

Use of an In-Class Sensory Activity Schedule for a Student with Autism: Critical Case Study

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Abstract

Many students with autism and intellectual disability demonstrate atypical sensory behaviours which impact on their schooling. Few studies provide empirical support for teachers using planned sensory activities in special education classrooms. Aim: To determine whether a classroom based Sensory Activity Schedule (SAS) improves behavioural outcomes for one student with ASD who demonstrated atypical sensory processing and associated challenging behaviour. Methods: Critical case study methods were used to describe changes in the frequency of challenging behaviour “incidents” recorded for one eight year old student with autism over one school term during implementation of a Sensory Activity Schedule. Results: There was a reduction in the reported frequency of challenging behaviour incidents which were associated with sensory triggers over one school term. Conclusion: When applied with caution, in context, and with appropriate training, a Sensory Activity Schedule was associated with a reduction in challenging behaviour incidents for one student with autism during classroom activities.

Keywords

Autism, Intellectual Disability, Sensory Activities, Special Education, Challenging Behaviour

1. Introduction

Autism Spectrum Disorder (ASD) is a developmental disability characterised by impairment in two core areas including social communication and repetitive and restricted interests (American Psychiatric Association, 2014). While atypical sensory processing is not considered a core feature of autism, children with autism often present

with differences to their peers in the way they process sensations embedded in everyday life (Case-Smith, Weaver, & Fristad, 2015). Children with ASD frequently have co-occurring intellectual disability (ID) (Matson & Shoemaker, 2009) which has an additional impact on their ability to participate and succeed within the classroom environment. Evidence of such atypical sensory processing in people with ASD and ID and its impact on function is found in autobiographical accounts, as well as through caregiver reports (Tomchek, Huebner, & Dunn, 2014) using measures such as The Sensory Profile (Dunn, 1999) and The Sensory Profile School Companion (Dunn, 2006), and observational assessments. Understanding the triggers to a child's behaviour is essential, as without this it is unlikely that any behaviour strategy will be sustainable. Although behaviours triggered by sensory processing difficulties within the school setting have been found to present a significant barrier to successful school participation (Ashburner, Rodger, Ziviani, & Hinder, 2014), few studies have considered the impact of different sensory environments and activities on the learning experiences of children with ASD. Brown and Dunn (2010) found significant differences in sensory processing in children with ASD across home and school settings where associated behaviours appeared to be due to sensory differences in those environments. Such research suggests that behaviour which impacts learning at school may be associated with sensory triggers in that environment and may therefore need to be addressed within that particular school setting. Although occupational therapists are frequently engaged to address behaviours that arise from student sensory processing difficulties at school, there is currently little evidence to support using sensory activities, sensory diets, or sensory strategies in the classroom, or methods to evaluate of the impact of such interventions (Weeks, Boshoff, & Stewart, 2012).

The assumption underlying use of sensory activities where challenging behaviours exist in the classroom is that they mediate the relationship and social behaviours of both teachers and students, and are only one factor among many in the complex relationships of teaching and learning (Oblinger, 2006). Included in the implementation of classroom and curriculum adaptations is a plan to systematically evaluate the behavioural outcomes in ways that are consistent with student goals, teacher and school processes. The aim of sensory interventions which are implemented within the classroom for children with challenging behaviours that are triggered by sensory events is to achieve self-regulation for school performance and to counteract inconsistent, situation specific, splintered performance which hinders overall achievement. While occupational therapists often use tests of specific function such as visual perceptual tests or measures of planning for diagnostic purposes, they are global measures that might not reflect the specificity of expected outcomes for particular students such as those with ASD and ID, and are not used to measure change. Goal based and criterion referenced evaluation provides the best evidence of the success of classroom based sensory interventions developed by therapists and implemented by teachers. The purpose of this case study was to investigate the effects of using a Sensory Activity Schedule to reduce challenging behaviours and increase participation for one child with ASD and ID by employing behavioural measures that were used and understood by teachers. This is the first step in a line of research to further verify its use.

