




The impact of the Sensory Protocol on the functional and behavioural responses of children with intellectual disability, sensory defensiveness and behaviour support needs

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Background to starting study

- 58 DADHC Occupational Therapists trained in the Sensory Protocol
- Therapists wanted controlled and rigorous implementation
- Increase in number of BIS referrals regarding sensory based behaviour problems
- Collaboration with researcher




Aim

- To determine whether the Sensory Protocol, when used by parents/carers under the guidance of trained occupational therapists improves the functional performance and behavioural responses for children with severe sensory defensiveness.



What is Sensory Defensiveness?


- Many children with developmental delay/intellectual disability interpret everyday sensory input as threatening or noxious (Dunn, 1999; Wilbarger & Wilbarger, 1991).
- The consequence is an extreme behavioural response to sensory dimensions of everyday tasks such as bathing, eating, and dressing, referred to as 'severe sensory defensiveness' (Trott, 2002).



Methodology

- **Design:** A randomised controlled study

Children and nominated carers or parents were randomly allocated to either the experimental intervention (Group 1 Sensory Intervention) or a control intervention (Group 2 Behavioural Intervention).



Sensory intervention

- An individualised Sensory Diet and Therapressure Program as described by Wilbarger (2007) was developed for each child.
- Parent/carer received training in the intervention and the therapist followed up fortnightly.

Example Sensory Diet

Time	Key events in the day	DPPT	Other sensory diet activities	Comments
7.00	Wake up	✓	Jump and crash on bed	Jade woke in angry mood
8.00	Breakfast	✓	Crunchy cereal	
9.00	Go to school in car		Hand fidget toy Preferred music	
10.30	Morning tea	✓	Crunchy snacks	
12.30pm	Lunch	✓	Crunchy snacks Handstands and Tag with friends	
3.15	Bus arrives home		Jump on trampoline 15 minutes	Arrived home calm
3.30	Outdoor play	✓	Runs with sister, play dolls, throw ball	Found Jade enjoys making cubby houses
4.30	Homework		Hand fidget toy Glass of juice with straw	
5.30	TV time	✓	Sit on rocking chair to watch television	
6.30pm	Dinner		Chewy foods in dinner	
	Bath		Warm bath with firm sponge	
8.00	Bedtime	✓	Rock on parent's lap and read story. Then listen to songs on tape 15 minutes.	



- ### Behaviour intervention
- Changing environmental triggers for behaviour
 - Altering the consequences for behaviour
 - Positive praise
 - Parent/child skill building
 - Strategies for managing emotions
 - Medication review
 - Service system supports such as communication aids or human assistance for specific tasks.


- ### Participants
- 16 children** (11M: 5F, 4 – 10 years: Mn 5.8)
1. Diagnosis of developmental delay/intellectual disability
 2. Required support for behaviour problems, such as withdrawal, stereotypy, self-injury, aggression and tantrums
 3. Evidence of sensory defensiveness in two or more functional domains (e.g. self care at home and play at school)
 4. Lived in stable care arrangement e.g. family

- ### Outcome Measures
- **Developmental Behaviour Checklist (DBC)** (Einfeld & Tonge, 2002)
 - **4 goal attainment scales (GAS)** were determined by adult carer/parent
 - **Parent Sensory Protocol Diary**


Preliminary Findings

Question 1


What is the difference in outcomes over the intervention period between children in Group 1 (Sensory) and Group 2 (Behaviour) as measured by Goal Attainment Scale (GAS) scores?



- A statistically significant change on total GAS T scores over the intervention period was found in both groups (p=.001). This indicates that **both interventions obtained positive outcomes as measured by parent goals.**
- A statistically significant change in overall GAS scores was found between the Sensory and Behaviour groups (p= .001). This indicates **more positive outcomes for the sensory group in comparison to the behaviour group.**




- No difference between intervention groups on Functional GAS scores indicating **sensory and behavioural interventions were equally effective in changing functional behaviour.**
- A statistically significant difference in Behavioural GAS scores was found between the Sensory and Behaviour groups (p=.001). This indicates that the **sensory intervention is more effective in achieving desired behavioural change than behavioural intervention.**



Functional gains:

After the suggestions of the social story, reassurance and buddy system, the girls have started to play with him (Teacher of Will).


