

Autistic child's failure and false belief task



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Autistic Child's Failure & False Belief Task Is caused by an Executive Function Deficit

Autism is a neurological disease which is occasionally called (Classical Autism) and belongs to a class of developmental disorders called the Autism spectrum disorders (ASDs). It develops at an early age in life, before the age of 3 years and presents itself by through “ impaired social interaction, problems with verbal and nonverbal communication, and unusual, repetitive, or severely limited activities and interests” (Autism Fact sheet, 2007).

Diseases which are included in the Autism spectrum disorders include pervasive developmental disorder and child disintegrative disorder. Other diseases falling in the category include Rett syndrome and Asperger syndrome etc. autism is estimated to affect around 3 to 6 out 1000 children (Autism Fact sheet, 2007). According to the Autism and developmental Disabilities Monitoring Network (ADDMN), the disease affected 1 in every 150 8 year old children in different regions of United States. Furthermore it has been seen in males four times more than in females (Centre for disease control and prevention, 2007). Autism is a complex syndrome and its identification can be missed in case of a mild form of the disease. It is a debilitating disease in some cases and in order to identify patients suffering from ASDs, doctors study the patient's different aspects of behaviour. These include:

- Difficulty in making friends with people.
- Difficulty in starting conversations with people
- Patient's conducting repetitive routines.

- Lack of imagination and inability to be social.
- The atypical and stereotyped use of language skills sometimes repeating sentences.
- Limited interests in subjects with abnormally focused mind

(Autism Fact sheet, 2007)

Although the stated patterns of behaviour alert the physicians about suspicion towards Autism, the complete explanatory framework for understanding autism ultimately has to encompass multiple aspects of the condition:

1) Aetiology

(2) Brain structures and processes

(3) Neuro-psychology

(4) Symptoms or behaviours

At the most basic level, aetiology of the condition is thought to be genetic as well as environmental. Both factors are thought to play a role in the future abnormalities in the developmental process of the brain structures at an early age, and the behavioural pattern, the mind becomes able to illicit. Researchers have been attempting in the recent years to pinpoint the exact relationship between the anomalies in the brain structures and the effect they have on the behavioural patterns in autistic people.

A person's ability to "control and regulate" behaviour through cognitive abilities is called Executive function of the brain (Executive functions, 2007).

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They are complex behavioural abilities which simple mental abilities like focus, motor skills and memory etc (Executive functions, 2007).

Researches note that the autistic children suffer from executive function deficit. Utah Fith in 1985 along with fellow psychologists' put forward the idea that the main mental deficit in autism could be their inability to assess their own and other's mental states. This is known as the " theory of mind" (Johnston, E, 1997).

The theory that children with autism lack the theory of mind (ToM) is supported by multitude of experiments concerning the testing of presence of ToM via false belief task which show that the autistic children usually fail to pass the test (Johnston, E, 1997).

Discussion

Autisms come under the spectrum disorder, which means the characteristics of the disease, can appear in different combinations and different intensity levels. The aspects of individuality of human personality make it difficult to apply similar diagnostic techniques to different children. Some of the symptoms of Autism are resistance to change, lack of social interaction, lack of eye contact, inappropriate association of things and objects, lack of physical reaction to different stimuli and non- responsiveness to verbal instructions and many more. There are many misconceptions about the disease and lack of awareness among the family members and associated people, which makes it difficult to be accepted and to development of appropriate treatments and special behavioural attention that is to be given to these special children. Two major factors that affect the future behaviour

and progress of these children are the teachers and the parents. As these children cannot in most cases develop and react like normal children. So parents and teachers play an important role in making them normal people this also depends on the severity of the diseases (Baron-Cohen, 2004, p96).

False Belief task

Theory of mind is the ability of a person to predict or anticipate what the other person will think or do i. e. to read a person. Children at the age of 4 years old should be able to illicit this capability. The litmus test to assess if children have developed the theory of mind capability is through the False-belief Task. Children suspected of having deficit of ToM are put through a False-belief task. This task is used in the ToM research and checks the children's comprehension of other people's false beliefs (Young, S., 2008). The term False belief can be defined as " individual's wrong belief's about other's thoughts" (Young, S., 2008). The false belief task checks through a series of questions " whether child can distinguish between newfound knowledge of a stimulus and previous thoughts about the stimulus of interest" (Young, S., 2008).

