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ART AND DESIGN AIDING CHILDREN LIVING WITH AUTISM IN NAIROBI

Received: 24/04/2023, First Reviewed: 02/05/2023, Accepted 24th May, 2023

• Juddy Awuor Odera

Corresponding Author:
•Samuel Mwituria Maina PhD, PDr, OGW
smmaina@uonbi.ac.ke

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ABSTRACT

Background: The number of children affected by autism has risen, with 1 in every 59 children being diagnosed within the spectrum (WHO, 2022). In Kenya, the disorder affects approximately four per cent of the population according to a 2007 Autism Society of Kenya estimation. Such children face certain day to day challenges with the main ones falling under communication, social interaction, sensory sensitivities and behavioural issues. Considering that communication and social interaction are part of the most vital day to day activities in every human being, Autism Spectrum Disorder therefore affects a very important part of the children's lives.

Problem: The condition impairs the communication process, leading to a cavity in interaction between the children faced with Autism and their families and friends. There exists a tendency to ignore the emotional attachment and reaction children have with the products that they use which would otherwise improve their recovery process. In Kenya, therapists and support centres are challenged to find products that they can use for the treatment of children with Autism, with limited resources and financial constraints. Consequently, the products that are provided are not only limited but also do not fully explore the recovery process. **Objectives:** to explore possibilities of emotional design in aiding communication and therapeutics for children living with autism. **Design:** the study applied two types of research design: the case study research design and descriptive research. The case study was on the Differently Talented Society of Kenya (DTSK), a registered society that brings together parents of children with autism and children on the autism spectrum as well as professionals in the field of autism and special needs. Descriptive research method involved observing and describing the behaviour of subjects without influencing them in any way. **Setting:** the study was conducted in Nairobi, specifically at The Differently Talented Society of Kenya, a registered society and the Autism Support Centre, an organization that aims at helping and creating awareness on Autism and the Autism Society of Kenya which facilitates the assistance provided to autistic children in Nairobi and Kenya at large. **Subjects:** this included autistic children, their parents and committee members of societies that support autism in Nairobi.

Results: it emerged that there was a great flaw in the communication process that children within the autism spectrum are involved, and to facilitate proper communication then products have an upper hand in easing the process. The products must also offer some kind of therapy to the children, neutralizing their sensory and behavioural sensitivities. **Conclusion:** Characteristics of the design products to be used were also uncovered and include colour, texture and balance. In regard to the proposed emotional design products, the study recommended Consideration of sensory issues, Creation of clear visual cues, consideration of safety and use of simple and clear language to create calm and quiet environments.

Keywords: Autism, Emotional design, Children, Aesthetics.

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INTRODUCTION

Research indicates that 1.7% of children, that is, 1 in every 59 children, are diagnosed with Autism Spectrum Disorder (ASD) (Daily, 2018). As advanced by Mortensen (1972), communication is the most basic form of human interaction. Communication has been classified into verbal and non-verbal forms, each serving a very important part in basic human communication (Pierce, 2000). Autism, also known as Autism Spectrum Disorder (ASD), is a complicated condition that includes problems with communication and behaviour. In a nutshell, Autism affects the individuals suffering from it as they are not able to fully communicate with other individuals or decode communication cues from others; as well as also affecting those around people suffering from Autism. In most cases, communication therapy is an essential part of Autism treatment especially in regard to children under the age of 13.

The contribution of design on easing effects of autism is more than simply looking interesting or cool. Design in itself is communication. Just like a writer or a speaker chooses their words to communicate a message, good designers choose the right visual elements to communicate a message (Toda, 2017). This study therefore looked into the application of art forms and emotional design in the creation of aesthetic products for children suffering from Autism Spectrum Disorder. It looked into product design as part of a key aspect in the treatment of children with Autism and aiding their communication process.

Problem Statement

Autism impairs the communication process, leading to a cavity in interaction between the children faced with Autism and their families and friends. There exists a tendency to ignore the emotional attachment and reaction children have with the products that they use which would otherwise improve their recovery process. In Kenya, therapists and support centres are challenged to find products that they can use for the treatment of children with Autism, with limited resources and financial constraints.