2. Background

2.1. Sensory Processing, Autism and Intellectual Disability

Atypical sensory processing is widely reported in ASD and is more prevalent in children with ASD when compared with control groups of typically developing children (Tomchek et al., 2014) and children with developmental disabilities (Boyd et al., 2010; Ben-Sasson et al., 2009). Severity of difficulties in sensory processing has been correlated with severity of ASD (Ben-Sasson et al., 2009).

Boyd et al. (2010) describes three atypical sensory processing sub-types prevalent in children with ASD based on Dunn's (1999) four sub-type model: hyper-responsiveness (over-responding to sensory inputs), known as sensitivity and avoiding and hypo-responsiveness (under-responding to sensory inputs), known as low registration and sensory seeking (actively seeking sensory inputs). These sensory sub-types have been associated with repetitive behaviours in ASD (Ben-Sasson et al., 2009). Boyd et al. (2010) found hyper-responsiveness correlated with repetitive behaviours, compulsions, rituals and a tendency for sameness.

2.2. Challenging Behaviour and Autism

Individuals with ASD and ID are at risk of challenging behaviour which limits functional performance, partici-

pation and quality of life (Felce & Kerr, 2013). Behaviour is referred to as “challenging” when it persistently interferes with learning, (Jahoda, Willner, Pert, & MacMahon, 2013), or presents a danger to those in the environment due to its frequency, intensity or duration (Emerson, 1995). Many factors which characterise both ASD and ID have an impact on behavioural expression and include limited expressive and receptive communication skills, difficulties with social relating and misinterpretation of social cues, restricted interests, and complex sensory processing issues (Jahoda et al., 2013).

2.3. Sensory Activity Schedule (SAS) Intervention

The SAS described in this study involves a specific, planned and purposeful set of sensory activities that are used to enhance particular aspects of school performance within the classroom environment. The SAS reflects a non-positivist perspective of sensory processing which is defined as the mechanism of organising, making meaning, and responding to sensory experiences in everyday life (Dunn, 2007). It uses ecological assessment and intervention processes that target the capacity of a *particular classroom staff* to understand and manage a *particular child’s sensory processing needs* and responses that impact upon the *particular everyday demands* of their occupational life within their *particular classroom context*.

Based on the concept of a “sensory diet” originally developed by the Wilbargers (Wilbarger & Wilbarger, 1991), Sensory Activity Schedules are carefully constructed activity plans and consequent changes to sensory aspects of the classroom which have referents to a detailed assessment of a child’s sensory needs and the teaching staff’s capacity to carry out sensory activities where learning occurs. It is the sum of sensory based activities deemed necessary for a child to participate in school tasks (DET, 2011). Finding use of the term “sensory diet” unpalatable, educators and occupational therapists working with educators in Australia have asserted recent support for a modification of classroom based interventions adopting similar principles (DET, 2011). The researchers in this study termed them Sensory Activity Schedule, which comprise activities and environmental adjustments designed to complement the child’s sensory needs.

The following five key principles form the basis of the SAS used in this case study.

2.3.1. Evidence of Need

The philosophical underpinning of SAS intervention is sensory processing and its link to task performance. The need for the program therefore begins with identification of functional or learning need. Sensory processing difficulties are not addressed separate from the learning need of the child. This involves information gathering about what the child/family/school needs or wants to achieve. A functional behavioural assessment focuses on the extent to which the child is unable to engage in school tasks.

Many children with ASD and ID have behavioural manifestations that are similar to those triggered by reduced sensory processing. The SAS is used for children who demonstrate evidence of challenging behaviour that is consistently linked to specific sensory everyday events. If there are no sensory issues identified, it is likely that sensory interventions are not indicated. In this case study, the SAS intervention was designed for one child following formal and informal assessment of his sensory processing. Observed difficulties with sensory processing were having a persistent negative impact on classroom participation and performance in a way that was particular to this child.

