



## Social, emotional and behavioural influences on young children's pre-reading and word reading development



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### ARTICLE INFO

#### Article history:

Received 31 July 2014

Received in revised form 16 December 2015

Accepted 29 December 2015

Available online 23 January 2016

#### Keywords:

Reading  
Phonological awareness  
Behaviour  
Social  
Emotional

### ABSTRACT

The first formal instruction of reading typically takes place in the school environment setting. Therefore, there is good reason to predict that children's classroom behaviours at the time of formal learning will influence their early reading acquisition. The present study compared the extent to which symptoms of hyperactivity/inattention, conduct problems, emotional problems, peer relationship problems and pro-social behaviour predicted children's pre-reading (letter-sound knowledge, phonological awareness) and word reading development. Seventy three new school entrants were assessed during their first 2 years at school. Children were assessed at T1 (prior to reading instruction) on pre-reading and word reading, at T2 (approximately 6 months later) on pre-reading, word reading and classroom behaviours and at T3 (1 year after T2) on classroom behaviours and word reading. Overall, hyperactivity/inattention was the strongest predictor of pre-reading and word reading development, but not the only predictor. Implications for education are discussed.

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As word reading is a skill that is formally taught in school and takes time to master, it is feasible that early problem behaviours may interfere with children's initial ability to acquire word reading skills and/or pre-reading skills that support word reading (*i.e.*, letter-sound knowledge and phonological awareness) (*e.g.*, Dally, 2006). Research has shown that early success in word reading is a strong predictor of later word reading success (Cunningham & Stanovich, 1997); thus highlighting the importance of identifying factors influencing word reading acquisition and development.

Previous research exploring predictors of word reading development typically focus on cognitive skills. This body of research has highlighted the critical role of pre-reading skills such as letter-sound knowledge (Shapiro, Carroll, & Solity, 2013; Wagner *et al.*, 1997) and phonological awareness (phoneme and rhyme awareness) (Castles & Coltheart, 2004; Muter, Hulme, Snowling, & Stevenson, 2004) in particular. Nevertheless, other broader cognitive abilities have also been found to predict early word reading success, including language skills (Muter *et al.*, 2004; Wagner *et al.*, 1997), rapid automatized naming (Kirby *et al.*, 2010) verbal short term memory (Brunswick, Martin, & Rippon, 2012; McGeown & Medford, 2013) and visual discrimination skills (Brunswick *et al.*, 2012). However, letter-sound knowledge and phonological awareness (awareness of phoneme and rhyme) are typically the most consistent and strongest correlates

or predictors of initial word reading skill (*e.g.*, Shapiro *et al.*, 2013; Wagner *et al.*, 1997).

As the formal instruction of these important pre-reading skills and word reading skills typically takes place within a classroom setting, classroom behaviours, as well social and emotional factors could impact on children's initial progress in developing these skills. The present study used the Strengths and Difficulties Questionnaire (SDQ), to tap into a range of emotional, social and behavioural strengths and difficulties found among young children and examined the extent to which these predicted the development of important pre-reading and word reading skills. The SDQ examines four negative aspects (hyperactivity/inattention, conduct problems, emotional problems, peer relationship problems) and one positive aspect (pro-social behaviour) of development. Previous research exploring the relationship between these different social, emotional and behaviour constructs and reading typically utilise different assessments of reading which may include measures of word reading, reading comprehension and/or reading fluency. However, as reading comprehension and fluency are underpinned by word reading skills (the focus of this study), all are relevant and are included below for a comprehensive review of the research to date. However, prior to focussing on reading skills specifically, the extent to which social, emotional and behavioural attributes predict crucial pre-reading skills will be explored.

### Social, emotional, behavioural attributes and pre-reading skills

To date, very few studies have examined the influence of different social, emotional and behavioural attributes on the development of

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*pre-reading skills* such as letter sound knowledge and phonological awareness. Letter-sound knowledge and phonological awareness (phoneme and rhyme awareness) are considered to be the strongest predictors of word reading success (e.g., Shapiro et al., 2013; Wagner et al., 1997) and as a result, the development of these abilities often features heavily within formal reading instruction. Of those studies that have investigated pre-reading skills, inattention has been found to be the strongest or sole predictor of pre-reading abilities. For example, Giannopulu, Escolano, Cusin, Citeau, and Dellatolas (2008) found that for children aged 5 to 7 years, inattention was associated with lower scores on pre-reading and cognitive tasks such as letter recognition, phonological awareness, vocabulary, and verbal short term memory. In addition, Dally (2006) found that inattentive behaviour in kindergarten disrupted the acquisition of phonological analysis abilities. Similarly, Walcott, Scheemaker, and Bielski (2010) found that attention problems in preschool negatively predicted phonemic awareness and letter naming scores 1 year later, even after controlling for initial language ability and preschool performance on these tasks. Despite this, Velting and Whitehurst (1997) found that whilst early inattention–hyperactivity was significantly related to early reading achievement, it was not significantly related to the development of pre-reading abilities.