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OBJECTIVES

1. To explore the challenges faced in aiding children affected by Autism at the Differently Talented Society of Kenya
2. To examine the available therapeutic products for children suffering from autism in Nairobi.
3. To propose aesthetic products that can aid autistic children in their communication process and interactions with others.

THEORY

Autism therapy and treatment

Although social communication skills play a central role, developmental milestones in emotional regulation should be considered of equal importance (Laurent, 2004). Many treatment approaches involve therapies such as:

- Behavioural therapy With regard to Autism, Behavioural therapy that works towards treating the mental health issues associated with Autism. This type of therapy that uses rewards to reinforce positive behaviours and teach new skills. This in turn allows for the containment of

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the challenges faced by the children suffering from autism.

- Play therapy that enables Children with autism to play differently from other kids. This can help children with ASD learn and connect with other people, both children and adults.
- Occupational therapy; Children with autism and attention deficit hyperactivity disorder (ADHD) tend to exhibit significantly different patterns of sensory processing to their peers and to children with other special educational needs (Laurie, 2015). This knowledge helps promote skills for independent living in people with autism and other developmental disorders (WebMD, 2018).
- Physical therapy; Physical therapy includes activities and exercises that build motor skills and improve strength, posture, and balance. For example, this type of therapy aims to help a child build muscle control and strength so that s/he can play more easily with other children. Problems with movement are common in autism spectrum disorder (ASD), and many children with autism receive physical therapy.
- Speech therapy; Speech therapy can address a wide range of communication problems for people with autism (WebMD, 2018).

Products for autistic children

Products used for autism therapy adhere to the different therapy facets involved in autism treatment. Such products used by the children mainly possess these qualities:

1.Colourful; harshly colourful environments or products may lead to the children being triggered to acting as damaging to the treatment rather than being helpful. To avoid this, the colours are therefore maintained to primary colours and subtle shades of secondary ones (Jamal, 2019).

2. Texture; Another quality of autism products is the presence of texture on the therapeutic products. This is also very vital as it helps to stimulate the sensory nerves of the children (Jamal, 2019). In order to assist with that, their products are not only made with textured surfaces but are also made with other beneficial qualities. Autism therapy balls that adhere to the colourful nature of the therapy products are made with varying hardness (Jamal, 2019).

3. Balance; Balance is another challenge faced by children with autism. It is therefore important for the products to be able to stimulate balance either through movement, balance through multitasking or balance through suspension (Jamal, 2019).

Design is communication

Good design doesn't happen by chance, good design happens from executed purpose and intent (Today, 2017). Design

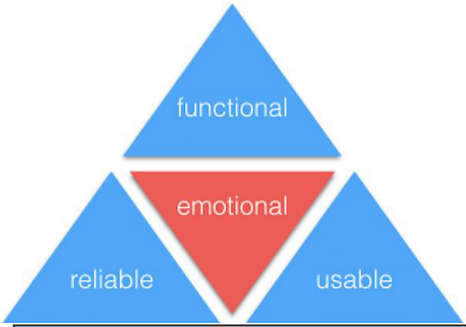

Figure 1: The product design structure according to Aarron Walter; (Source: researchgate.net, Jan 2022)

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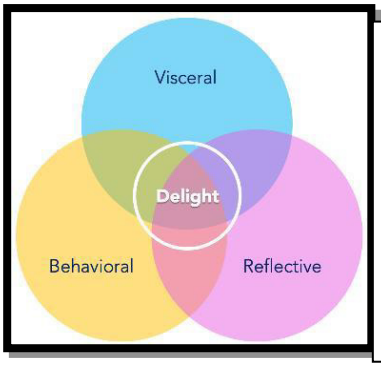

Figure 2: The three levels of design accordingt o DonN orman; (Source: researchgate.net 2023)

itself is communication. The larger goal and message for the design and effective communication of that message is what makes good design "good" (Toda, 2017). With regard to autism and the challenges that autistic children face during communication, it is therefore more effective and important to achieve communication through the use of design. In this case, design helps communication in both ways, from the autistic child to the non-autistic individual and vice versa. Autism affects verbal and non-verbal communication, social interaction. These may lead to speech delay which brings about necessity in the use of products and/or designs that assist with these aspects of communication.

