



The sensory profile of children in Danish primary school

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Background

- In Denmark, 79.99% of children attend public school.
- 45min daily physical activity.
- Not all children possess the necessary motor skills to participate in the physical activity offered at schools.
- Perhaps due to sensory processing (SP) difficulties.

Background

- SP refers to the ability to, upon receiving sensory information, being able to regulate and organize responses in an adaptive and graded manner.
- Correlation between physical activities and SP abilities.
- SP difficulties can affect children's ability to concentrate, and thereby also to learn while attending school.
- Children with SP difficulties have lower levels of participation and enjoyment in everyday activities.

Aim

- To investigate and describe the prevalence of children, in the Danish primary school, who might have SP difficulties.
- To explore possible cofactors such as gender, participation in sports outside of school, or parents level of education.

Participants & recruitment

- Participants in this study were parents to children attending 0-3 grade in Danish public schools.
- The total sample of participants (n=2041) was recruited from 12 municipalities across Denmark.
- Over a period of two months.

Method

- The study used the Danish translation of the Short Sensory Profile (SSP) together with demographics.
- SSP; a screening tool, where the parents are asked to assess how often they observe a described behavior from the child.
- Both section scores and total scores are considered, with the overall score ranging from 38-190.

Participants

A total of 1721 participant responses were included in the analysis, 320 (15,68%) were excluded, due to lack of responses to parts of

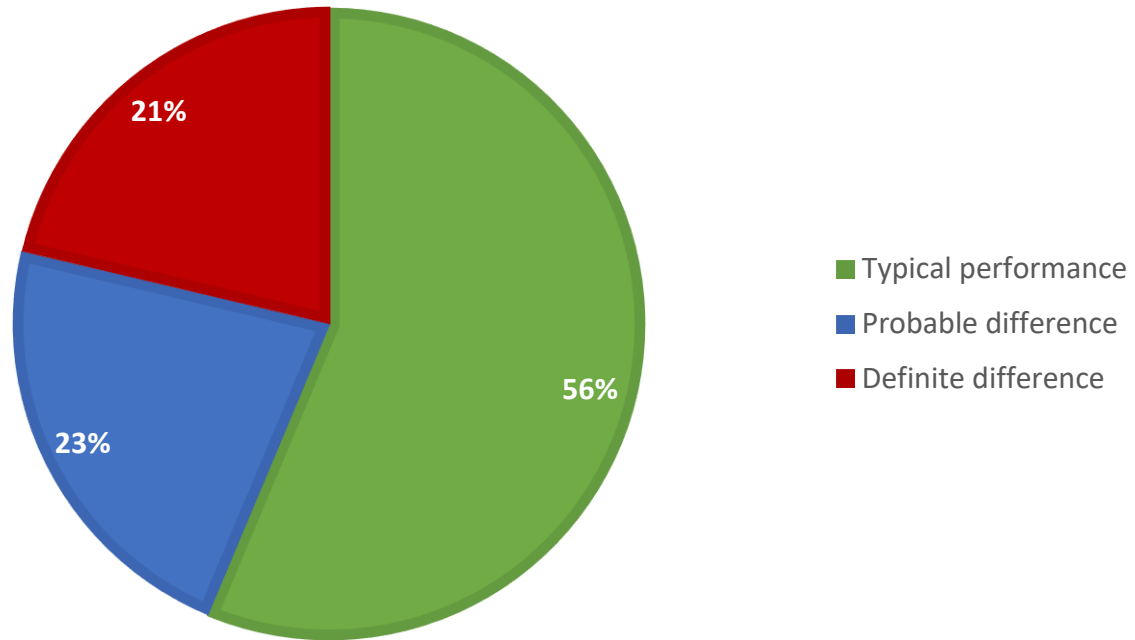
Demographic characteristics of participants (n=1721)			
The children:	Girls	Boys	Total sample
Gender*			
	46.54% (n=801)	53.22% (n=916)	
Mean age, years (SD)	7.54 (SD: 1.19)	7.49 (SD: 1.23)	7.32 (SD: 1.21)
Sports or gymnastics			
No	17.48% (n=140)	22.38% (n=205)	20.09% (n=346)
Once a week	45.57% (n=365)	34.17% (n=313)	39.49% (n=679)
More than once a week	36.95% (n=296)	43.45% (n=398)	40.42% (n=696)
Geographic			
Jylland	44.32% (n=355)	44.43% (n=407)	44.34% (n=764)
Sjælland	32.08% (n=257)	30.13% (n=267)	30.99% (n=534)
Smaller islands	23.60% (n=189)	25.44% (n=233)	24.67% (n=425)
Parental level of education			
None/youth	17.25% (n=265)	18.14% (n=318)	17.72% (n=585)
Short academic	21.09% (n=324)	21.22% (n=372)	21.21% (n=700)
Medium academic	38.15% (n=586)	38.39% (n=673)	38.23% (n=1262)
Long academic	23.50% (n=361)	22.25% (n=390)	22.84% (n=754)

* N=4 Missing that don't identify as boy or girl (Mean age 7.51 years)

Results

The prevalence of Danish schoolchildren who may have SP difficulties and possible cofactors.

