

Touch hypersensitivity in children with autism – An analysis

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ABSTRACT: *Children with autism are very unique and are different from each other. They do not have challenges and traits in common, hence they form a heterogeneous group. Autism in simple term means, they have an impaired ability to read, manage social cues and face various sensory issues. They are found with unusual sensory responses like being hyper responsive or hypo responsive to various types of sensory stimuli and 75% of children with autism are diagnosed with sensory problems. A majority of autistic people are either hyper or hypo sensitive to light, sound, crowds and other external stimulation. Some have both hyper and hypo sensitivities. This often results in autistic people covering their ears, avoiding or reacting negatively to brightly lit areas, or on the other hand they crash hard into sofas and crave for strong bear hugs. This research describes the behavioral responses of children with autism to hypersensitive tactile inputs. It was found that when occupational therapy was given, there was a difference in the hyper tactile functioning of the child.*

Over 65 years ago, Dr. Leo Kanner, a psychiatrist working at Johns Hopkins University hospital published his seminal article on the term “autism” after applying it to a group of children who had social-interaction difficulties, communication challenges and a tendency to engage in repetitive behaviors. He observed apparent differences in sensitivity to external sensory stimuli. It is widely accepted that autism is caused by abnormalities present in the structure of the brain or its function. This research provides an overview of the complexity of this neurological disability by summarizing the hyper sensitivity in children with autism.

Key Words:

Definition

Autism is also a “spectrum disorder”. Spectrum denotes the wide variation in challenges and strengths possessed by each person with autism. In basic terms, this means that you can be a little autistic or very autistic. At the higher end of the spectrum is Asperger Syndrome, usually known as “The Little Professor” syndrome. At the lowest end of the spectrum is the disorder that’s often called as “Classic Autism”, which often includes mental retardation. In between are a variety of pervasive developmental disorders such as the Rett Syndrome, Childhood Disintegrative Disorder and Pervasive developmental disorder not otherwise specified (PDD – NOS). **Right’s for Persons with Disability Act, 2016** defines autism as a neuro-developmental condition typically appearing in the first three years of life that significantly affects a person’s ability to communicate, understand relationships and relate to others, and it is frequently associated with unusual or stereotypical rituals or behaviors.

Sensory and motor symptoms

A majority of autistic people are either hyper or hypo sensitive to light, sound, crowds and other external stimulation. Some have both hyper and hypo sensitivities. This often results in autistic people covering their ears, avoiding or reacting negatively to brightly lit areas, or on the other hand they crash hard into sofas and crave for strong bear hugs.

Sensory impairment can involve the auditory, visual, tactile, gustatory (taste), olfactory (smell), vestibular and proprioceptive senses. These senses may be hypersensitive, hyposensitive or may result in the person experiencing interference such as in the case of tinnitus (a persistent ringing or buzzing in the ears). Hence, it may be difficult for individuals with autism to process incoming sensory information properly. These sensory problems could be the underlying reason for behaviors as rocking, spinning, and hand-flapping. It is believed that these problem stems from neurological dysfunction in the central nervous system – the brain, although the receptors for these senses are located in the peripheral nervous system (which includes everything but the brain and spinal cord).

Ayres (1979) describes the primary problem of the child with sensory integrative dysfunction as a sensory – based disorder which means sensory information from the environment and from the child’s body is processed in a manner that is inefficient and disorganized. This study describes the tactile dysfunction - tactile hypersensitivity.

In an article ; Autism spectrum disorder in the scope of tactile processing by MarkMikkelsen (2018), he explains that children with autism spectrum disorder (ASD) have sensory processing abnormalities which is a common behavioral phenotype and is characterized by either over – or under – responsiveness to stimulation. Ide M (2017) in her research on Hypersensitivity as Extraordinary High Temporal Processing in Individuals with Autism-Spectrum Disorders says that hypersensitivity/hyposensitivity to different types of sensory stimuli is present in most individuals with autism-spectrum disorders. Strong hypersensitivity to sensory stimuli was present in individuals with high temporal resolution and vice versa. She also researched on a case across the tactile, auditory, and audio-tactile domains with extraordinarily high temporal resolution.

Catherine (2015) in a study on Sensory Processing Challenges in Children says that the behavior, learning and the way the world is negotiated seems to be affected due to sensory processing challenges in children and hence the identification of these disorders is very crucial. The symptoms could be hard to assess and could be found to exist alone or encapsulated within disorders such as attention deficit or hyperactivity disorder, cognitive disorder or autism spectrum disorder. Children could be often mislabeled, mismanaged and misunderstood when left unrecognized and untreated.