Emotional design

With the evolution of design and the design process it is no longer sufficient to design a product that just works; products need to have an amazing user experience (Chapman, 2009). This has brought about the emergence of emotional design. Emotional design strives to create products that elicit appropriate emotions, in order to create a positive experience for the user (See Fig 1.). There is currently interest in the emotional relationship between a product and its user. Walter (2011), states that emotional design, when paired with solid functionality, will help fill in the gaps and work as a trust agent in the user experience as they interact with your design. If the functionality needs tweaking, the emotional design creates a space for the user to connect and give feedback (Walter, 2011).

Researchers have developed different perspectives to understand what emotional design should be and the role of emotion in design.

Levels of emotional design

In his book Emotional Design, Norman (2004), proposes that the emotional system consists of three different, yet interconnected levels, each of which influences our experience of the world in a particular way. He explores these different levels of design that capture how people emotionally react to visual experiences: visceral, behavioural, and reflective (see fig 2).

Visceral emotional design

Visceral design includes the user's pre-conscious state, the product's initial attractiveness, and the user's overall feelings (Baker, 2019).

Behavioural emotional design

Behavioural reaction is how we feel as we are immersed in the product experience. Behavioural design includes usability, product function, performance, and effectiveness of use.

Reflective emotional design

A reflective reaction is how we feel after

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we have been immersed in the experience. It is how we remember the experience itself and how it made us feel. It determines whether we want to try that experience again or shun it all together. This is the highest level of emotional design; representing the conscious thought layer, where we consciously approach a design; weighing up its pros and cons, judging it according to our more nuanced and rational side, and extracting information to determine what it means to us as individuals (Komninos, 2019).

Connection between emotion and design

Everything has been designed in some way and all design ultimately produces an emotion upon interaction between the consumer and the design (Philips, 2019). There is an old adage in the design world that interaction with any product produces an experience (emotion). In product design, for example, one would find its end products elicit an emotion from their audience, whether good or bad, pleasing or frustrating. Everything around us has been designed in some way and all design ultimately produces an emotion. People experience an emotional reaction to our environment moment by moment: a like or a dislike, elation, joy, frustration (Philips, 2019). Product design considers how a user interacts with and responds to an interface, service or product. That response is an emotion. User experience designers not only strive to design usable, functional products but to also generate a certain emotional effect on the user while they are using a product—usually a positive one—and try to maintain it throughout the user journey. When talking about emotional design, we're talking about how a product's design or an interaction with it affects the user.

Plutchik's wheel of emotions and how it's used

Psychologist Plutchik (1980) came up with a wheel of emotions which stands as a resource for understanding emotions and using them as a resource, and in this case, in the world of design. Plutchik proposed a psychoevolutionary classification approach for general emotional responses. He considered there to be eight primary emotions—anger, fear, sadness, disgust, surprise, anticipation, trust, and joy. In his opinion, these emotions influence people's actions. This is why the tool is so useful. It enables the user, and in this case the designer, to visualize emotions, and understand which combinations of emotions creates certain outcome (Donaldson, 2017). It is important during the designing of products that designers realize what emotions are stimulated by specific behaviour, and foster their products in relation to that (Karimova, 2019).

METHODS

The study applied two types of research design: the case study research design and descriptive research. In the case study method the researchers studied the Differently Talented Society of Kenya (DTSK). The subjects from the case study included children suffering from Autism, committee members and the parents of autistic children. This method was selected based on the premise that case study is intensive study about a person, a group of people or a unit, which is aimed to generalize over several units (Twycross, 2017).

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To supplement case study, descriptive research method would further anchor the information collected through the case study method.

