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Identification of emotional and behavioral problems by teachers in children with developmental coordination disorder in the school community

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ABSTRACT

Current evidence on the co-occurrence of Developmental Coordination Disorder (DCD) and psychosocial problems mainly concerns parent-reported information, but rarely includes teacher information. The aim of this study was (1) to investigate the teachers' identification of emotional and behavioral problems in children with DCD and (2) to examine the performance of the teacher version of the Strengths and Difficulties Questionnaire (SDQ-T) compared with the Teacher Report Form (TRF) in children with DCD. We assessed primary school children (202 boys, 200 girls, range 4–10.8 years, mean age 7.2 years) for DCD following the DSM IV-TR criteria. Emotional and behavioral problems were measured with the TRF ($n = 327$) and the SDQ-T ($n = 361$). DCD was established in 23 (5.7%) children, 16 boys and 7 girls (mean age 7.0 years). Children with DCD had a higher proportion of clinical scores on both the TRF Total Problem Scale (TRF TPS) and SDQ-T Total Difficulties Score (SDQ-T TDS). Children with DCD had increased odds on the TRF domains Thought (odds ratio, OR: 5.39), Externalizing (OR: 4.12) and Internalizing (OR: 4.42) problems, and on all SDQ-T-domains and Total Difficulties score (OR: 7.30). In the DCD group the SDQ-T TDS correlated strongly (Spearman's rho 0.80) with the TRF TPS and demonstrated a moderate agreement (Cohen's Kappa 0.53). In conclusion, teachers identified significantly more emotional and behavioral problems in children with DCD compared with their peers. The SDQ-T showed moderate agreement with the TRF in identifying emotional and behavioral problems in children with DCD.

1. Introduction

Developmental coordination disorder (DCD) is a common disorder affecting motor coordination in school-aged children (Blank, Smits-Engelsman, Polatajko, Wilson, & European Academy for Childhood Disability, 2012; Kadesjo & Gillberg, 1999). Current prevalence estimates for DCD range from 2 to 20%, with 5 to 6% being the most frequently quoted percentage in the

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literature (Blank et al., 2012; Lingam, Hunt, Golding, Jongmans, & Emond, 2009). DCD causes restrictions in motor activities of daily living (such as sports, play and self-care skills) and/or in academic achievement (Flapper & Schoemaker, 2013).

Motor performance has a great impact on the psychosocial development of children, which may explain the co-morbidity between DCD and various psychosocial problems (Chen, Tseng, Hu, & Cermak, 2009; Dewey, Kaplan, Crawford, & Wilson, 2002; Emck, Bosscher, Beek, & Doreleijers, 2009; Ferguson, Jelsma, Versfeld, & Smits-Engelsman, 2014; Jansen, Veenstra, Ormel, Verhulst, & Reijneveld, 2011; Lingam et al., 2010, 2012; Tseng, Howe, Chuang, & Hsieh, 2007). In children (6–12 years) with DCD, several studies reported significantly higher levels of depression, withdrawn behavior and anxiety than typically developing children (Cairney, Veldhuizen, & Szatmari, 2010; Chen et al., 2009; Dewey et al., 2002; Pratt & Hill, 2011; Tseng et al., 2007). Children with DCD (6–11 years) not only show significantly higher internalizing behavior, but also showed higher externalizing behavior compared with peers (Dewey et al., 2002; Tseng et al., 2007). Up to 50% of children (7 years old) with DCD have been shown also to meet criteria for Attention Deficit Hyperactivity Disorder (ADHD) (Kadesjo & Gillberg, 1999) and the majority of children with ADHD have motor deficits (Kaiser, Schoemaker, Albaret, & Geuze, 2014). It is important to recognize double diagnoses of DCD and behavioral problems since both diagnoses affect children's daily functioning and these children are at risk for poorer adult psychosocial functioning (Rasmussen & Gillberg, 2000). There is only limited research on emotional and behavioral difficulties in pre-school children with motor problems (Piek, Barrett, Smith, Rigoli, & Gasson, 2010). The recent study of King-Dowling, Missiuna, Rodriguez, Greenway, and Cairney (2015) demonstrated that children (mean age 4 years, 11 months) with motor difficulties (MABC-2 $\leq$ 16th percentile) had more externalizing behaviors in the form of increased aggression as well as increased withdrawn behavior (King-Dowling et al., 2015).