2.3.2. Use of Sensory Activities

In this case study, sensory activities occurred with a classroom teacher and took approximately ten minutes twice a day. Activities chosen for use with this child included “heavy work” or tasks emphasising physical exertion and proprioception (for example, tug of war using an elasticised band, throwing, catching a weighted ball) and oral motor and respiratory tasks (for example, blowing a ping pong ball along the floor). These activities were selected as they appeared to have benefit for the child in terms of engaging in classroom tasks.

2.3.3. Task Specific

SAS intervention was designed and scheduled to occur at specific times, before specific work tasks took place. Use and timing of sensory activities targeted specific work tasks within the classroom that the teacher predicted would prompt challenging behaviour, rather aiming for a general behaviour change across the school day.

2.3.4. Teacher Directed

Use of the SAS targets child behavioural reactions to learning events in the classroom. This change is prompted by teaching staff knowing how to change the sensory environment to promote learning, and shape child reactions to sensory aspects of curriculum activities. This also implies being able to achieve considerable behavioural change on the part of teaching staff. Time for follow up and review is needed to build confidence and skill as teaching staff adopts suggested changes to the way daily learning activities might be carried out. In this case study, the school occupational therapist worked closely with the teachers to identify specific activities which could be used in the classroom. During this process, teachers were trained in the use of particular equipment and were able to provide feedback to the occupational therapist if they felt a particular activity needed to be changed. The school occupational therapist gained insight into the teacher's priorities as part of developing a relevant SAS for the child (Hinder & Ashburner, 2010).

2.3.5. Contextual Fit

Therapists working in schools should consider the classroom and school context when designing school based interventions (Chapparo & Lowe, 2011). An important aspect of assessment before implementing any sensory processing strategies such as the SAS within a school environment is to determine 1) whether the school context contains the resources required (human and equipment); and 2) the amount and type of support either from within the school network, or from therapy services through an initial training phase and follow up. The unique context of the classroom which included space, time, other child needs and staffing capacity was considered when designing SAS intervention in this case study.

3. Method

3.1. Design

This research employed critical case study design. A critical case study is a specific paradigmatic example of characteristics assumed to be present in a general population and offers strategic importance in the initial stages of a line of research (Creswell, 2009). The intention of research utilising critical case study method is to gain an "in-depth" understanding of a target phenomenon in a "real-life" setting that is unknown (Yin, 2009). In this study, purposeful dyadic sampling of one child with ASD and his teachers was used to describe the impact of a Sensory Activity Schedule on the child's behaviour in the real-life classroom environment and utilizing measures understood and used by the student's teachers. Appropriate approvals were gained from the school and the child's parents gave written consent for his participation. Critical case study method was used as there is no research which describes 1) the effectiveness of sensory activity schedules (SAS) on the specific in-class challenging behaviour of children with ASD and; 2) the impact of a SAS administered by teachers within the real-world classroom environment.

3.2. Participant: LR

LR was eight 8 years old with ASD, mild ID, and severely limited expressive and receptive language. LR began formal schooling at a special school for children with autism in a small class of six children staffed by a teacher and teacher's aide. LR was later moved into a support class of nine children with autism at a mainstream school. This class placement aimed to offer LR opportunities to integrate into mainstream classes for certain subjects (Keane, Aldridge, Costley, & Clark, 2012) and participate in fully integrated playground activities. LR began his class placement at this school in January at the beginning of the school year. Staffing in LR's class consisted of two full time teachers and one teacher's aide. Support staff available for consultation consisted of a psychologist and an occupational therapist. Two weeks after LR's commencement, staff reported difficulties with managing LR's challenging behaviour. A change of class placement for LR was requested due to concerns for the safety of other children in the class as well as mainstream peers. In response, the school principal sought assistance to address LR's difficulties, which included a referral to the school occupational therapist to determine the function or purpose behind LR's behaviour and to develop strategies to complement existing behaviour management strategies in the classroom. Staff also sought occupational therapy support to determine if any of LR's behaviours were "sensory" in nature.