POPULATION

The population under study included autistic children, their parents and committee members of societies that support autism in Nairobi. It was achieved from the 1.7% of the children population in Nairobi who are crippled by autism. In the case of varying characteristics within the target population a sample was chosen. This 1.7% number of children suffering from autism is against the total population of 4,397,073 individuals in Nairobi (KNBS, 2019). In addition, present in Nairobi are three Autism societies which members that tend to the autistic children. These societies include the Differently Talented Society of Kenya, the Autism Society of Kenya and the Autism Support Centre. The Autism Society of Kenya as well contains 5 committee members and 15 support staff members, with the Autism Support Centre containing 4 founding members, 7 supporting members and which works with a total of 100 kids. This brings the total population of 14 committee members of the societies supporting autistic children, 50 involved parents and 22 supporting staff members.

SAMPLING TECHNIQUE

Simple random sampling was used to determine the sample population. Through simple random sampling, the following steps were involved in selecting simple random sample: random number tables and random number generator software.

DATA COLLECTION METHODS

The study used various data collection methods in order to thoroughly investigate the problem of autism spectrum disorder in Nairobi. Most of these methods are qualitative data collection methods. Among them were:

Observation

The study specifically used non-participant observation at the Differently Talented Society of Kenya and its associated spaces provided for autistic children. The researchers observed the children in their natural environment and saw what challenges they face due to Autism.

Interviews

The researchers specifically focused on using semi structured interviews. An interview guide with a predetermined set of questions which the interviewees answered to in their own words was used. It served as a checklist to ensure that all respondents provide information on the same topics but are not limited to specific answers

PHOTOGRAPHS

Images can constitute research data, or the tools through which research data is analyzed, or the medium via which research results are communicated. This method was used effectively.

Figure 4: A view of the plain environments for autistic children at the Mirema School, Nairobi; (Source: the researcher)

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DATA ANALYSIS

Content analysis

Content analysis involves the documentation of collected data in the form of texts, media or even physical items (Georgia, 2012). This was used to analyze documented information. This study technique was used to make replicable and valid inferences by interpreting and coding textual material.

Narrative analysis

The preferred method of analysis of observation as a data collection method was the narrative analysis. It used stories and experiences seen during the observation period to answer the research questions.

Visual analysis

Visual analysis offers researchers an interdisciplinary method for understanding and contextualizing images (Barrett, 2005). When working with photographs, for example, relevant descriptive variables included production qualities, the photographer's vantage point, focus and depth of field. This was properly utilized.

Fig 3: *Parents of autistic children at a parents-teachers meeting at the City Primary School; (Source: the researcher)*

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FINDINGS

The researchers, in order to successfully analyze the subject matter, went to different institutions of learning and therapy establishments that accommodate children within the autism spectrum. These institutions included the main site, Differently Talented Society of Kenya, Autism Support Center and the Autism Society of Kenya. The researchers also visited several associate schools that support autistic children and these schools include City Primary in Nairobi, Mirema School and Kenya Community Center for Learning (KCCL). The aforementioned schools are schools that are able to accommodate children within the spectrum among other atypical children (Figure 3). These regular meetings are held to discuss issues facing the children and how those issues can be addressed; amongst them the judgement that is directed towards the autistic children based on behaviour, interaction, communication among other differences that they have with atypical children. Figure 4.1: Parents of autistic children at a parents-teachers meeting at the City Primary School (Source: the researchers).

One of the biggest challenges faced by children within the autism spectrum is the lack of a specific facility other than the Autism Support Center that aids children with autism. Other facilities were accessed to observe the condition of

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spaces. From observation, many of them were generally wanting and inadequate.

Challenges faced by children within the autistic spectrum

To meet the requirements of objective one, which aimed at determining and establishing the challenges faced by autistic children in Nairobi, the researchers conducted research at the environment provided for autistic children at the Mirema School;

Studies through non-participant observation of the autistic children and semi-structured interviews with committee members of institutions that cater to autistic children in Nairobi were contacted. Based on the research conducted, the research revealed that the children face four major challenges. These challenges are categorized into but are not limited to:

- Communication barriers
- Social skills
- Behavioural issues (Repetitive or peculiar behaviour)
- Sensory Sensitivities. These challenges, however, vary based on the specific child within the spectrum.

