

## STEREOTYPICAL BEHAVIOURS AMONG CHILDREN WITH ASD: CAUSES AND INTERVENTION

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### ABSTRACT

Children with Autism Spectrum Disorder (ASD) may exhibit unusual or stereotypical behaviours (Hodges, et al, 2020; Kirk, et al., 2015). Identification of the reasons for such inflexible or unusual behaviours among these children is essential for useful interventions. This study aimed to explore the causes of stereotypical behaviours among children with ASD in the cultural context of Pakistan, and to made recommendations for relevant stakeholders in order to address the problematic behaviours identified employing descriptive research. Population of the study included all teachers of children with ASD residing in Punjab province. 200 teachers of children with ASD were taken as sample for this study with convenient sampling technique. The causes of stereotypical behaviours among children with ASD as well as interventions to address these behaviours were explored using a self-made questionnaire. Data was analysed using descriptive and inferential statistics according to the intent and the objectives of the study.

According to the results of this study, some of the main causes of inflexible or stereotypical behaviours among ASD children in our cultural context are cognitive inflexibility, organizational deficiencies, limited problem-solving ability, love for sameness, complexity of tasks, difficulty breaking down a task, sensory sensitivities and insecurities, inability to express one's own feelings or understand the feelings of others, impaired communication, obsessions and inflexible interests.

Based on the results of the study, clear expectations, structured activities, thorough elaboration of the rules, advanced notification of upcoming change, provision of alternatives/choices and notifying beginning and ending of an activity to make transition easier and less resistant are among effective strategies to control stereotypical behaviours of children with ASD.

**Keywords:** Autism spectrum disorder, stereotypical behaviour, transition, sensory sensitivities, intervention.

### INTRODUCTION

Autism spectrum disorder (ASD) the most common neurodevelopmental disorder in the world is marked by persistent deficiencies in social interaction and communication across multiple contexts, as well as restricted and repetitive patterns of behaviour, interests, or activities (American Psychiatric Association, 2013; Hodges, et al, 2020). Stereotypical behavior

is defined as engagement in repetitive, restricted, persistent behaviours without a clear purpose, with no apparent function (Melo, et al., 2020; Reed, et al., 2014). Although many accounts infer a self-stimulatory, perceptual reinforcement function more recent conceptualizations challenge this notion. Other terms such as compulsive, ritualistic, and perseverative

behaviour have also been used to describe stereotypy (Jankovic, 2015; de Vaan et al., 2019). Edwards, et al. (2012) putting forward a clinically helpful perspective say that it is a non-goal-directed movement pattern that is repeatedly performed in the same way and on several times over an extended period, usually causing distraction.

Stereotypy may involve repetitive movements of body parts or hands inappropriate to the context and seem to serve no apparent adaptive function (e.g., rocking of the entire body, tensing of muscles, and waving or flapping of hands) (McTiernan et al., 2011; Ellerbeck, et al., 2015). Stereotypy might also take the form of inappropriate or non-contextual manipulation of objects such as placing objects in a line, spinning or banging objects together, or licking or mouthing nonedible items (Robinson, et al., 2016). Finally, vocal stereotypy includes repetitive or non-contextual vocalizations such as noncontextually laughing or giggling, nonsense sounds or words, or repetition of words or phrases heard previously (Reed, et al., 2014). Motor stereotypies are involuntary, patterned, repetitive, continuous, coordinated, purposeless, and ritualistic movements, postures, or utterances (Jankovic, 2015; Melo et al., 2020).

The research has shown that numerous factors can trigger and impact stereotypes. A study indicated positively correlation of intensity and duration of stereotypic behaviour with the severity of the accompanying disorder (Melo et al., 2020). Stereotypies seem to be precipitated by excitation, anxiety (Beavers, et al., 2013; Querim et al., 2013), or intense imagery or thoughts (Robinson, et al., 2014; Robinson, et al., 2016). Studies have also found that stereotypies are frequently triggered by anxiousness, worry, obsessions, and fatigue (Harris, et al., 2008). A study on children with motor stereotypies found that more than one trigger played its role in causing stereotypies in half of the children (Akers, et al., 2020). other studies found that causes of the stereotyped movements among autistic individuals included anger caused by relationship-events, noise, sensory processing difficulties and interest in an object (Melo, et al., 2020).

