

Play structures appear to promote use of speech in preschoolers

Results from a pilot study

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Introduction

- Children's language skills in early childhood are correlated with:
 - Socio-emotional skills (Mashburn et al. 2008)
 - Executive functions (Gooch et al. 2016)
 - Theory of mind (Milligan et al. 2007)
- Children's language development during early childhood predicts reading skills later in school (Storch & Whitehurst, 2002; Kendeou et al., 2009)
- Ensuring strong language skills in children is a major focal point of early educational research (NELP, 2008). However, whereas the far majority of this research has focused on the role of indoor, teacher-directed activities in improving children's language outcomes (see Markussen-Brown et al. 2017 for a review), few studies have investigated the role of outdoor play.
- This is despite evidence that play influences the development of language and language-related skills in children (Weisberg et al. 2013).
- Even less research exists regarding the role that playground structures may play in promoting children's language development.

Research Objectives

- To explore whether play structures influence children's language use.
- To explore whether play structures influence children's social and cognitive play.
- To explore the influence of different activity panels on children's play.

Method

Participants

- Four typically developing 3-year-old children (mean: 42 months).
- All children were monolingual Danish speakers with no family history of speech impairment.

The Playstructure

We performed the research using a prototype of the Moments Mini series. The structure was developmentally appropriate for children aged 1-4 years. The prototype was a three-platform structure connected via hanging bridge and a ramp. The structure had a fireman's pole, a slide and three activity panels: (1) a panel with manipulatable sand-cups, (2) a panel with an abacus, and (3) a panel with a window (Figure 2).

Window panel



Sand cup panel



Abacus



Procedure

We positioned the play structure on a grassy area at a day care center in Denmark. After the structure had been there for a month, we started the study. On four days, all four children were led out to the grassy area and allowed to play freely on or off the play structure as they liked under adult supervision for approximately an hour. We video-recorded the children from a distance using two cameras. Additionally, children wore Go-Pro cameras, which provided us with an excellent recording of the children's speech and point of view, which we used to validate our observations.

Measures

- Play Observation Scale (POS; Coplan & Rubin, 1998). The POS codes play behaviour in 10 second intervals.
- Mean length of utterance (MLU; Rice, Redmond, & Hoffman, 2006)

Results

Finding 1: Amount and complexity of child speech increased on the play structure

In general, the children spoke more often and had longer utterances when they played on the structure.

Figure 1.

Mean Number of Utterances

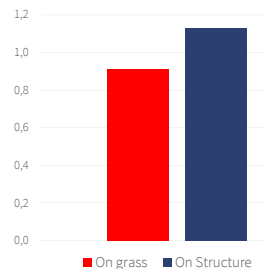
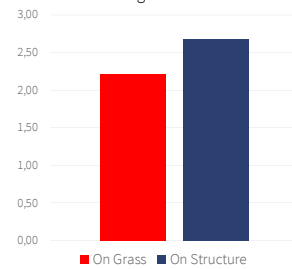


Figure 2.

Mean Length of Utterance



Finding 2: Large increase in dramatic play for two children on the play structure

- Child 1: **8%** dramatic play on grass, **39%** on play structure
- Child 2: **20%** dramatic play on grass, **75%** on play structure
- The two other children had equal amounts of dramatic play on and off the play structure

Finding 3: The child with the lowest MLU had the greatest change in language and play

The average MLU ranged from 2,17 to 4,68 (average 3,84). We remarked that the child with the lowest MLU appeared to have the greatest change in play behaviour both socially and cognitively when playing on the structure.

Figure 3.

Social Play Behaviours

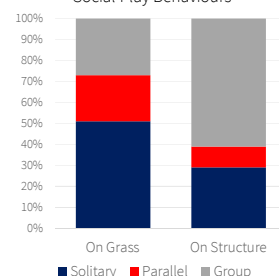
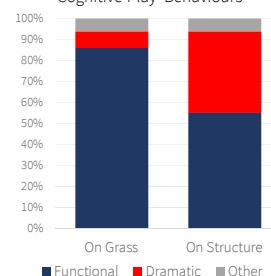


Figure 4.