According to a study on Impaired tactile processing in children with autism spectrum disorder by Nicolaas (2014) in children with autism spectrum disorder (ASD) impaired responses to tactile stimulation is seen as a repeatedly reported symptom. In ASD, impairments in filtering or habituation to tactile input have been detailed. He studied to examine atypical touch sensitivity in children with ASD which included measurement of different aspects in tactile processing. Children with ASD showed heightened static detection thresholds and there was an absence of a sprightly increasing subthreshold stimulus on static detection threshold.

METHOD

This study will portray the tactile dysfunction in children with autism and will suggest appropriate remedial measures for Hypersensitivity to touch. Tactile dysfunction can hold back the social development of children with autism and social delay in autistic kids is directly related to problems with touch. Cindy Hatch-Rasmussen (2007) said that a dysfunctional tactile system may eventually lead to the misperception of touch and/or pain (hyper- or hyposensitive) and may also include self-imposed isolation, general irritability, distractibility, and hyperactivity.

Many individuals with Autism are very reactive to normal sensory stimuli and may exhibit sensory defensiveness and therefore impaired responses to tactile stimulation is a frequently reported symptom among children with autism spectrum disorder (Nicolaas, 2014).

There are hardly few institutions catering to the tactile dysfunction of autistic children and very few professionals have knowledge about tactile dysfunction in children with autism. Many may ignore the signs and behaviors which the child may exhibit and this may lead to an increase in the frequency of tactile dysfunction in these children. Hence, awareness about tactile dysfunction should be created among all parents and teachers. They should be well educated about the signs of tactile dysfunction in children with autism and the appropriate intervention techniques required to deal with it. Hence this study presents a detailed overview about the nature of tactile dysfunction in children with autism. The awareness about the tactile dysfunction, hypo – sensitivity, hyper – sensitivity and poor tactile perception and discrimination is very minimal between professionals and parents of children with autism. This study will educate them about the various signs of tactile dysfunctions in children with autism and specific behaviour issues relating to tactile hypo – sensitivity, hyper – sensitivity and poor tactile perception and discrimination.

Difficulties of tactile dysfunction are directly or linearly associated to delays of early self-regulation; Hence the delays of 1st-year self-regulation milestones explain the delays of 2nd and 3rd-year milestones which are highly apparent in the first three years of the child's life, thereof during the third year of life is when social and behavioural self-regulation are completely absent and the diagnosis of autism is made. Due to significant and noticeable delay of self-regulation milestones in the first year, and delay of language in the second year, there is no foundation for 3rd-year social and behavioural milestones to be built on. To prevent the worsening of the condition of the child and for improvement of self-regulation, signs of tactile dysfunction are to be identified earlier and appropriate intervention is to be given.

Thus the study will help parents and professionals to understand and describe children with autism better and derive an intervention plan to cope with tactile dysfunction behavior problem, which would help

in enhancing the integration of tactile sensation. Since this area of tactile dysfunction has not been much exposed to research, this study will provide opportunities for future research, fostering deeper analysis and description into the topic.

OBJECTIVES OF THE STUDY

- To understand the presence of Tactile Dysfunction in children with autism.
- To know in detail about the behaviors exhibited by the children with autism during hyper tactile – sensitivity.
- To suggest a few Rehabilitation remedial measures for children with Hyper- tactile dysfunction

UNIVERSE SAMPLING DESIGN AND SIZE

The subject samples tested comprised of 30 children in the age group of 8 – 12 years and diagnosed as pervasive developmental disorder according to the DSM – IV (Diagnostic Statistical Manual of mental disorder) criteria. The subject sample did not have any abnormal structural functioning of the auditory and visual system. The sampling method is random sampling method. Thirty children with autism were chosen from two special schools which cater to children with autism in Trichy district.

METHOD OF SAMPLING

Quota sampling design was adopted in choosing the respondents for this study. Criteria for selection was children with autism between the age of 8 – 12 years. This specified sub – group was adopted for this study. Smaller representations of children with autism on behalf of a larger population having tactile dysfunction are selected intending to find out their behavioral response to tactile dysfunction. Samples selected share homogenous characteristics in terms of Autism Spectrum Disorder (ASD) relevant to the research. Two standardized tools were used for this research, namely; Indian scale for assessment of autism (ISAA), Tactile dysfunction checklist by Carol Stock Kranowitz (1995) has been used for the purpose of this study.