According to Kim, et al. (2014) and Cannon, et al. (2010), repeated behaviours can be a sign of dissatisfaction, frustration and discontentment

brought on by verbal and nonverbal communication difficulties. These behaviours are made worse by the incapacity to communicate or comprehend emotions (Gabriels, et al., 2015; Dichter, et al., 2010). Preference for routines and aversion to change, are typically the outcome of cognitive inflexibility (LeMonda, et al., 2012). Lack of creativity and problem-solving abilities can also cause stereotypies (Esbensen, et al., 2009). Insecurity and trouble with change can cause anxiety which can result in recurrent behaviours (Gabriels et al., 2015; Wood, et al., 2015). According to Dichter, et al. (2010) and Wood, et al., (2020), autistic children may become overwhelmed by the complex tasks/activities and sensory sensitivity, which can result in an increase in stereotyped behaviours.

Providing intervention to address sensory processing abnormalities when they are thought to interfere with participation and performance in daily life can help in this regard (Joosten & Bundy, 2010). Links between stereotypical and repetitive behaviours and difficulties in processing sensation was found decades ago. However, recent studies have provided evidence that these behaviours are multifunctional and are sometimes also motivated by a desire to reduce anxiety, to gain attention or a desired object or to escape (Joosten & Bundy, 2010). Cognitive behavioural therapy tends to foster the coping mechanism, cognitive flexibility and emotional control (Wood et al., 2020).

Combining behavioural, and sensory-based strategies results in effective therapies for stereotypical behaviours in ASDs (Beavers, et al., 2013). Functional analysis and reinforcement including rewarding the child when the stereotypical behaviour is not performed for a predetermined amount of time is also found to be effective (Reed, et al., 2012). When it comes to treating comorbid illnesses like anxiety and OCD tendencies that reinforce stereotyping, medicinal treatments or other alternative such as exercise, spending time with friends, me time may prove helpful (Harris et al., 2008). In order to assist children better adapt to sensory inputs and lessening the influence of sensory sensitivity that leads to stereotypical behaviours, sensory integration therapy and other structured activities that are intended to offer the proper sensory input should be included in child's intervention plan (Joosten & Bundy, 2010).

Although, much literature on stereotypical behavior, its reasons and useful intervention in the context of Pakistan is not available, this study attempts to unveil reasons of stereotypical behaviours of ASD children living in Pakistan along with effective interventions for context specific scenarios.

### Objectives of the Study

The study was conducted to:

1. Identify the reasons of stereotypical behaviours among children with ASD in the context of Pakistan.
2. Find out the interventions which is useful in managing inflexible and stereotypical behaviours of children with ASD.

### Research Questions

This study was carried out in order to find out answers to the following questions of the study.

1. What are triggers and causes of stereotypical behaviours among children with ASD in the context of Pakistan?
2. Which intervention is useful in managing inflexible and stereotypical behaviours of children with ASD?

### Methodology

This study was descriptive in its nature, following a quantitative approach. Questionnaire was used to collect data from teachers of children with ASD living in different cities of Pakistan.

### Population and Sample of the Study

Population of the study comprised all teachers of children with ASD living in different cities of Punjab province. The data was collected from

200 teachers of children with ASD. Convenience sampling technique was employed to select the sample for the study.

### Data Collection Instrument

Based on literature review related to stereotypical behaviours of ASD children, questionnaire was developed. Data obtained using self-constructed questionnaire based on indicators centered on the available literature and guidelines for instrumentation. Its validity was ensured by five field experts for its face validity. Reliability of the tool was determined before data collection which was Cronbach Alfa 8.2. The self-developed questionnaire covered several aspects of stereotypical behaviours, its causes and intervention.

