



ELSEVIER

Contents lists available at ScienceDirect

# Research in Developmental Disabilities



## Object-related generativity in children with Down syndrome<sup>☆</sup>



Deborah J. Fidler<sup>a,\*</sup>, Elizabeth Will<sup>a</sup>, Lisa A. Daunhauer<sup>a</sup>,  
 Brianne Gerlach-McDonald<sup>a</sup>, Jeannie Visootsak<sup>b</sup>

<sup>a</sup> Human Development and Family Studies, Colorado State University, 1570 Campus Delivery, Fort Collins, CO 80523, USA

<sup>b</sup> Departments of Human Genetics and Pediatrics, Emory University, 2165 N. Decatur Rd., Decatur, GA 30033, USA

### ARTICLE INFO

#### Article history:

Received 3 June 2014

Accepted 7 July 2014

Available online 6 September 2014

#### Keywords:

Down syndrome

Generativity

Goal-directed behavior

### ABSTRACT

Children with Down syndrome (DS) show challenges in some aspects of goal-directed behavior when compared to developmentally matched children (Daunhauer et al., 2014; Lee et al., 2011), particularly in the area of goal-directed action on objects (Fidler et al., 2005a,b). In this study, we examined one aspect of goal-directed action on objects, object-related generativity, in school-aged children with DS ( $n = 52$ ), a developmentally matched group of children with intellectual disability, but not Down syndrome (DD;  $n = 21$ ), and a group of chronologically younger, but developmentally matched typically developing children (TD;  $n = 34$ ). We administered the Leiter-R, the Oral and Written Language Scales (OWLS), and an Object-Related Generativity Task, which involved 2 min of unstructured play with a variety of objects that have divergent usages. Children with DS generated significantly fewer instances of initiating actions on new objects than children in both comparison groups, were less likely to produce novel functional action on any object (new or familiar) than TD children, and they showed fewer instances of novel functional object engagement with new objects overall than TD children. Frequency of acts on new objects in DS was associated with Leiter-R Form Completion and Repeated Patterns Raw Scores and OWLS Listening Comprehension Raw Scores. These findings contribute to the growing knowledge base regarding goal-directed behavior and self-regulation in individuals with Down syndrome. Implications for education and intervention are discussed.

© 2014 Elsevier Ltd. All rights reserved.

## 1. Introduction

Children with Down syndrome (DS) show relative challenges in aspects of goal-directed behavior when compared to developmentally-matched children (Daunhauer, Fidler, Lee, Will, & Hepburn, 2014; Fidler, Hepburn, Mankin, & Rogers, 2005; Fidler, Philofsky, Hepburn, & Rogers, 2005; Lee et al., 2011). In particular, the early development of goal-directed action on objects appears to be an area of impairment in infants with DS (de Campos, da Costa, Savelsbergh, & Rocha, 2013; MacTurk, Vietze, McCarthy, McQuiston, & Yarrow, 1985) and toddlers with DS (Fidler, Philofsky, et al., 2005) relative to overall developmental status. Two-year-old children with DS plan notably less optimal strategies than MA-matched children

<sup>☆</sup> The authors are grateful to the children and families who graciously contributed their time to this project. This study was funded by the U.S. Department of Education, National Institute of Disability and Rehabilitation Research (H133G100197) and the U.S. Department of Education, Institute of Educational Science, Special Education Research Grants (R324A110136).

\* Corresponding author. Tel.: +1 970491 7870.

E-mail addresses: [Deborah.fidler@colostate.edu](mailto:Deborah.fidler@colostate.edu) (D.J. Fidler), [Elizabeth.will@colostate.edu](mailto:Elizabeth.will@colostate.edu) (E. Will), [lisa.daunhauer@colostate.edu](mailto:lisa.daunhauer@colostate.edu) (L.A. Daunhauer), [brrgerla@rams.colostate.edu](mailto:brrgerla@rams.colostate.edu) (B. Gerlach-McDonald), [jvisoot@emory.edu](mailto:jvisoot@emory.edu) (J. Visootsak).

on an object retrieval task that involves minimal motor demands (obtaining a desired object through the opening of a clear box; Fidler, Hepburn, et al., 2005). Similar findings have been observed when children with DS complete a comprehensive battery of object-related planning tasks (e.g. putting a necklace in a cup, putting coins in a coin bank; Fidler, Philofsky, et al., 2005). Understanding the complex pattern of challenge and competence in this area in DS may be of particular importance in that the ability to formulate actions on objects during early development has been found to predict later academic outcomes in typically developing children (Bornstein, Hahn, & Suwalsky, 2013). Effective planning with objects has also been concurrently linked to adaptive behavior outcomes and early instrumental communication in young children with DS (Fidler, Hepburn, et al., 2005).