Jane's behaviour when she is having a shower has changed significantly, she even seems to enjoy it most of the time (Mother of Jane).



Behavioural gains:


Some days she doesn't do it all, the rocking, other days quite frequently (Mother of Jane)

Ben is lashing out at others less (Mother of Ben)



Question 2

What is the difference in outcomes over the intervention period between children in Group 1 (Sensory) and Group 2 (Behaviour) as measured by the Developmental Behaviour Checklist (DBC)?




- No differences in change to Total DBC scores over the intervention period between the two treatment groups.
- A statistically significant difference in change to DBC Anxiety subscale scores over the intervention period between the Sensory and Behaviour groups (p= .03). This indicated that **the sensory intervention resulted in greater reduction in anxiety in comparison to the behaviour intervention.**



Changes in children's anxiety


Simon now shows no anxious running behaviour (Mother of Simon).

I can get closer to her now. I can sit next to her for about 10 minutes and she's more relaxed (Brother of Sally).




Question 3

- What was the difference in parent perceptions of change to frequency and severity of behaviour over the intervention period between children in Group 1(Sensory) and Group 2 (Behaviour) as measured by the Parent Sensory Protocol Diary?




Parent's Perceptions of Frequency of Behaviour

- There is **no statistically significant difference** between the Sensory and Behavioural Groups ($p = .146$)
- Parent's perceived that there was no greater reduction in frequency of behaviour by using the behavioural compared to the sensory intervention.



Parent's Perceptions of Severity of Behaviour

- There is **a statistically significant difference** between the Sensory and Behavioural Groups ($p = .01$). This indicates that parents perceived that the children in the Sensory group **improved more** in Severity than the children in the Behaviour Group.
- Parent's perceived that there was a greater reduction in severity of behaviour from using the sensory intervention.




He has become the sandbox police, putting things back where they belong (Mother of Jaden).

He's more cooperative after the brushing..He's running away less (Father of Luke)


Tantrums were not happening this week at home, school or respite (Parents of Tom)

Elsie has improved with her eating habits, she is more settled (Mother of Elsie)



Question 4 and 5


- How easy/difficult did parent's perceive that the interventions were to use for children in Group 1 (Sensory) compared to Group 2 (Behaviour)?
- How much did parents perceive that the interventions contributed to daily life for children in Group 1(Sensory) compared to Group 2 (Behaviour)?



Parent's Perceptions of Ease of Using the Intervention

- Parent's perceived that it was significantly easier to use the sensory intervention than the behavioural intervention at the beginning (p=.016) of the study and at week 6 (p=.009) of the study.

Sally's mother reported that after using the sensory intervention she was able to apply previously learnt behavioural strategies which they had been unable to use before.



Parent's Perceptions of the Contribution of Intervention to Daily Life


- Parent's in the sensory group perceived that the sensory intervention contributed significantly more to their child's daily life than the parent's receiving the behavioural intervention at the beginning (p=.004) and at week 6 (p=.002) of the study.



Dave's overall behaviour seems to be improving and he is much more settled and less stressed. We went out to the local shopping centre for coffee. Dave sat beautifully (Mother of Dave)


Jeremy was able to stay asleep 6 out of 7 nights when previously he had woken almost every night during sleep time (Jeremy's mother).

Emilio used to run away when we were out in the community. Now he has started to walk beside us (Emilio's parents).



Lachlan now follows the house rules such as having quiet play which has given me time to get the daily jobs done (Lachlan's mother).

- Family life became more manageable and community activities were able to occur without parents being concerned about their children's behaviour. These outcomes were all very positive and had an impact on the overall family functioning



Conclusion

- Preliminary findings indicate that the sensory intervention is more effective than behavioural intervention for improving the functional performance and behavioural responses of children with intellectual disability, sensory defensiveness and behaviour support needs.

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