RESULTS AND DISCUSSION

Hypersensitivity to movement (Over – Responsive)

Children with tactile dysfunction have problem in integrating tactile sensation hindering their life skills. Recent studies have shown the presence of tactile dysfunction in children with autism, which is very much reflected in their level of low tolerance for any activity that involves touch sensations. Very few professionals are aware of the presence of this condition in children with autism. The findings of the study have been qualitatively described to give a better and clear picture about the experiences of children with autism with regard to tactile hypersensitivity. Tactile Hypersensitivity – Hyper-tactile individuals show high resistance towards social touch and avoid being kissed, hugged or cuddled. They are often unable to certain type of clothes and find it difficult to cope with certain textures. The textures of certain foods can be very hard to handle and might find discomfort in using combs, brushes, socks, and other items with a medium to high sensory output.

1.1 Most children with or unexpected autism show fear towards sudden touch.

Children with autism have an impaired social interaction and a significant delay in social development. For children with ASD it is very common to become extremely frightened in response to sensory stimuli and anxiety strikes them. Children become fearful, anxious or aggressive with light or unexpected touch. They find it very difficult to process tactile stimuli, hence it becomes difficult for them to associate with people. When parents or teachers touch the child unknowingly, they express their thoughts through fear and anger. Due to their aversion towards unexpected touch, these children avoid group situations. Light touch for these children seemed to be more unpleasant than deep touch. Rachel appears to be afraid of, or avoids standing in close proximity to other people or peers (especially in lines). When the children are made to stand behind each other during their school assembly, she showed great annoyance and abnormal distress. It becomes very difficult for the teachers to calm her. Varun may also become frightened when touched from behind or by someone/something he cannot see. When he was placed under a blanket in a dark room, he started crying and yelling because the place in front of him became invisible. A sudden and unpredictable physical touch can not only be overwhelming; it can also be extremely unpleasant for the child with autism.

Alice becomes fearful of birthday parties after being frightened by a balloon that popped unexpectedly. Other signs of extreme distress in children with ASD can include yelling, crying, clinging and general agitation because these children may have difficulty communicating, it's important to observe their

behavior for these signs of distress. This can help us determine what's triggering their fears. The intensity of some children's anxiety and fear made everyday life difficult for the children and their families and often if parents knew what was likely to affect their children and could reassure them, though some children tended to keep their fears hidden, particularly at school. Unfamiliar things and people, particular textures could also upset and disorientate children with autism.

1.2 *Tactile hypersensitivity is exhibited through avoidance of social touch.*

Children with autism resist friendly or affectionate touch from anyone besides parents or siblings. Social skills are a broad topic which include areas like working in a group, making friends, asking for help, dealing with family relationships, communicating over the phone, conversation etc. Sometimes, the family of Kanishka felt that they also get excluded from touching the child. These children may not prefer social or happy touch moments, but always tend to avoid them. They show great resistance towards touch. As an infant, Hari did not like to be held or cuddled. He would arch back, cry, and pull away from anyone who would hold him. These children dislike kisses. They usually will "wipe off" place where kissed and the sensation of being hugged or kissed can feel like a tidal wave. These children feel that unexpected touch, even from a loved one, could be very unpleasant and difficult for them to understand. These children would avoid hugs and would usually demonstrate a 'flight' response when someone puts their arms around them. Reduced sociability is a core feature of autism spectrum disorders (ASD) and is highly disabling, which can be due to impaired processing of tactile sensation.

It is not only hugs and kisses that these children avoid, but they show high resistance towards social touches. Social touches are used to communicate emotions and is a powerful force in human development, shaping social reward, attachment, cognitive, communication, and emotional regulation from infancy and throughout life. The sense of touch is the earliest sense to develop in a human embryo and is critical for early social development. The sense of touch is one of the first mediums of communication between newborns and parents, this lacks in ASD because children find social touch sensations to be overwhelming. These children may dislike group games like tag or dodge ball, or holding hands with a partner can be agonizing and they may be afraid of the possibility of being touched by another child.

Hence, they may want to stand apart from others to prevent being bumped and this stops them from being able to interact with friends in a normal way. The slightest accidental bump from another person might feel like a threat and these children may lash out in defence. It may appear that these children are impulsive, hitting others, but no one understands that they are fighting against the perceived raid of their space as interpreted by his brain.

1.3 *Children with Tactile hypersensitivity are bothered by certain textures and clothes.*

This characteristic stated was observed to a great extent in many of the children studied. Most children are bothered by rough bed sheets. Especially if old and "bumpy", they would avoid the usage of it. Ramgopal felt that textures were too overpowering and he would show his aversion to certain textures. The one sensory area that he continues to battle on a regular basis has been tactile and it seems some textures still feel too awful to put up with. Therapists may work with tactile-sensitive children to desensitize them to unavoidable textures and touch sensations, so that it could be accomplished gradually over time by teaching affected children to be able to tolerate ever increasing durations of contact with avoided sensations. Children felt that raindrop, water from the shower, or wind blowing on the skin may feel like torture and produce adverse and avoidance reactions. Geetha refused to walk barefoot on grass and sand. She felt so ticklish and it made her unable to walk. Some children showed resistance to small feathers, pebbles and any light object that touched their palms and feet. Children with tactile hyper responsivity may Avoid/dislike/aversive to "messy play", i.e., sand, mud, water, glue, glitter, playdoh, slime, shaving cream/funny foam etc. When given these materials, most children showed resistance and annoyance towards it.