Challenges faced by one child may differ completely from challenges faced by another child, though those challenges may exist within the same realm. For example, based on communication, one child may experience extreme withdrawals from those around him due to difficulties in communication whereas another child may opt for attention seeking behaviour trying more and more to connect and draw attention to self. Therefore, there are no standardized challenges, and after interaction with one child on the spectrum, a researcher may not draw any conclusion of the entire disorder. Figure 4 showing the problems that autistic children face (Source: the researcher)

Communication

The researcher observed (fig 4) that children on the spectrum face challenges with various verbal and nonverbal skills, including grammar, proper use of pronouns and reactions to speech. Differences in other non-critical communication features, such as facial expressions and speech tempo, may result in what some perceive as 'awkwardness' in children with autism. Communication problems have always been considered a core feature of autism. Challenges in any of these areas can contribute to the social difficulties children on the spectrum experience (Barret, 2017. Difficulties in communication also birth some of the other issues experienced such as frustration which leads to an eventual aggressive outpour by the autistic individuals. Communication between people with and without autism is a two-way problem. Individuals on the spectrum may have communication challenges to address, but their typical peers and conversation partners could do more to meet them halfway by accepting differences in the way they express themselves. Due to the challenges in communication, children with autism were observed to result to the following means of communication:

Escapism

In autism, escapism refers to the child opting to retreat from any interactions and partially or completely closing themselves off from communicating with anyone around them. Due to the frustrations that arise from not being able to effectively communicate their emotions, thoughts

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and feelings, and not being able to effectively decode those verbal and non-verbal cues by those around them, autistic children prefer to shut down and shut the world out completely. This leads to even further frustration and may cause more harm than good. They drift off into an alternate universe through art, books, technology or anything that they are good at or that they like, in order to feel safe.

Attention-seeking behaviours

Attention-seeking behaviours are common in children with autism; and range from silly to defiant to violent behaviours. The researcher observed that in a child with autism, negative attention-seeking behaviours can be problematic and difficult to stop. They aren't necessarily a bad thing, just an effect of lack of proper communication decoding by the children on the autism spectrum.

At the very core, all humans are social creatures and crave attention, so when, in the case of autistic children, they feel like they're not getting enough or the right kind of attention, they naturally change their behaviour in an attempt to get more of it. In this case, they either continuously do whatever activity they are doing continuously or throw fits. Another reason a child with autism might engage in an attention-seeking behaviour is as a distraction to put off doing something they dislike, such as bath time, bedtime or even eating (Barret 2017).

Aggression

The researcher found that children with autism spectrum disorder don't necessarily express anger, fear, anxiety or frustration in the same way as other children. They sometimes express these feelings through aggressive behaviour towards others. Sometimes they're aggressive towards themselves, which is called self-injurious behaviour. They might hit, kick, throw objects or hurt themselves (Barret 2017). Children with ASD behave aggressively or hurt themselves because they:

- have trouble understanding what's happening around them – for example, what other people are saying or communicating non-verbally.
- can't communicate their own wants and needs – for example, they can't express that they don't want to do an activity or that they want a particular object.
- are very anxious and tense.
- have sensory sensitivities, like oversensitivity to noise or a need for stimulation.
- want to escape from stressful situations or activities.

Social interaction

The researcher uncovered that children on the autism spectrum vary enormously from each other but they all have impaired social skills of one kind or another (Barret 2017). Those social skills include social interactions (such as sharing interests with other people), the use of non-verbal communication (such as making eye contact), and the development and maintenance of relationships (such as making friends). Social interaction among children within the autism spectrum proves to be one of the hardest activities for them.

This stems from their issues in communication. The difficulties they experience in encoding and decoding communication cues make it close to impossible to fully interact with atypical

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adults and children alike (Barret 2017). It was evident that children with autism appear neither to be interested in nor able to "read" the social world. It is as though they are blind to the animated, complicated, emotionally loaded give-and-take of human interaction. Other children appear to know, intuitively, how to communicate and interact with each other, and many parents of autistic children struggle to explain why their children struggle with social interaction when they can have astonishing skills in other areas). Children with autism also lack an important psychological wiring known as theory of mind. This refers to a social-cognitive skill that involves the ability to think about mental states (beliefs, desires, and intentions, which are used to understand why someone acts in a certain way), both your own and those of others. Not only does the theory of mind involve thinking about thinking, but it also refers to the ability to understand that other people's thoughts and beliefs may be different from your own and to consider the factors that have led to those mental states (Cherry, 2018). A lack in this social-cognitive skill makes their expression of interest, love, beliefs and intention very different from everyone around them. An example of this was observed with the intention of showing love, children with autism lacked boundaries such as not understanding intimate and personal space and end up irritating the other party instead of receiving the response that they expected.