### Data Collection Procedure and Data Analysis

The researcher took help from the professionals working in the special education department and related field to access the targeted sample. Once identified, the purpose of the study was explained to the respondents. Questionnaire was provided to the sample consented to participate in the study. The instrument was distributed and collected back with the assistance of special education teachers where possible. Google form was also used to develop electronic version of the questionnaire for greater accessibility. Thus data was collected personally as well as through Google forms. Confidentiality, anonymity and other ethical considerations ensured.

Descriptive and inferential statistics was applied to analyze and interpret the collected data based on nature of the data collected through questionnaire.

### Results

**Table 1. Mean Scores of Teachers (N=200) on Causes of Stereotypical Behavior Scale.**

S.No.	Statements regarding perceived causes of stereotypical behavior among children with ASD	Range of score on each item	Cut score	St deviation	Mean score
1	Impaired communication	1-5	3	.956	3.80
2	Inability to express their feelings	1-5	3	.839	4.00
3	Inability to understand others feelings	1-5	3	.855	3.85
4	Cognitive Inflexibility	1-5	3	1.051	3.52
5	Organizational deficiencies	1-5	3	1.049	3.42
6	Time management deficiencies	1-5	3	1.114	3.63
7	Limited problem solving ability	1-5	3	.874	3.70
8	Limited creativity	1-5	3	1.044	3.38

9	Complexity of tasks on hand	1-5	3	.937	3.78
10	Inability to breakdown a longer/complex task into manageable pieces	1-5	3	.879	3.68
11	Language barrier	1-5	3	.894	3.83
12	Love sameness of routines	1-5	3	1.037	3.92
13	Obsessions	1-5	3	.972	3.90
14	Inability to follow unstructured routines	1-5	3	.837	4.05
15	Inability to follow unstructured activities	1-5	3	1.084	3.67
16	Inflexible interest	1-5	3	.802	3.90
17	Sensory sensitivities	1-5	3	1.000	3.83
18	Feeling insecure among unknown people (new/unfamiliar teacher, staff, peer)	1-5	3	.923	4.05
19	Feeling insecure in new surroundings (change in classroom, play area, book shelf, furniture etc.)	1-5	3	1.152	3.67
20	Difficulty accepting change	1-5	3	.879	4.08
21	Anxiety or fear	1-5	3	1.098	3.72
22	Perceptual limitation	1-5	3	.907	3.68

Table 1 shows teachers' mean scores (N=200) on the scale. The range of scores on the Likert scale against each item was 1-5, which means the respondent could score a minimum of 1 and a maximum of 5 on each item. Score 3 was decided as the cut score or median score, which means the score below 3 shows the disagreement of respondents on the statements of causes of stereotypical behavior scale. The score above 3 shows the respondents' agreement to the

statements on the scale. The table shows the mean score of all 200 teachers on each item of the scale was above three, which means the teachers shown their agreement on the statements on the scale regarding perceived causes of stereotypical behavior among children with ASD. It indicates that the above mentioned statements are causes of stereotypical behavior among children with ASD living in Punjab.

**Table 2. Mean Scores of Teachers (N=200) on Intervention Strategies for Stereotypical Behavior.**

Effective intervention strategies to manage stereotypical behavior among children with ASD living in Punjab, Pakistan	Range of score on each item	Cut score	Std deviation	Mean score
Gradual familiarization with new or unknown people	1-5	3	1.063	3.97
Gradual familiarization with new or unknown places	1-5	3	1.082	3.64
Gradual familiarization with new or unknown environment	1-5	3	1.062	3.92
Gradual familiarization with new or unknown materials	1-5	3	.929	4.11
Gradual familiarization with new or unknown items	1-5	3	1.055	3.96
Gradual familiarization with new or unknown rules	1-5	3	1.264	3.72
Giving clear expectations	1-5	3	.897	4.24
Maintaining clear structures	1-5	3	.887	4.24
Providing clear rules	1-5	3	1.142	4.09
Prompt cards for upcoming changes	1-5	3	.903	3.91
Visual reminders for upcoming changes	1-5	3	1.003	3.99
Personalized time table	1-5	3	1.112	3.89
Visual records for details of activities	1-5	3	1.041	4.15
Timers for activity shift	1-5	3	1.034	3.83
Checklist of expected behaviours	1-5	3	1.210	3.89
Checklist of activities and their alternatives	1-5	3	.837	4.38