Children might be distressed by seams in socks and may refuse to wear them. Mahesh doesn't wear socks since he feels it suffocate his feet. The feel of socks does not mesh with the sensation it makes on his skin, but socks are not the only problem. Certain shirts cannot be worn and he never prefers anything with buttons or snaps or collars. Coats require zippers and shorts are preferred over long pants. Long pants are acceptable only under certain circumstances by Mahesh. Children would feel distressed by clothes rubbing on skin and might want to wear shorts and short sleeves. As a toddler Ram may prefer to be naked and pull diapers and clothes off constantly. Children would refuse to wear new or stiff clothes, clothes with rough textures, turtlenecks, jeans, hats, or belts, etc. Ankit strips off his clothes every time his mother dresses him up with new clothes. Children may want to wear long sleeve shirts and

long pants, to avoid having skin exposed. When skin is exposed, children would feel irritated and agitated. Children with tactile sensory issues may have difficulty tolerating the sensations generated as they dress or groom themselves and this shows how much hypersensitive their skin is towards certain textures and dresses.

1.4 Tactile hyper responsivity in personal activities of children with autism.

Daily living skills (DLS), such as personal hygiene, meal preparation, and money management, are important to independent living and research suggests that many individuals with autism spectrum disorder exhibit impairments in daily living skills relative to their cognitive skills. Janani complains about having hair brushed and might be very picky about using a particular brush. Her mother finds it very difficult to groom her hair and plat it. According to one study, problems with daily living skills "may be especially prominent in those with advanced cognitive abilities" and autism. These children may overreact to minor cuts, scrapes, and or bug bites. Naveen would walk on toes only and he usually loses balance and has complaints of repeated injuries due to continuous falls. Even the slightest touch can send children with autism who are hyper responsive into a panic attack and parents often report that washing their child's hair or cutting nails turns into an ordeal demanding several people to complete it.

A person with autism may, first of all, not inherently value doing things "all by myself," or care about how they appear to their peers if they can't perform a certain skill because they may have impaired fine motor skills that make buttoning their dresses a challenge. Due to this, they may not like the way how certain garment feels. Social, motor, and sensory issues collide when it comes to self-care activities. Many people with autism need systematic, sometimes intensive teaching in the self-care area due to deficits in language and attention skills, interfering behaviors, and/or sensory impairments. Also most children with autism do not understand the social motivations of others and the tendency to insist on sameness can also make acquiring life skills difficult. Too much information can becomes accumulated during the performance of daily living activities which can cause stress, anxiety, and possibly physical pain. Therefore this can result in withdrawal, challenging behavior or meltdown, making the child incapable of completing the task.

1.5 Food and tactile hyper responsivity in children with autism.

ASD is considered to be a major health and educational problem, affecting many areas of daily living, including eating. Children with ASDs are often picky or selective eaters when it comes to food. Parents of toddlers and young children often describe their children as "picky eaters", refusing to try or eat a variety of foods and although picky eating is not uncommon among young children who are typically developing. Pickiness in children with autism spectrum disorders (ASDs) may be even more restrictive and may extend beyond the early childhood period (1 - 3). Stephen is a picky eater, only eating certain tastes and textures. Mixed textures tend to be avoided by him as well as hot or cold foods. He resists trying new foods. Radha is picky or fussy about food, and eats only food of certain textures or colours.

Issues around eating and self-feeding can be complicated by a child's acceptance of only a limited number of foods because preferences that may also be connected to sensory issues surrounding taste, texture, or appearance. National Autistic Society stated that "the pattern of avoidant and restrictive eating we see in autistic people is also observed in children and adults in the neurotypical population and therefore represents a function of traits that individuals have in common, rather than being specific to a diagnosis". (Elizabeth Shea, 2015) Ram finds some flavours and foods too strong and overpowering because of his sensitive taste buds and has a restricted diet. Certain textures cause discomfort and these children may only eat smooth foods like mashed potatoes or ice-cream. Some children may also spit out, feel nauseated or even throw up because of the taste of certain foods.

