



Children's executive and social functioning and family context as predictors of preschool vocabulary



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ABSTRACT

The primary source for young children's vocabulary development is parent-child interaction. How parent-child interaction influences vocabulary depends on the child's functioning and the family context. Although research shows the effect of the family context on vocabulary (e.g., reading activities at home, parental education), the role of a child's functioning has received less attention. Children's executive functioning (EF) influences how linguistic input is processed and their social functioning (SF) is important for maintaining social interaction. The aim of the present study was to investigate the additional contributions of children's EF and SF to vocabulary. EF, SF and family contextual factors were measured in 223 Dutch preschool children. EF and SF strongly predicted children's vocabulary in addition to their age, linguistic diversity at home and parental education. EF and SF are therefore important factors to take into account when investigating vocabulary and vocabulary interventions in preschool children.

1. Introduction

Children's vocabulary development is an informal learning process that takes place through interactions with adults (Leseman & De Jong, 1998). Considering the large amount of time a preschool child spends at home, their primary source for language input and practice is verbal parent-child interaction (Snow, 2006). Parent-child interaction differentially affects a child's vocabulary depending on child functioning and of the family context in which it occurs (Bronfenbrenner & Morris, 1998). Even though the influence of the family context on preschool vocabulary has been well established, less attention has been given to how child functioning influences vocabulary development. The family context, including educational level and linguistic diversity has been found to have a great impact on vocabulary development (e.g., Ebert et al., 2013; Hoff, 2006; Van Druten-Frietman, Denessen, Gijssels, & Verhoeven, 2015).

Moreover, there is growing evidence that a child's executive functioning (EF; the ability to control and regulate cognitive and behavioral processes) and social functioning (SF; successful initiation of interactions and relationships) play an important role in how that child acquires vocabulary from parent-child interaction (Diamond, 2006; McClelland, Morisson, & Holmes, 2000). Nevertheless, few studies have examined vocabulary while including a child's EF and SF in

addition to the family context (Vitiello & Williford, 2016; Weiland, Barata, & Yoshikawa, 2014). Up until now vocabulary has mainly been studied from the perspective of the family or the child, but only limited attention has been paid to the integration of EF, SF and the family context (Ebert et al., 2013; Van Druten-Frietman et al., 2015). In the present study, we therefore addressed the role of EF and SF in predicting preschool children's vocabulary in addition to the family context. Identification of how children's EF and SF at an early age contribute to vocabulary could provide insights into improving intervention programs that aim to facilitate children's vocabulary at home.

1.1. Vocabulary in the family context

From a social constructivist perspective, vocabulary development is, fundamentally, a social process that takes place via verbal interactions with others (Leseman & de Jong, 1998). Therefore, several aspects of the family context are important for a preschool child's vocabulary. In the first place, a child must be offered opportunities to participate in language stimulating activities, such as shared book reading or singing songs and rhymes (Sylva, Melhuish, Sammons, Siraj-Blatchford, & Taggart, 2004). The frequency with which a child is involved in these types of activities at home is correlated with their vocabulary (Bus, Van IJzendoorn, & Pellegrini, 1995). In general, lower

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educated parents engage in fewer reading activities with their child (Hoff, 2006; Scarborough & Dobrich, 1994), which is related to the degree of their self-efficacy (parent's beliefs about their capacities to control their functioning and environmental demands (Bandura, 1986). Parents with a lower level of education often feel themselves less proficient in influencing their child's development and behavior (Bandura, 1986; Seefeldt, Denton, Galper, & Younoszai, 1999) and are therefore less likely to be involved with their child than more highly educated parents who often believe their involvement will make a difference (Walker, Wilkins, Dallaire, Sandler, & Hoover-Dempsey, 2005).

Secondly, acquiring vocabulary from these home activities is facilitated by other more experienced adults who, in case of preschool children, are often the parents (Rogoff, 1990). The quality of verbal interaction between a parent and child plays an especially important role in vocabulary development (Rowe, 2012). Often, lower educated parents have lesser language skills, using more concrete language about the here and now and less abstract language about what is beyond perceptual presence (Van Kleeck, Gillam, Hamilton, & McGrath, 1997). Moreover, children growing up in linguistically diverse families, with a minority language spoken at home, receive less language input in the native language of the country that they are growing up in and therefore experience fewer opportunities to practice this language (Scheele, Leseman, & Mayo, 2010; Van Druten-Frietman et al., 2015). Even though children's prior language experiences (L1) are beneficial for learning a second language (L2) (Cummins, 1979), L2 children tend to have smaller vocabularies in L2 compared to their peers for whom that language is L1 (Mancilla-Martinez & Vagh, 2013). As a result, children from lower educated parents with limited self-efficacy and children speaking a minority language at home often have smaller vocabularies and develop vocabulary at a slower rate (Hart & Risley, 1995; Hoff, 2006; Seefeldt et al., 1999).