Appropriate alternatives for gaining the same kind of pleasure/fun	1-5	3	.949	4.09
Confine obsessions to a particular place or time of the day but also make it conditional on something else	1-5	3	1.065	3.68
Change rules of the games to experience change of rules	1-5	3	.891	4.10
Changing ways of playing a game to experience change of routines	1-5	3	.970	4.15
Reinforcement on accepting a change	1-5	3	.808	4.58
Using calendar for upcoming changes	1-5	3	1.062	3.63
Changing activity timing (e.g. increasing, decreasing/ simply changing)	1-5	3	1.187	3.61
Brain storming/finding multiple solution of a problem	1-5	3	1.097	3.83
Using emotional alert chart	1-5	3	1.138	3.69
Providing calming area	1-5	3	.857	4.30
Teaching relaxation techniques to child	1-5	3	.965	4.15

Table 2 shows teachers' mean scores (N=200) on the scale. The range of scores on the Likert scale against each item was 1-5, which means the respondent could score a minimum of 1 and a maximum of 5 on each item. Score 3 was decided as the cut score or median score, which means the score below 3 shows the disagreement of respondents on the statements of effective intervention strategies to manage stereotypical behavior scale. The score above 3 shows the respondents' agreement to the statements on the scale. The table shows the mean score of all 200 teachers on each item of the scale was above three, which means the teachers shown their agreement on the statements on the scale regarding effective intervention strategies to manage stereotypical behavior among children with ASD. It indicates that the above mentioned intervention strategies are reported as effective in managing stereotypical behavior among children with ASD living in Punjab.

### Discussions

Stereotypical behaviours in children with autism arise from various interrelated factors. Understanding these underlying causes can help develop effective interventions and support strategies.

Kim et al., (2014) and Cannon et al., (2010) studies have revealed that Impaired communication is a significant factor contributing to stereotypical behaviours in autistic children. Difficulties in verbal and non-verbal communication can lead to frustration, which may manifest as repetitive behaviours. Findings of the present study are in accordance

with this claim. Additionally, inability to express one's own feelings or understand the feelings of others is also related to communication impairments. This emotional disconnect can result in behaviours perceived as stereotypical. Autistic children might find it challenging to convey their emotions, leading to repetitive actions as a coping mechanism (Gabriels et al., 2015; Dichter et al., 2010). Results from these previous studies also match with the findings of this study conducted in a Pakistani context.

Results of this study are in line with other studies who found that cognitive inflexibility, inflexible thinking, organizational deficiencies, limited problem-solving ability, love for sameness, complexity of tasks and task breakdown, sensory sensitivities and insecurities, obsessions and inflexible interests, perceptual limitations (Reed, et al., 2014; LeMonda, et al., 2012; Dichter, et al., 2010) are some of the main causes of stereotypical behaviours among children with ASD. All these can result in a strong preference for routines and resistance to change, often observed as stereotypical behaviours (Raulston & Machaliecek, 2018). Additionally, organizational and time management deficiencies exacerbate this inflexibility, making it difficult for autistic children to manage tasks and transitions smoothly (Boyd, et al., 2012; Melo et al., 2020; Wood, et al., 2015).