LR's behaviour presented a challenge for staff within his school environment. Staff reported that they utilised

a positive behaviour support (PBS) approach to LR's behaviour management. PBS involves a range of proactive and reactive interventions aimed at increasing a child's access to meaningful and preferred opportunities as well as reducing challenging behaviours through an understanding of the function of the behaviour (Gore, McGill, Toogood, Allen et al., 2013). Neitzel (2010) suggests that structure, routine, clear behavioural expectations as well as noticing and praising desired behaviours are important components of behaviour management in the classroom. Reactive management of challenging behaviour involves deescalating situations once they occur (Menon, Baburai, & Bernard, 2012). In LR's case, PBS strategies were commonly used within the school before staff initiated an occupational therapy referral. Staff frequently attempted to verbally correct his behaviour while it was occurring and remind him of the expectations within the classroom. Staff reported that using clear structure, routine and visual supports was successful to some extent, however, LR continued to display challenging behaviours that reduced his participation in table-top curriculum activities, and included running and skipping around the classroom. Verbal correction was particularly unsuccessful with LR often not responding to verbal directions.

Gore et al. (2013) highlights the importance of considering the function of the behaviour when selecting an intervention approach. This approach involves data driven functional behaviour analysis. As behaviour is often exhibited to obtain something or avoid something (Murray-Slutsky & Paris, 2005), staff used scatter plots to determine the frequency and timing of LR's behaviour as well as an Antecedent-Behaviour-Consequence (ABC) data collection format. This included description of events immediately before the challenging behaviour to determine triggers and immediately after to determine what may have increased, decreased or maintained the behaviour. ABC data showed that many of LR's challenging behaviours were associated with sensory seeking and further sensory assessment was conducted.

3.2.1. Assessment of LR's Sensory Processing

Information about LR's responses to sensory elements of the school participation was gathered from observation by the occupational therapist in the classroom and playground, verbal reports given by his teachers, and scores from The Sensory Profile: School Companion (SPSC) (Dunn, 2006) which was completed by a teacher who knew him well. The SPSC is a teacher questionnaire consisting of 62 questions across five areas. These areas include auditory, visual, movement and touch processing as well as how sensory issues may be linked to behaviour. LR scored in the "probable difference" range for all environmental sensations, indicating that LR's behaviours and difficulty coping within the classroom and playground environment may have been linked to atypical sensory processing. Table 1 shows the SPSC scores.

Classroom observations by the occupational therapist were consistent with these results. Observation and teacher reports indicated that LR often sought extra movement inputs. He remained on task for a short period of time before engaging in activities such as skipping around the classroom or running out the door. In the absence of an observable reason, LR hit and pushed other children in the playground and in class, perhaps in an attempt to gain extra sensory input from the activity (Dunn, 2006), or an attempt to avoid or control sensory components of the social playground activity. Boyd et al. (2010) reported that children with a tendency toward hyper-responsiveness (sensory avoiding) were more likely to exhibit compulsive behaviours and an insistence on sameness.

Table 1. Sensory profile: school companion scores.

Quadrant	Raw Score	Range
Low Registration	62/85	Probable Difference
Sensory Seeking	40/60	Probable Difference
Sensitivity	60/80	Typical
Avoiding	62/85	Probable Difference
School Factor	Raw Score	Range
1	75/105	Probable Difference
2	46/65	Typical
3	65/85	Probable Difference
4	38/55	Probable Difference

School factor scores are described by [Dunn \(2006\)](#) as illustrating the impact of sensory processing within the classroom context. LR scored in the probable difference range for school factors one, three and four. School factor one indicates that LR presented with a high neurological threshold and required extra sensory input in order to feel alert and ready for learning. This school factor score was consistent with reports and data from classroom staff as well as observations from the occupational therapist outlined above. A probable difference score on school factor three indicated that LR was quickly overloaded by sensory input within particular learning environments. Data gleaned from teacher reports and observations indicated that LR frequently ran from the classroom. LR exhibited behaviours such as hitting or kicking when faced with too much sensory information or when a task was too difficult. Hitting and kicking was thought to be not only a protective behavioural response triggered by increased anxiety, but also an attempt to obtain additional proprioceptive inputs to calm himself down. Situations in which he was less likely to engage in these challenging behaviours were observed to be during activities involving whole body movement and muscle action against resistance, indicating a preference for this type of input to maintain control. School factor four describes the tendency for a child to become overloaded within the learning environment as well as difficulties detecting the most important information to pay attention to ([Dunn, 2006](#)).