TOTAL SHORT SENSORY PROFILE SCORES



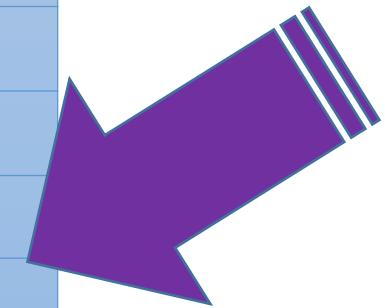
Correlation of Short sensory profile (n 1721) and cofactors

	Kendall's tau-b	P
Sports or gymnastics outside of school (n 1721)	0.18	<0.001
Parental education level (n 3301) *	0.04	0.01
Geographic's (n 1721)	0.07	0.001

* 141 missing, due to one of the parents' level of education was unknown

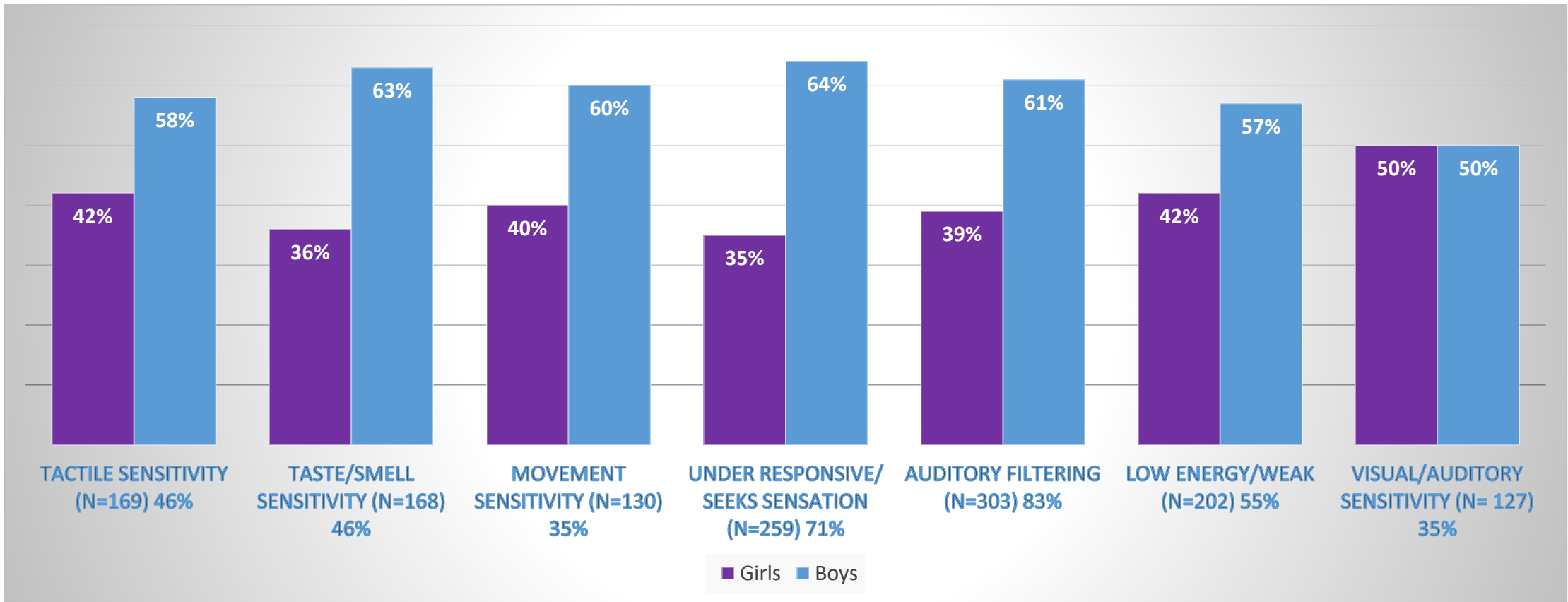
Results

Short Sensory Profile scores			
	Typical performance	Probable difference	Definite difference
	% (n)	% (n)	% (n)
Total scores	56.3 (950)	22.4 (386)	21.3 (367)
Tactile sensitivity	72.14 (1243)	15.9 (274)	11.96 (206)
Taste/smell sensitivity	65.35 (1126)	17.88 (308)	16.77 (289)
Movement sensitivity	72.90 (1256)	16.6 (286)	10.5 (181)
Under responsive/ seeks sensation	43.93 (757)	23.27 (401)	32.79 (565)
Auditory filtering	47.07 (811)	21.82 (376)	31.11 (536)
Low energy/weak	73.65 (1269)	9.63 (166)	16.72 (288)
Visual/auditory sensitivity	79.8 (1375)	12.07 (208)	8.13 (140)



