, & Wheelwright, et. al., 2003).

Albert Bandura’s Social Learning Theory in the 1970’s is a concept that believes in Modeling. Social Learning Theory explores the role of interaction and the influence of the personal, environmental and behavioral factors that work together in a process called reciprocal determinism (Bandura, 1986; Rhoetter, 2013). In line with this area of intervening, a study conducted by (Corbett and Abdullah, 2005) explained how individuals with ASD gained from visually cued instruction and are more receptive to visual information than verbal information.

Vygotsky’s social constructivist theory which is immersed in one of the interventions known as the Integrated Play Group Model is targeted to nurture social and symbolic play skills of children with autism spectrum disorders within the age of 3 to 11. It revolves around play and develops the intrinsic desire to play. (Wolfberg and Schuler, 1993) encouraging social interactions.

IMPLICATION OF THIS STUDY

The researcher hopes to share the simplicity in the learning theories found in the intervention programmes. This would empower parents to help the child across the autism spectrum in managing their children in a concrete and structured track of development. On understanding the function of these programmes through the psychological theories that are rooted in them, it will instill a conscious decision in its use amongst parents and caregivers.

It is the consistency in its use that fill in the missing links of development that will become part of their long-term memory enabling children to generalize their skills. This consistency can only be achieved if parents and caregivers participate in the intervention programmes as early intervention lays the building blocks of development that helps the child function in a socially acceptable manner.

Therefore, only if caregivers use the early intervention programmes with this clear understanding will the theory of mind, theory of executive function and theory of central coherence be improved. These three theories are the pillars of development which is missing in these children at different levels depending on which end of the spectrum they are defined. In particular, Aspergers who are known to have rigid thinking, preservative thinking and catastrophically thinking have their difficulties adjusting to society addressed through Carol Gray's intervention of social stories that introduces critical thinking.

At the same time, challenging behaviors like meltdowns, temper tantrums and outbursts will be managed better as coping strategies through early intervention programmes that introduce rewards and punishment creates predictability in behavior.

This study also sheds light on the importance of parents and teachers as well as therapists working as a team in sharing their expertise when using the intervention programmes to help the child across the spectrum to be functional and independent.

This team effort through early intervention programmes when used repetitively by the series of caregivers activate the Broca's area, which is related to social language processing, Wernicke's area which is responsible for social attention by the frontal lobe and the superior temporal cortex, parietal cortex and Amygdala which is responsible for social behaviors. The line of focus by parents on exercising dependency on alternative treatments, medications and spiritual healing will be redirected to these intervention programmes that have reliability and validity.

On the other hand, those who cannot afford the therapists will now be able to use the intervention programme to help their child as they have gained a clear understanding of the psychological theories that influence the intervention programmes. This knowledge will assist the parents even without the help of a therapist as there is clear revelation of the principles of psychology behind these programmes (Ryan et al., 2011).

The expensive costs, time and distance and non-availability as well as ignorance will not be reasons to deter parents in helping their child which has been the norm as shown through this qualitative analysis.

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