3.2.2. Sensory Activity Schedule Intervention for LR

A SAS was recommended by the occupational therapist in addition to the PBS strategies which were currently in use. One teacher participated in a one day training program on the use of sensory activities within the classroom and the conceptual basis for this approach. The purpose of the SAS was explained to the teacher as “*providing LR with a scheduled set of opportunities for heavy work in order to calm his nervous system and to decrease inappropriate seeking of proprioceptive input*”. The frequency of activities proposed was three heavy work activities and one calming/respiratory activity to do with LR three times per day: upon arrival at school, 20 mins before morning tea and 20 mins before lunch. Examples of activities are listed in [Table 2](#). However, staff reported that due to time constraints, intervention took place twice per day.

After initial follow up, the two activities italicized in [Table 2](#) (30 big jumps on the mini-trampoline and Jump into pillows or mat landing on bottom/knees) were removed from the SAS approximately two weeks after intervention began. Classroom staff reported that these two activities failed to decrease his running or hitting behaviours. The SAS was revised to include alternative activities providing proprioceptive input without the accompanying vestibular input in the heavy work section.

3.2.3. Data Collection Procedures and Instruments

Data on frequency and type of challenging behaviour were collected by classroom staff from March (the beginning of the Australian school year) and carried on for three months (over two school terms). By June, data collection on LR stopped as he was participating in the class program with minimal incidents. The following measures

Table 2. Sensory activities used with LR in the classroom.

HEAVY WORK ACTIVITIES	CALMING/RESPIRATORY ACTIVITIES
<i>30 big jumps on the mini-trampoline</i>	1/4 fill a container with water and soap. LR blows through therapy tubing into the container to make a bubble monster
Play a game of tug-of-war with a theraband	Blow on an item from the respiratory kit
Throwing and catching a weighted ball (or a bottle filled with sand)	Listen to music that has 50/70 beats per minute
Wheelbarrow walks with an adult holding feet	Roll up tightly in a mat or sheet
Crawl back and forth through a tunnel while pushing a weighted ball	Blow a ping pong ball along the floor whilst crawling on hands and knees
Row, row, row your boat	
<i>Jump into pillows or mat landing on bottom/knees</i>	
Pull a friend across the room on a blanket	
Try to push a wall over with hands then feet	

were employed.

3.3. Standard Incident Reports

These are standard reports used by the school teaching staff which document behavioural “incidents” that include the type, time and consequence of the behaviour. “Incidents” were defined as an event where in the perception of the classroom staff, safety of staff or children was put at risk as a result of the behaviour, and/or when there was an interruption to the routine/class program causing the teaching and learning of LR or other children to be affected for longer than 10 - 15 minutes. The number of incidents is charted in **Figure 1**.

3.4. Antecedent-Behaviour-Consequence (ABC) Charts.

ABC charts are an objective description of events immediately, during and after the behaviour to determine its motivation. ABC data collected about LR’s behaviours during “incidents” were categorised into three groups using guidelines for identification of behavioural motivators in children with ASD as sensory or not (Murray-Slutsky & Paris, 2005). First, those where the antecedent was observed to be sensory and those where the antecedent was non-sensory. *Sensory based behaviours* were those LR used to obtain sensory inputs or to avoid sensory inputs. For example, running or skipping around the classroom continually. Second, sensory based behaviours were further split into whether they appeared to be associated with *primary* or *secondary* sensory motivations. Primary sensory based behaviours were those with an explicit sensory function. For example, when LR attempted to gain proprioceptive input through an action such as pushing items within the classroom, or continually running, secondary sensory based behaviours were exhibited as coping behaviours which were characterised by seeking or avoiding sensory input, but which occurred in response to anxiety or difficulty performing a task. For example, at times, LR engaged in sensory seeking behaviours as a means to calm down rather than to experience sensory input per se. These events may have had sensory and behavioural functions and may have been related to LR’s tendency to become overloaded by both sensory and cognitive input.