Current evidence on the co-occurrence of DCD and psychosocial problems mainly concerns parent-reported information, but rarely includes teacher reports (Cairney et al., 2010; Chen et al., 2009; Dewey et al., 2002; Lingam et al., 2012; Pratt & Hill, 2011). Only two, somewhat outdated, studies presented teacher-reported information on psychosocial problems in children with DCD (Kadesjo & Gillberg, 1999; Miyahara, Mobs, & Doll-Tepper, 2001). In the first study (Kadesjo & Gillberg, 1999) teachers identified moderate to severe symptoms of ADHD in approximately half of the children with DCD in a school population. However, their method to obtain information about psychosocial problems, a structured teacher interview and multiple teacher questionnaires, is not feasible for routine use due to time and financial constraints (Kadesjo & Gillberg, 1999). The second study (Miyahara et al., 2001) showed that in a sample of hyperactive children ($n = 47$), the comorbidity of hyperactivity as reported by the teacher (using the Conners Teacher Rating Scale) and clumsiness as determined by the M-ABC ($<$5th percentile) ranged from 35 to 55% depending on the sampling source (school, hospital or support group). A study in a school population using a concise and feasible teacher questionnaire is lacking.

Reasons to include teachers as informants are first that teachers see children on a daily basis in the school environment and have the opportunity to compare behavior of children of similar age every day. Next, it is important to have multiple informants reporting on emotional and behavioral problems in children (Johnson, Hollis, Marlow, Simms, & Wolke, 2014; Stone, Otten, Engels, Vermulst, & Janssens, 2010). For most DSM mental health diagnosis in children both parental and teacher information are required, as symptoms must be present in two or more settings (e.g. at home and school) and there must be clear evidence that the symptoms interfere with or reduce the quality of social or school functioning (American Psychiatric Association, 2000). Moreover, detection and prompt treatment of emotional and behavioral problems in children with DCD may alleviate some of the risk of poor future mental health outcomes (Ferguson et al., 2014; Lingam et al., 2012).

Reliable and valid questionnaires for the detection of emotional and behavioral problems in children are available for teachers (Achenbach & Rescorla, 2001; Goodman, 2001). The Teacher's Report Form (TRF) is the teacher version of the Achenbach Child Behavior Checklist (CBCL), with the same questions worded differently for teachers. The TRF is a well-validated instrument to assess the extent of a child's emotional and behavioral problems (Achenbach & Rescorla, 2001). However, for routine use in a school population, a major disadvantage of this questionnaire is its length of 113 items. The Strengths and Difficulties Questionnaire (SDQ) might be a better option. The parental version has gained popularity because it includes only 25 items, and is freely available. The teacher version of the SDQ (SDQ-T) has good psychometric properties and a good construct validity of the SDQ-T when compared with the subscales of the TRF was found in the general population (Leeuwen, Meerschaert, Bosmans, De Medts, & Braet, 2006; Mieloo et al., 2012; Stone et al., 2010).

Although the parent version of the SDQ has been used in children with DCD, it is not known if the SDQ could identify the same emotional and behavioral problems in children with DCD as more extensive questionnaires like the CBCL and TRF (Lingam et al., 2012). The aim of this study was to investigate (1) teachers' identification of emotional and behavioral problems in children with Developmental Coordination Disorder (DCD) and (2) the performance of SDQ-T compared with the TRF in children with DCD.

2. Method

2.1. Participants and procedure

A cross-sectional study was performed in which data was collected on 402 children (202 boys, 200 girls, range 4–10.8 years, mean age 7.2 year (SD 1.9)). We obtained data using a two-step procedure (Fig. 1). In the first step, directors of 70 regular primary schools in the middle and eastern region of the Netherlands were contacted and asked if they were interested to participate in the study. Seventeen schools consented to have teachers participate in the study (24.3%).