Behavioural issues

The researcher found out that one of the hallmark features of an autism spectrum disorder is the presence of restrictive and repetitive behaviours, interests, and activities. The children may engage in stereotyped and repetitive motor movements (hand flapping or lining up items) or speech (echolalia). They may emphasize harmony, such as needing to take the same route to school every day or demanding that tasks be completed in the same sequence and at the same time. When other children are prevented from repetitive behaviour or when changes in the process are required, they may feel overwhelmed and engage in more problematic behaviours, such as aggression, to gain access to the routine or discouraging others from changing the process (Clinic 2018).

It was evident that decline, repetition and programming could be a source of enjoyment for independent children and a way to deal with daily life. But they can also limit their participation in other activities and cause grief or anxiety. For many people, the change in the idea of repetitive behaviour took time. Restricted and repetitive behaviours are a basic feature of autism and include not only the frequency of repetitions such as hand-flapping, but also intense interest in specific topics - such as train schedules or maps - and the difficulty of changing routes. They have often been viewed as something to eliminate or at least minimize, especially if they appear to hinder a child's daily life. Studies, however, suggest that some of the behaviours, such as body-rocking and arm-waving, help guide typical development (Clinc 2018). And many non-autistic children also engage in stims such as fidgeting or fiddling with objects. What's more, a growing body of evidence from the past decade reinforces the notion that repetitive behaviours can help autistic people relieve sensory overload, cope with anxiety and express emotion.

The researcher uncovered that repetitive behaviours can also be viewed

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as a positive rather than something negative and this can be argued in the sense that repetition of certain behaviours may lead to stellar performance and even excellence and mastery of some of the crafts that the autistic children involve themselves in. An example is a child that continuously flaps or engages in stimming. Those senses may be quenched by the use of a piano which because of the repetitive nature of their behaviour may lead to a mastery of the craft. This may also be seen in autistic children who engage themselves in physical activities such as sports. The repetitiveness and routine that their mind follows may lead to excellence in these activities and eventually making them stellar.

Sensory sensitivities

Sensory issues often accompany autism. Autism's sensory issues can involve both hyper-sensitivities (over-responsiveness) and hypo-sensitivities (under responsiveness) to a range of stimuli. Many children on the Autism spectrum have difficulty processing the details of everyday feelings. Any feeling can be over- or under sensitivity, or both, at different times. These differences can affect behaviour and can have a profound effect on a person's health (Clinic 2018). The research revealed that children with autism spectrum disorder (ASD) can be oversensitive or under sensitive to noise, light, clothing or temperature. Their senses - sight, hearing, touch, smell and taste - absorb too much or too little information from their surroundings.

Adolescents often have emotional feelings, but they often withdraw. These feelings usually last longer in children with ASD, though they diminish over time. It was observed that when children with ASD are oversensitive or over reactive to sensory experiences, it's called hypersensitivity. These children might cover their ears when they hear loud noises or eat only foods with a certain texture (Jamal, 2019). When children are under sensitive or under reactive to their environment, it's known as hyposensitivity. These children might wear thick clothes on a hot day, or repeatedly rub their arms and legs against things (Jamal, 2019). Sometimes an autistic child may behave in a way that one wouldn't immediately link to sensory sensitivities. A child who struggles to deal with everyday sensory information can experience sensory overload, or information overload. Too much information can cause stress, anxiety, and possibly physical pain. This can result in withdrawal, challenging behaviour or meltdown.