Cognitive Play Behaviours



How children used the three activity panels

- The **sand cups** encouraged solitary and parallel non-symbolic play. The children were also more concentrated when using them, and they practiced coordination of left and right hands.
- The **abacus** encouraged spontaneous counting from the children; moreover, we observed children counting numbers that they had not yet mastered. For example, the child with the lowest MLU was recorded counting on the abacus as follows:
Ti, elleve, tretten, fjorten, femten – tretten, fjorten, fjorten!
'Ten, eleven, thirteen, fourteen, fifteen – thirteen, fourteen, fourteen'
- The **window** panel was the most popular panel, despite it not having moving parts. We observed that the window encouraged social play with increased language activity. Children also used the window more often in symbolic play than the other panels, pretending it was something else (for example a ship's wheel).

Discussion

- Outdoor play structures appear to increase children's speech use and influence the type of social and cognitive play that children engage in.
- Child with less language may benefit most.
- We hypothesize that play structures encourage more social behaviour because they attract children into closer contact with each other.
- Children use play panels in different ways – panels requiring more concentration promote more solitary and parallel play.
- We argue that the context of outdoor play is undervalued with regards to its benefit on language development
- Our research supports other research (Weisberg et al. 2013), which found that outdoor play can serve as a locus for language and emergent literacy pedagogy.

Limitations

- This is a small, exploratory study. Larger, more controlled studies are needed.

Literature

- Coplan, R. J., & Rubin, K. H. (1998). Exploring and Assessing Nonsocial Play in the Preschool: The Development and Validation of the Preschool Play Behavior Scale. *Social Development, 7*(1), 72-91. <https://doi.org/10.1111/1467-9507.00059>
- Gooch, D., Thompson, P., Nash, H. M., Snowling, M. J., & Hulme, C. (2016). The development of executive function and language skills in the early school years. *Journal of Child Psychology and Psychiatry, and Allied Disciplines, 57*(2), 180-187. <https://doi.org/10.1111/jcpp.12458>
- Kendeou, P., van den Broek, P., White, M. J., & Lynch, J. S. (2009). Predicting reading comprehension in early elementary school: The independent contributions of oral language and decoding skills. *Journal of Educational Psychology, 101*(4), 765-778. <https://doi.org/10.1037/a0015956>
- Markussen-Brown, J., Juhl, C. B., Piasta, S. B., Blases, D., Højen, A., & Justice, L. M. (2017). The effects of language- and literacy-focused professional development on early educators and children: A best-evidence meta-analysis. *Early Childhood Research Quarterly, 38*, 97-115. <https://doi.org/10.1016/j.ecresq.2016.07.002>
- Mashburn, A. J., Pianta, R. C., Hamre, B. K., Downer, J. T., Barbarin, O. A., Bryant, D., ... Howes, C. (2008). Measures of classroom quality in prekindergarten and children's development of academic, language, and social skills. *Child Development, 79*(3), 732-749.
- Milligan, K., Astington, J. W., & Dack, L. A. (2007). Language and theory of mind: meta-analysis of the relation between language ability and false-belief understanding. *Child Development, 78*(2), 622-646.
- National Early Literacy Panel. Developing early literacy. Washington, DC: National Institute for Literacy; 2008.
- Rice, M. L., Redmond, S. M., & Hoffman, L. (2006). Mean Length of Utterance in Children With Specific Language Impairment and in Younger Control Children Shows Concurrent Validity and Stable and Parallel Growth Trajectories. *Journal of Speech Language and Hearing Research, 49*(4), 793. [https://doi.org/10.1044/1092-4388\(2006\)056](https://doi.org/10.1044/1092-4388(2006)056)
- Storch, S. A., & Whitehurst, G. J. (2002). Oral language and code-related precursors to reading: Evidence from a longitudinal structural model. *Developmental Psychology, 38*(6), 934-947. <https://doi.org/10.1037/0012-1649.38.6.934>
- Weisberg, D. S., Zosh, J. M., Hirsh-Pasek, K., & Golinkoff, R. M. (2013). Talking it up: Play, language development, and the role of adult support. *American Journal of Play, 6*(1), 39.

Acknowledgement

- We would like to acknowledge the support of Fraugde Børnehus, and the families and children herein, for their aid in conducting this research.