Recent evidence also suggests that object-related behavior may affect the ways that children with DS respond to early intervention. Fey, Yoder, Warren, and Bredin-Oja (2013) recently reported that the dimension of 'object interest' moderated intervention effects for preschoolers with DS in a rigorous communication/language focused early intervention program. Object interest was coded in the context of a Developmental Play Assessment where children were presented with sets of toys for 5 min segments, with minimal experimenter scaffolding offered. The specific dimension of object interest was operationalized as the number of different toys with which a child engaged in functional or symbolic play. A second dimension of 'object knowledge' was operationalized as the number of different play acts (functional or symbolic) that the child engaged in. Fey et al. (2013) reported that the object interest variable moderated treatment response in the areas of receptive and expressive vocabulary both at the end of the intervention, and after a 6 month post-intervention follow-up assessment.

Despite the fact that children with DS have been shown to demonstrate challenges in goal-directed action on objects relative to developmentally matched peers, the dimension of object-related behavior in DS remains poorly characterized. There is some suggestion that during the first year of life, infants with DS specifically show impoverished reaching for and manual exploration of objects in comparison to TD infants (de Campos et al., 2013; MacTurk et al., 1985d). Toddlers with DS have also been shown to produce less optimal reaching strategies for goal-directed planning with objects (Fidler, Hepburn, et al., 2005; Fidler, Philofsky, et al., 2005). A more comprehensive account of the specific nature of object-related behavior in childhood in DS will shed light on this potentially important dimension, and will enable researchers to address this profile to enhance intervention and educational outcomes.

To understand the specific presentation of object-related behavior outcomes in DS during childhood, it may be important to examine and describe performance on the dimension of *object-related generativity*. Object-related generativity is defined here as the ability to flexibly produce a variety of behaviors and strategies on a variety of novel objects. In particular, it may be useful to identify the extent to which, under carefully controlled conditions, children with DS differ from developmentally-matched peers in terms of the frequency with which they engage with novel versus familiar (previously manipulated) objects, and the use and range of novel or familiar (previously produced) actions on objects. Beyond these previously uncharacterized dimensions, it may also be helpful to describe the extent to which strategies produced can be categorized by conventional play categories of sensory or functional acts on objects, and whether these interact with the use of novel objects or novel acts. In this study, patterns of performance on the dimension of object-related generativity in DS are compared to two mental-age matched comparison groups. The association between performance on an object-related generativity task and cognition and language measures is examined as well.

## 2. Method

### 2.1. Participants

Participants were 52 children with Down syndrome, 21 nonverbal mental age (NVMA)- and chronological age-matched children with other developmental disabilities (DD), and 34 NVMA matched typically developing (TD) children (see Table 1 for demographic information). All three groups demonstrated a mean NVMA of approximately 4 years as measured by the Leiter Scales of Performance-Revised (Leiter-R; Roid & Miller, 1997). Groups showed similar distributions of gender and ethnicity, though maternal age was significantly higher for the DS group when compared to the TD group. The disability groups were close in chronological age, though the children in the DD group were marginally older. The TD group was significantly younger chronologically than the two disability groups. None of the children in the two disability groups met criteria for co-occurring autism spectrum disorder.

### 2.2. Procedures

This study was conducted under the IRB approval at Colorado State University. Participants were a subset from a larger-scale research study funded by U.S. Department of Education, National Institute of Disability and Rehabilitation Research (H133G100197) and the U.S. Department of Education, Institute of Educational Science, Special Education Research Grants (R324A110136). Participants were recruited through Rocky Mountain Down Syndrome Association, the Poudre School District in Fort Collins, CO, JFK Partners, a University Center of Excellence in Developmental Disabilities at the University of Colorado-Denver, and a regional genetics clinic in Decatur, GA. Parents of child participants provided written consent prior to completing any measures. Children provided assent for participating in developmental measures.

Child participants attended 2–3 assessment visits. Parents completed questionnaires and observed laboratory assessment visits.

Download English Version:

<https://daneshyari.com/en/article/10317443>

Download Persian Version:

<https://daneshyari.com/article/10317443>

[Daneshyari.com](https://daneshyari.com)