Even though, the influence of the family context on vocabulary has been well established over the past decades (Ebert et al., 2013; Hart & Risley, 1995; Hoff, 2006; Van Druten-Frietman et al., 2015), less attention has been paid to the child's functioning and how this influences parent-child interactions and vocabulary. Often age and gender are included in analyses, with older children showing greater vocabularies and little or no difference between preschool girls and boys (Ebert et al., 2013; Van Druten-Frietman et al., 2015). Along with age and gender, vocabulary is considered to be influenced by a child's functioning, that is to say their executive and social functioning (Diamond, 2006; McClelland et al., 2000). These abilities allow a child to control and regulate the verbal input provided and are considered to be essential for participation in social situations.

1.2. Executive functioning and vocabulary

Vocabulary acquisition in young children via social interactions seems to depend on their executive functioning (EF). EF is defined as their ability to control and regulate their cognitive and behavioral processes (Lezak, 1995; Mesulam, 2002). EF can be viewed as a multidimensional concept involving the interrelated components of working memory, response inhibition and attention shifting (Diamond, 2013; Miyake et al., 2000). Working memory is the ability to hold information in mind and allows the information to be retained for learning (Gathercole & Baddeley, 1993). Response inhibition is the ability to suppress prepotent responses and allows children to control and suppress automatic, impulsive behaviors and to carry out less automatic responses in their place (Diamond, Kirkham, & Amso, 2002; Weiland et al., 2014). Attention shifting refers to children's ability to flexibly shift to a new situation or another mind set (Garon, Bryson, & Smith, 2008). These skills start developing around the age of one and improve substantially during the preschool years (Welsh, Nix, Blair, Bierman, & Nelson, 2010). It is now widely acknowledged that, in three-year-old preschool children, the different EF components

form a unitary construct (Barata, 2011; Fuhs & Day, 2011; Wiebe, Espy, & Charak, 2008; Wiebe et al., 2011). When children become older, the separate components become more clearly differentiated and develop into distinct mental abilities (Miyake et al., 2000; Tucker-Drob, 2009). As EF is a unitary construct formed by multiple components, a multiple task approach is desirable to achieve a reliable EF score in preschool children (Wiebe et al., 2011).

Empirical studies have shown that EF in preschool children supports the development of vocabulary (McClelland et al., 2000; Weiland et al., 2014). Children with greater EF skills in preschool had larger vocabularies in preschool and elementary school. EF seems to be essential for children's initial language development. It helps them to focus on and process multiple streams of language input at the same time, monitor errors, and make decisions based on the available linguistic information (Diamond, 2013). In order to abstract meaning from social interaction, children use shifting, inhibition and memory abilities at the same time. For example, they shift attention between contexts to derive word meanings corresponding to a particular context, they focus on the relevant linguistic input by suppressing attention to irrelevant and distracting input, and they hold phonological representations of words in mind and store them in their long-term memories (Bialystok, Barac, Blaye, & Poulin-Dubois, 2010; Moriguchi, 2014; Weiland et al., 2014). Moreover, EF facilitates social interactions because it helps children to overcome saying the first thing that comes into their head (Moriguchi, 2014). Controlling and regulating their behavior in social interactions allows children to obtain the linguistic input that they require in order to expand their vocabulary. Recent research has shown the contribution of EF to children's communicative behavior and vocabulary (Moriguchi, 2014; Weiland et al., 2014). However, the (relative) contribution of EF to vocabulary is still unclear because it has not been considered in conjunction with children's social functioning and in relation to the family context.

1.3. Social functioning and vocabulary

Along with EF social functioning is considered necessary for the word learning process. Children's social functioning (SF) enables them to initiate, participate in and maintain interaction with their parents, other adults and peers, which is essential for generating language input and to practice language (McClelland et al., 2000; Vitiello & Williford, 2016). SF includes, for example, pro-social behavior in which children interact positively, play collaboratively and share and take care of others. SF is especially important in understanding the reciprocal nature of interactions and the integration of input from parents and children into a coherent social event (Feldman, Bamberger, & Kanat-Maymon, 2013). Reciprocity changes over the course of the preschool years with a gradual shift from greater amounts of parental reciprocity, with the parent adapting to the child, to a more balanced giving and receiving. Gradually, the child develops an understanding of the reciprocity of communication, including their own contribution. SF forms the basis for the quality and quantity of child-parent interaction. Children with higher levels of SF engage in more conversations with adults and peers (McClelland et al., 2000). Studies have also shown that stronger SF at preschool relates to better learning and greater gains in vocabulary (Caprara, Barbaranelli, Pastorelli, Bandura, & Zimbardo, 2000; Vitiello & Williford, 2016; Ziv, 2013). However, the relative importance of SF needs further study to establish its role in vocabulary in conjunction with EF and taking into account the family context.

1.4. This study

The aim of this study was to examine the role of the children's EF and SF in predicting preschool vocabulary in addition to the family context. The influence of the family context on preschool vocabulary has been well established with the parents' educational level, their self-efficacy, and the language spoken at home being important (Ebert et al.,

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