Gender differences

The subgroup scores of children with total SSP score suggesting sensory processing difficulties (n=367)



Discussion

- 21.3% out of the 1721 children showed SP difficulties
 - Additional 22.4% might be at risk of having SP difficulties.
- In 2012, in Puerto Rico, Román-Oyola & Reynolds found that 19.9% children had SP difficulties, with no significant link to the household income.
- Both studies found that the subgroup of the SSP where most children had definite difference, was regarding under-responsive/sensory seeking behavior (Danish = 32.79% and Puerto Rican = 38.3%).

Perspectives and possible implications

- Knowledge of how many Danish schoolchildren who might have SP difficulties.
- Awareness of a issue that the Danish school system could benefit from addressing.

References

- **Undervisningsministeriet.** Undervisningsministeriet.dk. *Elevtal i folkeskolen og frie skoler*. [Online] Undervisningsministeriet, 11. 03 2016. [Citeret: 17. 01 2017.] <https://www.uvm.dk/Service/Statistik/Statistik-om-folkeskolen-og-frie-skoler/Statistik-om-elever-i-folkeskolen-og-frie-skoler/Elevtal-i-folkeskolen-og-frie-skoler?allowCookies=on>.
- **Ministeriet for Børn, Undervisning og Ligestilling.** *Bekendtgørelse af lov om folkeskolen*. København : Ministeriet for Børn, Undervisning og Ligestilling, 2016. LBK nr 747.
- **Bonke, J. og Greve, J.** *Bruger skolebørn tiden hensigtsmæssigt? Om søvn, spisning, motion, samvær og trivsel*. Odense : Rockwool Fondens Forskningsenhed & Syddansk Universitetsforlag, 2013. 978 87 7674 687 2.
- **Dunn, W.** *The Impact of Sensory Processing Abilities on the Daily Lives of Young Children and Their Families: A Conceptual Model*. 9(4); 23-35, Kansas City, Kansas : Aspen Publishers, Inc., 1997, Årg. Inf Young Children.
- **Fisher, A. G., Murray, E. A. og Bundy, A. C.** *Sensory intergration, Theory and Practice*. Philadelphia : F.A. Davis company, 1991.
- **Bar-Shalita, T., Vatine, JJ. og Parush, S.** Sensory modulation disorder: a risk factor for participation in daily life activities. *Developmental Medicine & Child Neurology*. 2008, 50, p: 932-937.
- **Chien, C., et al.** Sensory processing and its relationship with children's daily life participation. *Physical & occupational therapy in pediatrics*. 2016, 36(1), s. 73-87.
- **May-Benson, T. A. og Koomar, J. A.** Systematic Review of the Research Evidence Examining the Effectiveness of Interventions Using a Sensory Integrative Approach for Children. *American Journal of Occupational Therapy*. 2010, 64 s.403-414.

References

- **Bundy, A. C., et al.** How Does Sensory Processing Dysfunction Affect Play? *The American Journal of Occupational Therapy*. 2007, 61, p: 201-208.
- **Román-Oyola, R. og Reynolds, S.** Prevalence of Sensory Modulation Disorder among Puerto Rican Preschoolers: An Analysis Focused on Socioeconomic Status Variables. *Occupational Therapy International*. 2013, 20, p: 144-154.
- **Dunn, W.** *Technical Report*. s.l. : Pearsons Education, 2008.
- **McIntosh, D. N., Miller, L. J. og Shyu, V.** Development and validation of Short Sensory Profile. [forfatter] W. Dunn. *Sensory profile manual*. San Antonio, TX : Psychological Corporation, 1999.
- **Pearson.** Sensory Profile introduktion. *pearsonassessment.dk*. [Online] [Citeret: 17. 02 2017.] <http://www.pearsonassessment.dk/productfile/index/view/fileid/83/>.
- **Statens Institut for Folkesundhed.** *Folkesundhedsrapporten*. Denmark : Statens Institut for Folkesundhed, 2007.
- **Nielsen, Tina og Kreiner, Svend.** *SPSS introduktion til databehandling & statistisk analyse*. Gylling : Jurist- og økonomforbundets forlag, 2003.