It has been seen that autistic children do not learn this capability and this is seen through the false belief tasks. These tasks require a person to anticipate or predict another person's behaviour. It has been seen that a majority of the autistic children fail this task. The ToM theory was first tested by Uta Frith and Baron Cohen et. al using the modified " Wimmer and Perner's False belief task" (Johnston, E, 1997). It was found that of the 20 autistic children tested, more than 80% failed to identify the False-Belief

task. Whereas children with Down's syndrome with a mental age lower than those of the autistic children passed the task. The authors attributed the failure of the autistic children in this particular task to their lack of capability to imagine or predict the mental states of others (Johnston, E, 1997). Since then, it has become a common practice to associate autism with failure lack of development of ToM and failure of completing the False-belief task. We present two rationales to discard this exercise. First, fleeing the false belief task requires capabilities other than theory of mind. Second, theory of mind need not involve the aptitude to basis about false beliefs. We conclude with an alternative conception of the role of the false belief task. (Obernman et al., 2005, p190) Studies have shown that even though autistic children perform worse than ordinary children on the false-belief tasks, they have success rates greater than those of other mentally retarded children. These results lead us to suspect that even though children suffering from Autism have a reduced comprehension of the false beliefs, when compared to children without the disease, they do not provide clear evidence to support the theory that their mental deficit is in comparable to children who suffer from mental retardation.

Executive Functions in Autism

Executive function is a general term used to describe large spectrum higher level cognitive processes. These are layered processes with can involve, a person's ability to detach self from context, or plan for future actions. These actions also include inhibitions of actions deemed inappropriate or actions which relate to responding to and adjusting ones behaviour according to feedback from people other than self. A commonality noted between autistic

children and those with frontal lobe injury is their restricted and limited “stereotyped behaviour” (Happe, F. and Frith U 1996). This similarity in the both cases has led to the formation of a cognitive theory about autism. Children with autism seem to fair worse, when subjected towards “Wisconsin card sorting task, tower of Hanoi, fluency test, working memory, extra dimensional shift” (Happe, F. and Frith U 1996) etc as compared to those children who are mentally challenged but of a similar mental age as the autistic children (Happe, F. and Frith U 1996). These significant findings have researchers suspecting the involvement of frontal lobe in the disease of autism. More importantly the new cognitive theory links autism directly to the decrease in one’s executive function execution and comprehension theory.

Discovery of Autism

When a child is discovered to be suffering for Autism it comes as a real shock for the parents and the family to accept the situation and accommodate the impairments of the child. It is very stressful for the family to grow an autistic child, and a challenge to deal with all the possible outcomes and reactions that they might have to face. The initial reactions of the family are always denial and anger, which is usually, spread over a number of days. It is followed by various other emotional reactions and for a few days the families suffer from emotional turmoil. The next stage is of acceptance and steps, to come in terms with the disease and proper procedures, which have to be taken to deal with the situation at hand. (Bauman, 2004, p791)

The issue of Pretence

The triad of autistic impairments according to Wing and Gould (1979) are imagination, communication and Socialization. The mind blindness hypothesis can give reason for the loss of socialization with other people and communication (verbal as well as non verbal). It would be logical to state that children who have deficits in communication and with social relationships, would have a difficult time understanding the thinking of others i. e. deficit in the theory of mind. This leaves us with the third component of the triad of characteristics found in the autistic children, i. e. the imagination. The imagination component works in a young child in the form of pretend play. The mind blindness theory cannot explain the absence or the impaired capability of the mind of an autistic child when it comes to pretence. (Bauman, 2004, p 794)

The Obsessive Side of Autism

The simplest explanation for the sometimes aggressive, repetitive and obsessive behaviour of autistic children can only be explained as the result of social alienation. This has been the traditional belief. A normal healthy young child spends most of its time occupied and overloaded with interactions of the social nature. The mind tries to “ take in” all it can and learn the rules and responses to normal behaviour and actions. The expressions representing anger, the tone of voice which is inviting and loving, are all the interactions learnt at a very young age. A normal child mingles with parents, plays with the toys, and has, person read him imaginative bedtime stories. Severely Autistic children being handicapped in the sense that they are mind blinded cannot understand or comprehend these expressions and social activities, which are continuously thrown at

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them. The world is frustrating for this child as he has no understanding of the actions expressions of the gestures thrown at him. Therefore it can be thought of, as a natural phenomenon that autistic children would try to withdraw themselves from social atmosphere and into loneliness avoid further confusion. It would also seem logical that their learning and curious mind causes them to preoccupy themselves with simplistic and repetitive tasks which their mind can easily comprehend and keeps their mind occupied.

