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## The determinants of self-determined behaviors of young children with cerebral palsy



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### ABSTRACT

The purpose of this study was to identify determinants of self-determined behaviors of young children with cerebral palsy. The participants were 429 children (56% boys, 18–60 months) and their parents. Structural equation modeling was used to test two models of self-determined behaviors, one for children with walking mobility (Gross Motor Function Classification System, GMFCS levels I–II) and the other for children with limited self-mobility (GMFCS levels III–V). Cognitive-behavioral problems and the extent family supports their child's self-determined behaviors explained 60% of the variance in self-determined behaviors of children with walking mobility. Cognitive-behavioral problems, playfulness, and the extent family supports their child's self-determined behaviors explained 68% of the variance in self-determined behaviors of children with limited self-mobility. The less the child's cognitive-behavioral problems affect daily activities ( $p < .05$ ) and the more the extent family supports their child's self-determined behaviors ( $p < .05$ ), the more effective the child's self-determined behaviors. Playfulness only had an effect on self-determined behaviors of children with limited self-mobility ( $p < .05$ ). Service providers are encouraged to assess and support children's daily functioning in cognition, communication, and emotional/behavioral regulation, playfulness, and family strategies in providing opportunity for children to practice self-determined behaviors.

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## 1. Introduction

Self-determination is an attribute that describes taking responsibility for oneself and advocating for personal life goals (Brotherson, Cook, Erwin, & Weigel, 2008; Shogren & Turnbull, 2006; Ward, 1988; Wehmeyer, 1992, 2001). For example, identifying desires, making decisions, solving problems, and actively pursuing interests are behaviors that characterize children who are self-determined (Brotherson et al., 2008; Ward, 1988). Self-determination is considered a desirable outcome of rehabilitation and special education for children with disabilities (Algozzine, Browder, Karvonen, Test, & Wood, 2001; Wehmeyer, 2001) and is supported by legislation in the United States. The U.S. Department of Education, through the Individuals with Disabilities Education Act (PL101-476) and the Amendment of the Rehabilitation Act (PL102-569), support self-determination of children, youth, and adults with disabilities.

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Children with cerebral palsy (CP) may be at a disadvantage in becoming self-determined compared to their peers without disabilities. Children with CP have a life-long disorder of posture and movement, often accompanied by associated health problems in cognition, communication, and behaviors that limit their participation in daily activities (Rosenbaum et al., 2007). Many children with CP require assistance from an adult to perform motor functions, which may, in turn, have a negative impact on developing self-determination. Research suggests that children with disabilities, including CP, have fewer opportunities to make choices and engage in family activities (Bannerman, Sheldon, Sherman, & Harchik, 1990; Zhang, 2005) and participate in fewer community activities than their peers without disabilities (Ehrmann, Aeschleman, & Svanum, 1995). These differences may have long-term consequences.

Youth with CP participate less frequently in recreational and social activities, have lower rates in post-secondary education and employment, and are more dependent on parents and family than youth without disabilities (Andersson & Mattsson, 2001; Wehmeyer, 1996). Two studies, however, have reported that adolescents with intellectual or learning disabilities who are self-determined achieved better outcomes (*i.e.*, higher employment rates and better health status) than peers with disabilities who are not self-determined (Wehmeyer & Schwartz, 1997, 1998). Thus, Supporting self-determination of children and youth with CP may be critical to optimal life outcomes.

### 1.1. Development of self-determined behaviors in young children

Little is known about the development of self-determination. Doll and colleagues proposed that self-determined behaviors begin in infancy with exploration and interaction with toys (Doll, Sands, Wehmeyer, & Palmer, 1996; Wehmeyer & Palmer, 2000). Brotherson et al. (2008) proposed that five behaviors are critical building blocks for self-determination: (1) exhibiting self-awareness, (2) expressing preferences and choices, (3) participating in decision making, (4) displaying engagement and persistence, and (5) exercising increased appropriate control over the environment. Several authors have proposed that early childhood is a sensitive period for the development of self-determined behaviors (Brotherson et al., 2008; Erwin & Brown, 2003; Shogren & Turnbull, 2006). From the age of 2, children begin to reason, form beliefs, and develop decision-making and problem-solving abilities (Doll et al., 1996; Piaget, 1983). Furthermore, during early childhood, young children develop preferences, personal identity, and goal-directed behaviors (Brown & Cohen, 1996).

Family and home environments are important supports for the development of self-determined behaviors (Cook, Brotherson, Weigel-Garrey, & Mize, 1996; Erwin & Brown, 2003; Shogren & Turnbull, 2006). Brotherson et al. (2008) conducted a qualitative study that identified family strategies and home environmental supports to enable young children with disabilities to develop self-determined behaviors. For example, parents increase children's engagement by promoting choices and involving children in decision-making and by providing accessible environments (Brotherson et al., 2008). However, there is limited research to support the impact of family strategies and home environmental support on children's self-determined behaviors. Thus, there is a need to understand how self-determined behaviors are influenced by family and environmental characteristics.

The purpose of this study was to identify the child and family characteristics that together are determinants of self-determined behaviors of young children with CP. Two models of self-determined behaviors of children with CP were tested using *structural equation modeling* (SEM). SEM is a confirmatory statistical method to test both the direct and indirect effects of hypothesized determinants on self-determined behaviors. Knowledge of child and family determinants will guide families and service providers in supporting young children with CP to develop to their fullest capability.

### 1.2. Conceptual model of determinants of self-determined behaviors in young children with CP

Fig. 1 presents our conceptual model of determinants of self-determined behaviors of young children with CP. The model was conceptualized based on appraisal of research and empirical perspectives and discussions among the authors. The model proposes the contributions of direct and indirect paths between the child, family, and environmental characteristics and self-determined behaviors of young children with CP.

#### 1.2.1. Child characteristics

As shown in Fig. 1, we propose that child characteristics have a direct effect on, and are the largest contributors to, self-determined behaviors. Child characteristics represent capacity related to knowledge, abilities, perceptions, playfulness, gross motor function, cognitive-behavioral problems (cognition, communication, and emotional/behavioral problems), and age.

Playfulness is proposed to be a direct and strong determinant of self-determined behaviors by virtue of three shared characteristics of the two constructs: intrinsic motivation, internal locus of control, and engagement (Chang et al., 2012). Playfulness is a behavioral attribute of the individual that is characterized by flexibility, spontaneity, and high-spirited fun (Bundy, 1997; Hamm, 2006; Hess & Bundy, 2003; Rubin et al., 1983). Bundy (1997) proposed four elements of playfulness: intrinsic motivation, internal control, freedom to suspend reality, and framing. Children who are playful tend to be creative and flexible in solving problems and often demonstrate positive affect (Bundy, 1998). In preschoolers without disabilities, Saunders, Sayer, and Goodale (1999) reported a positive moderate relationship ( $r = .51, p < .05$ ) between playfulness and adaptive behaviors. Although the result cannot be generalized to young children with CP, the finding supports proposing playfulness as a strong determinant of self-determined behaviors for young children with CP.

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