Third, *non-sensory behaviours* were identified. Non-sensory based behaviours usually occurred when LR was unable to communicate his needs to adults or other children (Murray-Slutsky & Paris, 2005). Non-sensory based avoiding behaviours were most common, and were used to avoid people, tasks or situations when LR’s communication capacity resulted in him being overwhelmed and not fully understanding the instruction. For example, a staff member was standing next to LR and he verbalised “go away”. When the staff member remained (antecedent), LR hit her (behaviour) which resulted in her moving away (consequence).

4. Results

First, the total number of sensory and non-sensory based incidents per school day was calculated by taking the number of incidences documented by class staff and dividing this by the number of school days LR attended school in that month (see **Figure 2**). This calculation was used as some months had fewer school days due to school holidays and public holidays.

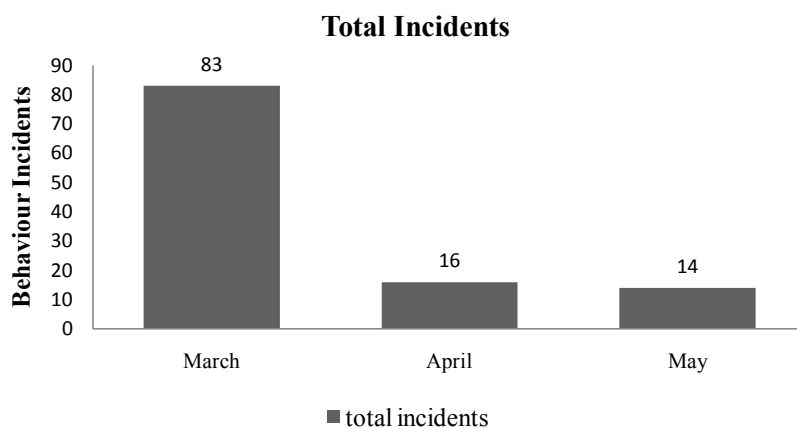


Figure 1. Total behaviour incidences.

Second, incidences of specific primary and secondary sensory behaviours and non-sensory behaviours were calculated and graphed (see **Figure 3**).

Data indicated that there was a reduction in all behaviour incidents during the time the SAS was implemented. None of the behaviours was extinguished. March had the highest number of sensory based and non-sensory based behaviour. Sensory Activity Schedule intervention was commenced in the first week of March and was used in addition to PBS strategies which were already being implemented.