We can also attempt to explain the focused attention and interest of children with autistic child as a means to distract one self from “ opacity” of the social nature of the world and their lack of understanding of it (Bauman, 2004, p795). When we attempt to figure out how many social influences normal healthy children and adolescents have from their social environment, e. g. fictional books, movies sex, sports etc, we realise that we have an innate need for social interactions and they make heavy heavily on our social awareness and our personality as a whole. Keeping this in mind, we can also reason that autistic children also have the innate urge or the need to satisfy their mind with activities which make sense to them. Since they are hypothesised to be devoid of executive function, they preoccupy themselves with activities that they can comprehend like calendar dates time tables’ or any other activities which the later on excel at. There is certain evidence from research which leads us to believe that there is lack of flexibility in the autistic mind and this cannot simply be explained through the theory of social isolation (Bauman, 2004).

Rowe et al, (2001) demonstrated in a study conducted on 31 patients that patients with frontal lobe defects reduced capacity for the executive function executions. These shows that loss of executive function comes from pathological tissue damage in the frontal cortex of the brain. They also demonstrated that the results relative to the executive mind defects were “ independent of the theory of mind impairments” (Rowe et al, 2001).

Several studies have also shown that autistic children fare worse than normal ones in the tasks involving planning and problem solving (Bauman, 2004). Even though this is consensus amongst some researchers that “ autistic children have damage to their frontal lobe and the surrounding areas leading them to suffer from executive function deficit as well as mind blindness. These regions appear in proximity to the ones involving the tasks related to theory of mind (Bauman, 2004). This alone cannot be the basis on which we refute our position as any reliable theory about the autism has to explain the syndrome itself as well as the signs and symptoms that present themselves along with the main features of the syndrome.

Deficits in executive control in Autism

There is general association of the deficit of Executive function (control) with the pathological anomalies or any other aetiologies leading to damage of prefrontal region of the brain and specifically the dorsal region. Researchers still are cautious about findings related to executive dysfunctions in developmental disorders. They caution that the behavioural or functional disability need not necessarily reflect pathology in the above mentioned region of the brain which is thought to be involved with the executive

function control. Rowe et al (2001) also found inconclusive evidence to support the hypothesis that the prefrontal cortex damage was the sole cause of executive function deficit. It was deduced from the study that executive function could be a result of a collaboration of inputs from the amygdale (Shaw, 2004) along with other regions including thalamus, striatum, hippocampus etc along with temporal and parietal lobes (Rowe et al, 2001). This means that the executive function deficit is the result of more diffuse damage than previously expected.

“ The ‘ theory of mind’ theory of autism was experimentally tested with the now famous ‘ Sally-Ann’ version of Wimmer and Perner’s false belief task. In this task the child is shown two dolls, Sally and Ann. Sally has a basket and Ann has a box. The child watches as Sally places a marble in her basket and goes out. While Sally is out Ann moves the marble into her box. Sally returns. The question posed to the child is, ‘ Where will Sally look for the marble?’ Baron-Cohen, Leslie & Frith tested 20 autistic children with mental ages well over 4 years; 16 (80%) failed to appreciate Sally’s false belief. In contrast, 12/14 children with Down’s syndrome of lower mental age succeeded on the task. Baron-Cohen et al attributed the high rate of autistic children’s failure on this false belief task to an inability to ‘ mentalize’, to consider the mental states of self and others” (Johnston, E, 1997).

This hypothesis postulates that social interactive and communicative abnormalities in autism are derived from a inability to understand other people’s minds and to interpret behaviour in terms of their underlying mental states particularly the ability to anticipate or predict the contents of another’s mind.

How to Deal With Autism

After the initial emotional reaction and acceptance comes the stage of devising strategies to make the child comfortable and acceptable at home and surroundings. There are many matters of concern that would than come face to face with the family. A resistance towards the child is developed which poses a greater threat to the future progress. The gap that is developed between the family and the child is to be overcome by patience and techniques. There are several well-planned techniques that the parents can use to communicate properly with their child. First of all they have to collect comprehensive information about the disease, and try to understand all the causes and their remedies. Proper medical help should be sought to initiate a proper treatment. Education about the disease and its particularities can be sought from various sources. Associations of the parents of the already suffering children are good source of information. The associations provide better guidance, counselling between families, opportunities to share experiences, about the adopted behaviour towards the child (George, 2004, p418). It is the parent's duty to educate the people around the suffering child to accept the disorder and being receptive to the child's needs. They also have to disseminate information that they have collected around; a standard pattern of behaviour is established that will make the child comfortable. Seeking more and more information and then generalizing it will make it easy to deal with the circumstances. Along with the school the parents have to be extra careful about overcoming the gap between the child and themselves. They have to take up the place of an instructor along with a caretaker to make learning the deficiencies be

