



## The profile of performance skills and emotional factors in the context of participation among young children with Developmental Coordination Disorder

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### ABSTRACT

Participation is a person's involvement in daily activities in a variety of environments, roles and life situations. Children with Developmental Coordination Disorder (DCD) experience difficulties in gaining academic achievements or in their engagement in activity of daily living. Motor difficulties have a negative effect on the ability to participate, as well as on various affective components. Senses of coherence, effort and hope have not yet been assessed, within the context of participation, in children with DCD. The purpose of the present study is to look into the relations between participation and senses of coherence, effort and hope among children with DCD, in comparison to typically developed children. Fifty subjects aged 5–6 years participated in the study, 25 of whom are children diagnosed with DCD, the other 25 being typical children. The DCD diagnosis was established according to the DSM-IV criteria and the M-ABC test. All children completed the coherence questionnaire for children as well as the children's questionnaire on effort and hope. Parents completed the Children Participation Questionnaire (CPQ), and the Performance Skills Questionnaire (PSQ). Children with DCD had lower performance skills, lower sense of coherence, hope, and effort than their peers. They less enjoy their participation and their parents are less satisfied in comparison to control group. Significant correlations were found between sense of coherence and hope to participation. Process skills were found to be the main predictor for explaining child's participation. While treating children with DCD we have to consider also socio-psychological aspects that may be weakened.

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### 1. Introduction

Participation in everyday activities is considered to be a vital part of children's development and life experiences. Participation is defined as involvement in life situations. It is essential for psychological and emotional development (Law, 2002), and influences health, self-esteem and social adjustment (Larson, 2000). The International Classification of Functioning, Disability and Health (ICF) model is based on the notion that impairments at the level of body function or structure influence a person's ability to carry out activities and participate in everyday pursuits (WHO, 2001). Children with physical disabilities are at risk of limited participation in the typical activities of childhood (Bouffard, Watkinson, Thompson, Causgrove Dunn, & Romanow, 1996; Smyth & Anderson, 2000).

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Children with Developmental Coordination Disorder (DCD) have marked impairment in the development of motor coordination that interferes with academic achievement and/or activities of daily living (APA, 2000). They also exhibit more difficulties in performing motor and processing skills than normally developed children (Bart, Rosenberg, Ratzon, & Jarus, 2010). The ICF model revealed that the motor impairments of children with DCD lead to activity limitations and participation restrictions, which, in turn, can affect their health and well-being (Mandich, Polatajko, & Rodger, 2003; Rosenberg, Jarus, & Bart, 2010).

Children with DCD might also suffer from social and emotional difficulties, such as loneliness, anxiety, and low self-esteem, as well as being at risk for psychopathology (Bar-Haim & Bart, 2006; Cantell, Smyth, & Ahonen, 1994; Chen & Cohn, 2003; Miller, Missiuna, Macnab, Malloy-Miller, & Polatajko, 2001; Schoemaker & Kalverboer, 1994; Skinner & Piek, 2001; Smyth & Anderson, 2000). The emotional factors of sense of coherence, hope and effort have not yet been studied in the context of the extent to which they affect children with DCD participation in everyday activities.

“Sense of coherence” is defined as an all-encompassing orientation that allows the individual to see the world as predictable, explicable, and meaningful (Antonovsky, 1987). A strong sense of coherence is related to flexibility in selecting appropriate coping behaviors from a wide repertoire of coping strategies. The sense of coherence construct is not a specific coping style, but rather a personality characteristic (Antonovsky & Sourani, 1988). People who demonstrate a high sense of coherence will often be more successful in applying their potential resources and be better able to cope with real-life situations.

“Hope” is defined as the perceived capability to invoke pathways to desired goals, and motivate oneself by means of agency thinking to use those pathways. Hopeful thinking includes pathway and agency thought. Agency thought involves the mental energy to begin and to preserve on the way to achieve goals (e.g., “I can do this”). Pathway thinking is the thought that mediate between the present and the future (e.g., “I’ll find a way to get this done”). Greater hope is consistently related to better outcomes in academics, athletics, physical health, psychological adjustment, and psychotherapy (Snyder, 2002). “Effort” is an invisible, internal, hypothetical construct that is assumed to be a limited-capacity resource that can be allocated to a range of different activities, including on-task, off-task, and self-regulation activities. These allocations can vary in terms of intensity and persistence (Kanfer, 1990).

Sense of coherence, hope and effort had been examined in school-aged children with Learning Disabilities (LDs) and were found to be lower compared to their peers without LD (Al-Yagon & Margalit, 2006; Al-Yagon & Mikulincer, 2004; Lackaye & Margalit, 2006; Lackaye, Margalit, Ziv, & Ziman, 2006; Margalit & Efrati, 1996; Margalit & Kleitman, 2006; Margalit, 1998). There is, however, a paucity of studies on the sense of coherence, hope and effort in young children (i.e., Margalit, 1998), and none in children with DCD. Therefore, the purpose of this study was to compare those emotional/psychological factors and the extent to which they affect participation in a variety of activities between children with and without DCD. We hypothesized that children with DCD will score lower, similar to the above-cited findings in children with LD. Furthermore, we wanted to explore the multidimensional concept of child participation. Specifically, we aimed to examine how selected performance skills (motor, processing and communication skills) and selected emotional/psychological factors (sense of coherence, hope, and effort) explain five distinct measures of participation as defined in this study: diversity, frequency, independence, enjoyment and parental satisfaction, among children with and without DCD.

## 2. Methods

### 2.1. Participants

Fifty children (32 boys [64%] and 28 girls [36%], age range 5–6.11 years, mean  $\pm$  SD 5.29  $\pm$  0.42) were enrolled. Most of them were first-born (52%) and came from non-religious families (76%). The number of children in their families ranged between 1 and 5 (mean = 2.52, SD = 0.88). Most of the children who participated in the study lived in a city (88%), and their parents had  $\geq$ 14 years of education (68% of the mothers and 58% of the fathers) and earned above average salaries. The study group included 25 children who were referred to occupational therapy intervention in a community clinic. The inclusion criteria were: (1) A score below the 15th percentile on the Movement Assessment Battery for Children–2nd Edition (M-ABC2; Henderson, Barnett, & Sugden, 2006) test; (2) Normal IQs (as was reported by the psychologist in the clinic); and (3) Difficulties in activities of daily living (ADL) and in school as reported by the children’s parents. The control group included 25 children who were volunteers from the community matched by gender, age, and family income. Based on their parents’ reports, these children did not have difficulties in ADL or in school. Most of the children in the control group were friends of children from the study group who their parents agreed to participate in the study. Children with severe developmental disabilities, such as cerebral palsy, or autistic spectrum disorder, children with behavioral problems, and those with a major visual or auditory impairment were excluded.

### 2.2. Measures

The Movement Assessment Battery for Children–2 test (M-ABC2) is a well-documented, individually administered, and standardized measure designed for children ranging from 4 to 12 years of age. This validated and reliable test includes eight subtests across three domains: manual dexterity, ball skills, and static and dynamic balance. The test score ranges from 0 to 40, where higher scores indicate greater impairment. A score lower than the 15th percentile is indicative of suspected DCD and a score lower than the 5th percentile is considered a definite indication for a diagnosis of DCD. The M-ABC2 has good test retest reliability (the minimum value at any age is 0.75), good inter-rater value (0.70), and good concurrent validity

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