Challenges faced in aiding children with autism

To meet the requirements of objective two, which aimed at exploring the challenges faced in aiding children affected by Autism at the Autism centers, the researcher conducted research through semi-structured interviews with committee members and supporting staff of institutions that cater to and parents of autistic children in Nairobi. Institutions, caregivers and parents, especially those new to dealing with children on the autism spectrum experience great difficulty in nurturing autistic children. These challenges stem from those faced by the autistic children in their daily activities. Among them are;

Communication

It was evident that based on their communication issues; there is persistent difficulty in getting through to a child with

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autism. Due to their inability to decode and properly encode communication cues, anyone trying to aid a child on the autism spectrum may face great struggle. This leaves a gap of understanding between the two parties which may lead to even worse results such as withdrawal of the children on the spectrum.

Solution: speech therapy

The researcher found out that to tackle this issue, most children with autism are taken through speech therapy. This allows them to learn how to effectively communicate and how to interpret communication verbal and non-verbal cues from other parties. Another means through which this challenge of communication was dealt with is through the use of products. Several products have been made in order to allow children with autism to communicate using. These products allow them to communicate their thoughts, feelings and emotions to the caregivers who can then proceed to deal with the problems being faced. These products grow important with regards to taking care of children on the autism spectrum.

Interaction

Because children with autism suffer with regards to social interaction, this proves difficult for caregivers because they experience resistance from the children in an attempt to assist them. The researcher observed that children on the autism spectrum withdraw from general interaction with their caregivers and may result to aggressive behaviour when interaction is required. This prevents any aid that would've been given to them from being effective. With these challenges in interaction, dealing with children on the autism spectrum and aiding them in their activities may be interfered with (Figure 4)

Solution: play therapy/ sports/ physical activities

The research revealed that play therapy and sports or physical activities are implemented as a solution to social interaction issues. The children were allowed to play, and other children or adults slowly incorporated into their environment, in a way that does not make them uncomfortable but otherwise invites more attention. This allowed for them to make their previously uncomfortable environment easier for them to get accustomed to due to the distractions provided by the play products that they use. Sports also allow them to learn the essence of teamwork as well as burn off the excess energy some of them may be holding onto (Jamal, 2019). This prevents any situation where they go through sensory overload. The

Figures 5 show examples of caregivers implementing behavioural therapy and a group of autistic and non-autistic children involved in sports at the city primary School in Nairobi (Source: the researcher)

energy that may have been used in aggressive behaviour is then converted and used in specific physical activities. They get to do these physical activities along-

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side other children, which introduces individuals into their environment in a non-threatening way.

BEHAVIOURAL ISSUES

Behavioural issues that autistic children face or go through end up affecting the caregivers and parents as well. The researcher found out that children with ASD often like predictable environments, and they can get very upset if their familiar routines are broken. For example, the child might be upset if you change the route, they usually take home from school. This causes a great rift in interaction between the child and their respective caregivers (Brown 2002). The child might also not understand it's time to move on from one activity to another. Or like typically developing children, she just might not want to. The child might also get upset if too much is happening around him/her, or if she finds a particular noise overwhelming, or it's too bright for her. These behavioural issues may make care giving very difficult to tackle in respect to ASD.

Solution: behavioural therapy

Behavioural therapy allows for the caregiver to influence reactions, behaviours and response of the autistic child to specific environments and people. It is majorly done to allow the child to not only adapt well to any environment but also to be self-sufficient in certain areas in their lives (Jamal, 2019). It helps change how they think and how they adjust to new situations in life. Behavioural therapy can be done through talking but the most effective way is through certain activities and by the use of certain products.

Challenges faced by autistic children during product interaction

In regard to therapy, the autistic children ought to be exposed to a lot of products that facilitate their well-being. However, the researcher found out that their interaction with products is very different from interaction of atypical children with products. Unlike the aforementioned group, children within the autism spectrum experience the following challenges in their interaction with products:

Focus

The research revealed the children have very specific focus and concentration in regard to product interaction. They focus on specific parts of the product instead of interacting with the product as a whole. An example is when interacting with a toy car; a child on the autism spectrum may only focus on interacting with the rotating wheel rather than the whole toy car. This takes away from proper immersion in product usage and therefore impairs judgement and their reaction to the product at hand. The solution for this is to create whole products that capture and maintain the attention of the children; products that allow the children to interact with all sections and parts.