### Hyperactivity/inattention and reading

Inattentive behaviours in the classroom typically include being easily distracted, making careless mistakes, and being unable to listen to or carry out instructions (Goodman, 1997). A significant body of research suggests that inattentive behaviour is closely associated with children's reading development (word reading, comprehension and/or fluency skills) in the early years of school (Alexander, Entwistle, & Pauber, 1993; Duncan, Dowsett, Claessens, Magnuson, Huston, Klebanov et al., 2007; Grimm, Steele, Mashburn, Burchinal, & Pianta, 2010; Rabiner, Malone, & The Conduct Problems Prevention Research Group, 2004; Rabiner et al., 2000; Romano, Babchiskin, Pagani, & Kohen, 2010; Rowe & Rowe, 1992). For example, attention skills assessed in kindergarten or at school entry have been found to have moderate predictive power on later reading achievement (Duncan et al., 2007; Romano et al., 2010). Furthermore, early attention problems have been found to have a greater effect than other negative behaviours in predicting changes in children's reading skill (Grimm et al., 2010), and have been found to account for variance in early reading skill even after controlling for prior achievement, other behavioural difficulties, socio-economic status, and gender (Rabiner et al., 2000; Rabiner et al., 2004; Rowe & Rowe, 1992).

Similarly, hyperactive behaviour, such as fidgeting, being unable to sit still, and excessive physical movement and talking (Goodman, 1997), has also been linked to children's reading ability (e.g., McGee, Prior, Williams, Smart, & Sanson, 2002). However, evidence suggests that hyperactive behaviour may have a lesser influence than other negative behaviours on early reading skill. For example, a number of studies indicate that inattention is more closely associated with children's reading ability than hyperactivity (e.g., Merrell & Tymms, 2001; Willcutt et al., 2007). In addition, hyperactivity has been found to be unimportant for early reading skill after taking inattention into account (Giannopulu et al., 2008), suggesting that inattentive behaviours may play a more dominant role in determining early reading progress.

### Conduct problems and reading

Conduct problems are characterised by anti-social, aggressive, defiant, and rule-breaking behaviour (Goodman, 1997). Children with reading difficulties often show more conduct problems than typical readers (Fergusson & Lynskey, 1997; Terras, Thompson, & Minnis, 2009) and conduct problems have been found to be negatively associated with children's reading ability, even after controlling for intelligence (Adams, Snowling, Hennessy, & Kind, 1999). However, other studies

suggest that the association between the two may be weak (Cornwall & Bawden, 1992; Hooper, Roberts, Sideris, Burchinal, & Zeisel, 2010). In addition, some studies suggest that there may be age effects in the relationship between conduct problems and reading ability. For example, Miles and Stipek (2006) found that whilst aggressive behaviour was associated with literacy achievement in 3rd and 5th grades, it was not associated with literacy skill in kindergarten or 1st grade. Similarly, Arnold (1997) found that whilst the relationship between externalising behaviour (aggressive, non-compliant behaviour) and academic difficulties was evident in the early years, the association increased in strength with age.

Regarding the causal nature of the relationship between conduct problems and reading ability, findings are mixed. For example, a review by Cornwall and Bawden (1992) concluded that whilst there was some evidence to suggest that behavioural difficulties are a precursor to reading difficulties, there was no evidence to suggest that reading difficulties are a precursor to behavioural problems. However, a more recent study by Halonen, Aunola, Ahonen, and Nurmi (2006) found that problems in learning to read predicted an increase in externalising problem behaviour (anti-social behaviour and problematic relations with peers) during the first 2 years of school. In addition, Morgan, Farkas, Tufis, and Sperling (2008) found that whilst reading levels elevated a child's odds of engaging in problem behaviours (e.g., arguing, fighting), early problem behaviours did not elevate a child's odds of becoming a poor reader. Therefore, it is feasible that the relationship between conduct problems and reading development is bi-directional, with each having some casual influence on the other (e.g., Arnold, 1997; Maughan & Carroll, 2006). In addition, some findings suggest that the relationship between conduct problems and reading ability may be mediated by other factors, such as attentional difficulties (Maughan & Carroll, 2006; Maughan, Pickles, Hagell, Rutter, & Yule, 1996; Rapport, Scanlon, & Denney, 1999; Willcutt & Pennington, 2000).

### Emotional symptoms and reading

Emotional symptoms have also been linked to children's reading (Adams et al., 1999; Boetsch, Green, & Pennington, 1996; Dahle, Knivsberg, & Andreassen, 2011; Siperstein, Wiley, & Forness, 2011; Willcutt & Pennington, 2000). For example, children with reading difficulties have been found to show higher levels of emotional symptoms than typical readers, such as anxiety, depression, and somatic complaints (Dahle et al., 2011; Terras et al., 2009). However, research examining the association between emotional symptoms and early reading development is mixed. Some studies suggest that the relationship is evident even among young children (Halonen et al., 2006; Hooper et al., 2010; Jalongo, Edelsohn, & Kellam, 2001; Lim & Kim, 2011; Massetti et al., 2008). Indeed, emotional symptoms have been found to explain significant variance in early reading ability (Halonen et al., 2006) and cause slower growth in early reading skills (Lim & Kim, 2011). Conversely, some studies suggest that early emotional symptoms and reading development are only weakly related (Grimm et al., 2010; Hooper et al., 2010) and other studies have reported no relationship between emotional symptoms and early reading skill (Kempe, Gustafson, & Samuelsson, 2011; Miller, Hynd, & Miller, 2005). Other studies suggest that there may be age effects in the association between emotional problems and reading skill. For example, Ackerman, Izard, Kobak, Brown, and Smith (2007) found that whilst emotional distress was associated with children's reading problems in 5th grade, it was not associated with reading difficulties in 3rd grade, suggesting a closer relationship with age.

Regarding the causal nature of the relationship, it may be that emotional problems have a negative influence on children's reading development; for example, by causing children to put less effort or attention into reading instruction and learning activities due to other, emotional, pre-occupations (e.g., Jalongo & Hirsh, 2010). Alternatively, emotional problems may arise as a consequence of reading difficulties,

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