Autistic children usually preferred foods of a similar texture, typically either soft or hard /crunchy foods. For some children, the eating issues emerged in infancy at the second stage of weaning (7-9 months) when the textured and lumpy foods were introduced. Here, children born with tactile or touch hypersensitivity will gag, spit out and refuse these foods and such sensory based avoidance can lead to a prolonged reliance on first stage (4-6 months) weaning foods, typically smooth purees, or foods that bite and dissolve easily in the mouth. In turn, this may lead to poorly developed oral-motor skills in these children which further perpetuates a reliance on smoother textures.

These children want to avoid getting 'messy' and dislike food of certain texture. Hence, they resist eating most foods which are in a semi - liquid form. They prefer solid foods and tend to avoid most fruits which are juicy for this reason. Thereby, these children can also face problems of constipation.

REHABILITATION INTERVENTION**Rehabilitation intervention for children with Tactile Hypersensitivity**

Children who have Tactile Over-responsivity (tactile defensiveness) are sensitive to touch sensations and can be simply overwhelmed by and afraid of ordinary daily experiences and activities that occur in the life of the child. Tactile hypersensitivity can stop a child from play and interactions which is important to learning and social interactions. The child would avoid touching textured materials/items, "messy" things, vibrating toys, dislike hug and kiss, certain clothing textures, rough or bumpy bed sheets, seams on socks (seamlessocks), tags on shirts, light touch, hands or face being dirty, shoes and/or sandals, wind blowing on bare skin and bare feet touching grass or sand. Interventions that can be given for children with tactile hypersensitivity which is suggested in this research includes certain activities which can be given by the occupational therapist, special educators, rehabilitation workers, parents and caregivers. These activities can be put in the form of a kit for portable use and certain activities can be instructed to make the child better in handling tactile sensations.

Before introducing the child to messy play, we can use water balls or bubbles to make the child get acquainted with it. The child's body can be prepared prior to any messy play activities using proprioceptive and deep pressure activities such as desk pushups, making a firm fist with the hands and releasing, pushing hands together in a prayer position, pressing thumb and finger tips together firmly, squeezing a ball, etc. A container and colored rice could be used to put small toys. A pudding and cool whip for finger-painting could be given. A plastic dish tub filled with various things such as rice, pinto beans, popcorn etc, and we can make the child fill and dump with cups, bowls and spoons. Hair gel in a gallon-size zip-lock baggie adding strong tape across the zip lock and we can put enough gel so that the bag can lay flat and the child can poke at it with his/her finger or feel the squishiness of the bag. Finger painting or body painting with water-based paints could be given for these children. Playing with play dough or putty by pulling, squeezing, rolling, etc can be given. Make the child squeeze the glue on paper (good for finger strength, also) and smear it around. It can take a while to dry on the fingers and ask the child to peel it off. Putting shaving cream, lotion, or pudding on a large piece of aluminum foil and have the child draw a picture or write spelling words and be sure to get both hands messy.

Rubbing lotion or powder on the legs, hands, and arms as the child gets his/her bath and massage can be given on the scalp before haircuts. Cutting nails can be done after soaking in warm water first, then press on nail bed before cutting. "Brushing" the child with a surgical brush could be given. Give activities which provide tactile input on the child's entire body, such as a kid pool full of Styrofoam, big soft pillows, or balls. Face washing can be done with different textures of cloth or towels. Spending a few extra minutes after bath time to vigorously rub the child with a towel, or guiding them to do so. Rub the child with other textures such as terry towel, smooth fabric, etc. Put textured mittens or puppets on the child's hands and let him/her take them off. We can encourage oral-motor activities before meals with non-food items such as blowing bubbles, biting hard on oral toys. Encourage the child to brush his tongue and the insides of his cheeks to reduce the sensitivity in their mouth. Make the child walk on the grass, barefoot in summer. Vibrating toys, vibrating pens and balls can be used.

Squashy ball could be used to help the child. Make the child hold the ball between two flat hands in front of the chest and squash the ball hard to try as well as keep it flattened. Bear Hugs combined with gentle rocking back and forth could be used for extra calming effect. For row the Boat activity, a skipping rope or holding of hands could be used. Sit facing the child with feet outstretched and touching and do controlled push and pull movements like a rowing exercise. We can make the child identify objects with eyes closed such as keys, comb, marble, block, coins, shapes, etc. Instruct the child walk across different textures of carpet barefoot. Allow the child to sit on a beanbag for few minutes.

Modification of art activities could be done for children with hypersensitivity to reduce the tactile input such as use of rolling pin with play dough, use of a paintbrush or other tools when using paint could be done. Also allow the child to wash their hands at the sink or a bowl of water can be kept next to them during messy activities.

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