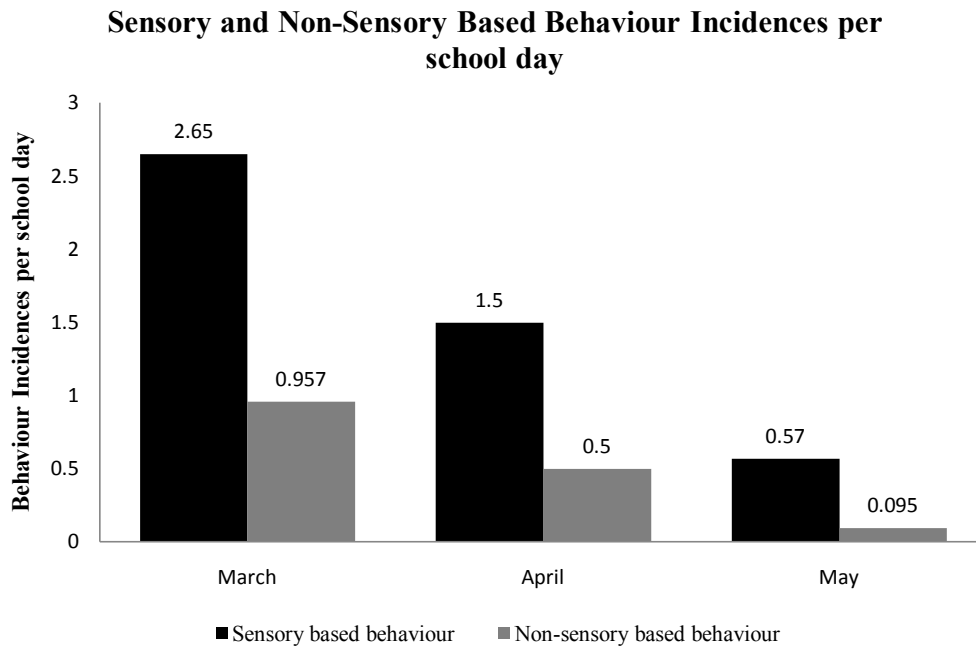


Figure 2. Incidences of sensory and non-sensory behaviour per school day.

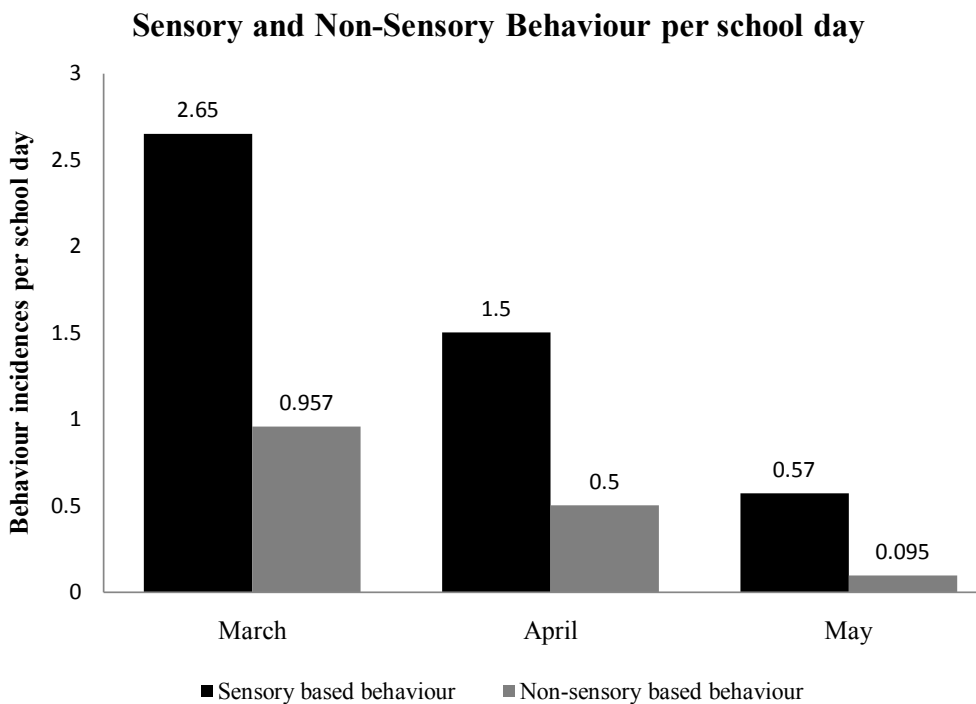


Figure 3. Incidences of primary and secondary sensory and non-sensory behaviour per school day.

5. Discussion

This critical case study aimed to document the impact of a Sensory Activity Schedule on challenging behaviour exhibited by one child with ASD and ID. The SAS was implemented by school staff after training from an occupational therapist. After implementation of SAS, data indicated that documented incidents of challenging behaviour which were interpreted to be both sensory and non-sensory in motivation declined. There may be several reasons for this finding. First, this intervention may have changed the sensory context of the learning environment such that it enabled LR's successful participation (Chapparo & Lowe, 2011). Specifically, the nature of activities within the SAS may have contributed to a change in the way LR was able to regulate and respond to sensory cues in the classroom resulting in expected learning behaviours. For example, proprioceptive input provided by the SAS at regular intervals may have afforded LR the opportunity to meet his sensory needs (heavy resistance) during sedentary tasks without the need to hit others. The scheduling of activities at predictable times and prior to difficult tasks may have contributed to LR being able to predict and learn to 'get ready' for task performance. This finding is consistent with literature that advocates provision of set opportunities to engage in sensory input throughout the school day may enable participation (Ashburner et al., 2014).

