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; Rendeou 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 approving 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
1. To explore whether play structures influence children's language use.
2. To explore whether play structures influence children's social and cognitive play.
3. 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 a hanging bridge and a ramp. The structure had a fireman's pole, a slide and three activity panels: (1) a panel with manipulative sandcups, (2) a panel with an abacus, and (3) a panel with a window (Figure 2).
- 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 GoPro 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.

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.

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

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