Distraction

Distraction greatly interferes with product interaction. The researchers found out that children on the spectrum are highly visual and highly sensitive to environments and that may lead to a challenge in product interaction (Jamal, 2019). They are easily distracted by external factors outside their product immersion. This then hinders proper therapy based on whatever the product is used for. They can get distracted by things as

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simple as sounds and nature to things such as moving parts in objects such as fans. These distractions sometimes seem harmful and harsh to the children even in situations where they aren't.

Attention span

In regard to attention span, the researcher observed that autistic children may suffer from either a short attention span to a very high attention span. The former may be caused by their Attention Deficiency Disorder and thus sees them unable to fully concentrate on one product for a prolonged period of time. This then leads to failed efficiency in the products being used. The other challenge associated with attention span is high attention span. This sees very prolonged concentration which means the child solely focuses on that one product for a very long time.

Resistance to adapt

On interaction with certain products, it was evident that children on the autism spectrum may be resistant to interact with different products once change is required or desired. For example, if the child is required to switch from one specific puzzle to a different one, s/he may be unwilling to use the new puzzle. This may also be in terms of texture. After interaction with several products of the same texture, e.g. smooth, the child may resist interacting with a product of different texture such as a rough item.

Autism therapy products

Based on the findings, autism therapy products available in Kenya are not only minimal but are also acquired through importation. Basic products that are used are normal products used for atypical children in kindergarten. Other products, those found at the Autism Support Center have been imported due to insufficient access to autistic therapy products in Kenya. The researcher uncovered that the products adhered to the following characteristics:

colour: The products were colourful in order to be able to engage the children and capture their attention. The colours stick to primary and secondary colours to ensure that the colours are not too harsh and cause an eventual sensory overload.

Texture: The researcher uncovered that autistic children are exposed to different textures to enable them to stimulate their sensory nerves. Exposing them to similar types of textures may cause sensory overloads once they're exposed to a different type of texture and they may end up throwing fits eventually. Their products, therefore, contain different textures, ranging from smooth to different kinds of rough.

Balance; The products aim to provide support and balance in order to allow the sensory stimulation in the backbone and eventually, the spinal cord. Therefore, the products are built to facilitate balance by suspension or by sitting.

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CONCLUSION

Based on the data, it emerged that the children's products have to be able to facilitate an experience between the children and the products themselves. They also have to be able to expose them to different environments and textures during their interaction. A great flaw was observed in the communication process. To solve these, products have an upper hand. The products must also offer some kind of therapy to the children, neutralizing their sensory and behavioural sensitivities. Characteristics of the products have to be adhered to. They include colour, texture and balance.

RECOMMENDATIONS

Based on findings, certain solutions were recommended. The main way through creation of products that would facilitate meditation, communication and interaction as the main issues being solved. These products would be used in an Autism Center and would be specific to the classroom, sensory room and the children's garden. The products created would be inspired by local art and follow the principles of emotional design. The space would entirely be dedicated to children within the autism spectrum.

In summary, the following emerged as ideal for design to accommodate children with autism into mainstream livelihoods.

1.Consider sensory issues: Children with autism often have sensory issues, so it is important to design with this in mind. Use soft and comfortable materials that won't be scratchy or irritating, and avoid bright colors when possible.

2.Create clear visual cues: Children with autism often respond well to visual aids, so make sure the design uses clear and consistent visual cues to help them understand what they are looking at.

3.Consider safety: Safety is always important, but particularly so for children with autism who may have difficulty understanding danger. Use child-proof materials and consider designing items with rounded edges and corners to minimize injuries.

4.Use simple and clear language: Avoid complex language and double meanings that may be confusing for children with autism. Use direct and simple language to help them understand what you are saying or showing them.

5.Create calm and quiet environments: Many children with autism can find loud noises and chaotic environments overwhelming. Use design techniques that create calm and quiet spaces, such as soundproofing or using soft colors and textures.

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