prevailed over. The parents on their own have to try to develop the skills of the child. They can either learn to use the medical treatment procedures or simple home made tricks to improve on the respective weaknesses of the child. Their abnormal responses to stimuli can be made better by exercising different activities like self-handling skills, show of particular responses in front of the child will make him to imitate. Sensory integration techniques can also be used at home to make their senses perform better. Role modelling can be done to make the child's communication better with other people. This way they can know how to react and behave with different people and can improve their eye contact and can carry themselves better. Bedtime stories and special games can improve their responses. They can be taught at home that how to develop on their touching and squeezing by making small toys of different textures, so they have a general idea. (Grigerenko, 1995, p205) The home environment should be made conducive for the child in terms of its safety and ease of movement. All the safety aspects of the windows, doors, sharp things and flames etc should be kept in mind.

The Executive-Function Deficits

There have been attempts to elucidate and explain the executive function deficit in people with autism through the reasoning of mind blindness theory it is too early to equate autism directly with complete executive function failure. “ Problems in executive functions cannot explain all aspects of the nonsocial impairments in autism and more importantly, cannot, on the face of it, explain the intact and superior skills sometimes exhibited by autistic children. The spiky IQ profile is a case in point; block design, which is so

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often a peak in autism, is considered a good test of 'fluid' intelligence, which in turn relies on executive abilities." Happe, F. (1996).

Executive function deficits are not limited to the disorder of autism. These deficits can be seen in "attention deficit disorders, hyper activity disorders, Tourette syndrome and phenylketonuria etc" Happe, F. (1996). Since these diseases amongst others do not follow the theory of mind therefore the executive function deficit cannot be expected to present itself in accordance with ToM in all case scenarios. (McEvoy, 2004, p563)

A study by Baron, Cohen (1985) forms the basis for deviation from the traditional view. It dissociates recurrent and stuck-in-set "preservations in the cognitive performance of autistic individuals, showing that the former was specifically associated with the presence of lower-level repetitive behaviours (e. g. stereotyped movements), whereas the latter was specifically associated with the presence of higher-level repetitive behaviours (e. g. circumscribed interests)" (Joseph R M, 1999).

"Yet, if the executive dysfunction theory is to provide a convincing alternative to the theory of mind view of autism, it needs to demonstrate similar associations between executive deficits and the impairments in social and communicative functioning that are so centrally defining of the disorder. Thus far, attempts to make such connections have not been replicated, or have suggested that executive deficits, although present, do not have a causal role in the social and communicative impairments." (Joseph R M, 1999).

Personal Thoughts

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Mind blindness hypothesis concerning autism presents and can even explain the often overlooked fact that people suffering from autism suffer not only from the inability to assign states of the mental sort to other people , but they also fail to achieve or assign a second order mental awareness level about themselves. It can be argued that the theory of mind hypothesis can be used to explain the self attribution and acknowledgement as well as other's attribution.

The theory of mind can easily account for and provide an explanation for autistic patient's lack of self and other's mental awareness. Explain the reason why autistic people have narrow range of interests' and have deficits in comprehending problems and finding their solutions. This can be explained as autistics do not have second order awareness about their own thought processes.

Conclusion In conclusion autistic disorder remains an enigma whose research studies have not yet managed to decipher the different parts to elucidate both the causes and the resulting disruption of brain function. However, it is hoped that the preliminary data obtained in neuropsychology, genetics, biochemistry or brain imaging may help in the coming years to identify subgroups of study subjects more homogeneous autism, providing other dimensions to explanation of the condition that the only concept too broad for autistic disorder. Since autism is a developmental disorder of the neurological type, it presents a challenge of how so diverse anomalies in higher centres of the body can lead to characteristic patterns and behaviours. Autism as a condition requires a lot of patience on part of the care takers to bring out positive changes in the patient. These children need

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acceptance and patience to be dealt with. Their comfort with the society and their mates at school will only be possible if they have the acceptance and proper dealing at home. Parents have the utmost responsibility to make things comfortable for their child and be supportive towards them so they can be better people accustomed to deal with their deficiencies in future.

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