Limited problem-solving skills and creativity also contribute to stereotypical behaviours. When faced with a problem, autistic children may rely on repetitive behaviours as a default response due to their limited ability to devise alternative solutions. This lack of creativity in problem-

solving underscores the necessity for structured support to develop these skills (Gabriels et al., 2015; Esbensen et al., 2009). Likewise, the complexity of tasks and the inability to break down complex tasks into manageable pieces can overwhelm autistic children, leading to increased stereotypical behaviours. These children may feel anxious or stressed when presented with tasks that appear too daunting, resorting to repetitive actions as a way to cope with the perceived complexity (Cashin & Yorke, 2018; Lang, et al., 2010; Robinson, et al., 2014; Wood et al., 2020). The findings of present study also shed light on effective intervention strategies used for manage inflexibility and stereotypical behaviours of children with ASD. Most of the strategies suggested for managing stereotypical behaviours of children with ASD in a Pakistani context are found effective in many earlier studies conducted worldwide for countries across the world. A love for sameness and difficulty accepting change is often a natural extension of obsessions and inflexible interests, where predictable routines provide a sense of security and control in an otherwise confusing environment (Kim et al., 2014; Jankovic, 2015; Harrop, 2015; Masi, et al., 2017; McNeill, 2019). The same is found in this study that definitive starting point and ending of an activity before moving to next task is useful strategy with autistic children. Likewise, a study by Sevin, et al., (2015) reported that notifying in advance about the upcoming event support smooth transition, while following a constant schedule reduce anxiety which may cause stereotypies. Teachers who participated in the present study reported that transition becomes easy when student oriented time tables and schedules are followed with children who exhibit restricted pattern of behavior.

Structured activities; precise, clear and to the point rules and expectations; prompting and reinforcement have been found effective intervention strategies for inflexible repetitive behavior of children with ASD by the teachers who participated in this study. Reducing, increasing or simple change in activity timing also play role in breaking rigidity of behaviours. Studies conducted in other parts of the world also noted effectiveness of planned activities, visual timetables and visual prompts in transition and completion of assigned tasks smoothly by autistic

children (Lin & Koegel, 2018; Zarafshan, et al., 2017).

The findings of this study correlate with previous studies who indicate that gradual familiarization/socialization including introducing and familiarizing new or unknown people, places or activities to the ASD child before an independent social encounter or event reduces outburst of unwanted repetitive or stereotypical behavior. Grahame, et al., (2015) reported that planning prior an activity can make the transitional process more acceptable. Lang, et al., (2010) and Sevin, et al. (2015) revealed that if the autistic child is made aware of the whole scenario and other elements of the targeted activity their resistance due to anxiety of unknown will subside. The results of this study are in accordance with the studies of Jankovic (2015) and Fisher, et al. (2019) who proved the efficacy of providing alternatives and choices to children with ASD. This study reported that providing appropriate alternatives and choices are found to be an effective approach in managing stereotypical behaviours of children with ASD.

### Conclusions

Based on the findings of this study, it was concluded that cognitive inflexibility, organizational deficiencies, limited problem-solving ability, love for sameness, complexity of tasks, difficulty breaking down a task, sensory sensitivities and insecurities, inability to express one's own feelings or understand the feelings of others, impaired communication, obsessions and inflexible interests, perceptual limitations are some of the main causes of stereotypical behaviours among children with ASD.

Effective intervention strategies used for manage rigidity, inflexibility and stereotypical behaviours of children with ASD include gradually familiarizing them to new, unknown situations, as well as with materials. In addition, clear expectations, structured activities, thorough elaboration of the rules, advanced notification of upcoming change, prompt cards, timers, provision of alternatives/choices and notifying beginning and ending of an activity to make transition easier and less resistant are among effective strategies to control stereotypical behaviours of children with ASD.

### Recommendations

Further studies should be conducted to explore the reasons for restricted repetitive behaviours and interventions used by teacher in greater depth by employing qualitative research methods. Study to identify feasibility of these interventions with parents group should also be conducted. Teacher and parent training programs should be arranged in to address stereotypical behaviours among children.

Awareness among parents, teachers and general population should be created about the effective interventions to reduce stereotypical behaviours in children with ASD in a Pakistani context. Mass media can be used for the said purpose. This will not only help in eliminated unwanted behaviours among ASDs but may also promote empathy and inclusion of these children in society.

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