Second, the results demonstrated a reduction in challenging behaviours during events that were not assessed as sensory. Using positive behaviour support principles, the aim of a SAS is not to fix sensory processing disorders, but to implement strategies to enable task performance. It uses sensory activities to assist students to regulate their arousal and anxiety during events that may pose sensory or other types of threats. A wealth of evidence describes how students with ASD and ID are likely to experience anxiety when there is poor fit between their needs and their environment (Dunlap et al., 2008). While this may be whenever there is limited opportunity to gain sensory inputs, it also may be when there is a need to gain social attention, escape from or avoid excessive demands, gain access to preferred activities, exert choice or control, understand and communicate with the teachers and others. SAS may exert a regulatory influence on anxiety in general and in turn, challenging behaviours. Evidence supports use of 'graded exposure', a core component in managing anxiety in children with ASD. Graded exposure involves supporting students with anxiety to try tasks or activities that increase their stress or anxiety (Drahota, Wood, Sze, & van Dyke, 2011). It is possible that introduction of SAS activities combined with difficult tasks provides the graded support needed to reduced anxiety both in the presence and absence of sensory threat.

Third, use of a regular set of sensory activities that were linked to specific task performance may have afforded the teacher an additional set of prompts and cues to those already in place to control LR's behaviour without waiting for the challenging behaviours to erupt.

Fourth, the SAS used in this study was designed by the occupational therapist and the teacher collaboratively. Many factors were taken into account when designing the intervention including LR's individual sensory needs as indicated by standardised assessment, observations of LR in the school environment as well as written and verbal reports from teachers. Assessment involving many different forms of information gathering has been identified as best practice when dealing with complex sensory-behavioural manifestations in ASD and ID (Schaaf & Blanche, 2011). Similar individualised assessment and SAS development would be necessary if the intervention reported here were to be used with another child. It is anticipated that LR will need regular reviews of his sensory needs to ensure that activities continue to be age and context appropriate in the ongoing management of challenging behaviour.

Finally, this study showed how the use of SAS may complement the use of PBS in classrooms for children with ASD and ID. Data indicated that many of LR's behaviours were triggered by sensory events or sensory need. The process of analysing ABC charts allowed a more precise description of behaviours that were sensory based and those that were not. The data indicated that while an SAS was implemented, challenging behaviours reduced. Further research over longer periods may address the extent to which results are maintained in the classroom and generalized to other contexts.

As there are several hypotheses which may explain the findings, caution should be used to attribute the positive results obtained with this child to use of the SAS alone. Factors other than the SAS may have also contributed including a change in the way staff interacted with LR or a change to LR's daily timetable of activities. Although staff reports indicated that the *amount* of learning assistance LR received was the same before and during use of the SAS, the type of interaction changed with introduction of SAS. There are obvious limitations to generalising the results of this study including the use of a case study design. The manner in which data were col-

lected makes it impossible to conclude that SAS alone contributed to a positive outcome for LR. The data collected were collected by LR's teacher. Teachers other than those involved in children's school performance might be used in future studies to independently evaluate the data collected.

This case study demonstrated how an effective system of managing sensory issues in the classroom to enable successful learning and a reduction in behaviour incidents. This was achieved through consultation with the teacher, the use of school based equipment and an evaluation method that was familiar to the teacher. The results of this study does not support the use of SAS to ameliorate sensory difficulties, but supports a performance based approach where changes were made to the learning and sensory environment in the classroom which successfully enabled LR's classroom performance. LR and his teachers were taught sensory management strategies by the occupational therapist which fit within the school context.

6. Conclusion

Research literature remains inconclusive on the efficacy of classroom based sensory interventions for children with ASD. This case study demonstrates preliminary evidence which suggests sensory based intervention such as SAS may be effective for managing sensory-based challenging behaviours demonstrated by children with ASD in a classroom setting. A more rigorous research design involving a randomised control trial and a large homogenous sample is required to determine the effectiveness of sensory activities for reducing challenging behaviour in a classroom setting with children with ASD.

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