



Contrasting approaches to the response-contingent learning of young children with significant delays and their social–emotional consequences



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ABSTRACT

Aims: The purpose of the analyses described in this paper was to evaluate the direct and indirect effects of two different approaches to child response-contingent learning on rates of child learning and both concomitant and collateral child social–emotional behaviour.

Method: The participants were 71 children with significant developmental delays or multiple disabilities randomly assigned to either of the two contrasting approaches to interventions.

Results: Findings showed that an intervention which employed practices that built on existing child behaviour (asset-based practices) was more effective than an intervention focusing on teaching children missing skills (needs-based practices) for influencing changes in the rates of child learning as well as rates of child social–emotional behaviour mediated by differences in rates of child learning.

Implications: Both the theoretical and practical importance of the results are described in terms of the extended social–emotional benefits of asset-based response-contingent learning games.

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What this paper adds

This study adds to the knowledge base in terms of the type of response-contingent intervention practices that is associated with the differences in rates of learning among young children with significant developmental delays or multiple disabilities. An approach to intervention that builds on existing child behaviour was found to be more effective than an approach that focused on teaching missing skills. Differences in rates of child learning in turn were related to differences in changes in child social–emotional behaviour while producing reinforcing consequences (concomitant behaviour) and changes in social–emotional responding while not engaged in contingent responding (collateral behaviour). The study is the first to demonstrate the latter effects among young children with disabilities and delays in an efficacy trial.

1. Introduction

This paper includes findings from analyses of the effects of two different types of operant learning games on the response-contingent learning of young children with significant developmental delays and multiple disabilities and the relationships between child learning and child social–emotional behaviour. Operant learning games are characterized by behaviour-based

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contingencies where the availability of a reinforcing consequence is dependent on production of a behavioural response (e.g., child leg kicks making a mobile move and produce sound; child head turns reinforced by a parent smiling and talking to his or her child). Infants without delays or disabilities demonstrate response-contingent learning as early as 2–4 months of age (Lipsitt, 1969), whereas children with disabilities or delays typically demonstrate contingency learning at somewhat older ages (Hutto, 2007). Reviews of studies of the response-contingent learning of children with disabilities or delays nonetheless demonstrate the ability to use behaviour to control environmental consequences in a manner much the same as infants without disabilities or delays (e.g., Dunst, Storck, Hutto, & Snyder, 2007d; Dunst, Gorman, & Hamby, 2010a).

Research investigating the response-contingent learning of children with disabilities indicates that the ability to learn behaviour to produce reinforcing consequences occurs in a similar manner regardless of child condition, disorder, etiology, or severity of developmental delay. Infants and young children with Down syndrome (Ohr & Fagen, 1994), Rett syndrome (Sullivan, Laverick, & Lewis, 1995), cerebral palsy (Dunst, Cushing, & Vance, 1985), and children with multiple disabilities (e.g., Lancioni et al., 2006; O'Brien, Glenn, & Cunningham, 1994) have all been found to demonstrate response-contingent learning in situations where a reinforcing stimulus follows a behavioural response. The same is the case for young children with visual impairments (Lancioni, Singh, O'Reilly, Oliva, & Groeneweg, 2005b), hearing impairments (Friedlander & Whitten, 1970), and children with both visual and hearing impairments (Friedlander, Silva, & Knight, 1973).

An important aspect of response-contingent learning opportunities is a child's development of contingency detection (Tarabulsky, Tessier, & Kappas, 1996) and contingency awareness (Watson, 1966) which are indicators of a child's recognition and understanding that he or she is the agent of an environmental effect (Gunnar, 1980). The consequences of that recognition are often increased social-emotional responding, including smiling, laughter, vocalizations, and excitement (McCall, 1972). Haith (1972) noted that contingency recognition and awareness are associated with social-emotional responding because cognitive achievement is pleasurable.

Reviews of contingency studies of young children with and without disabilities or delays (Dunst, 2007b) and older individuals with intellectual and multiple disabilities (Lancioni, Singh, O'Reilly, Oliva, & Basili, 2005a) indicate that the social-emotional benefits of response-contingent learning opportunities for children with disabilities are much the same as those found in studies of young children without disabilities or delays albeit at attenuated levels. Dunst, Raab, and colleagues, as part of their research and practice on the response-contingent learning of young children with developmental delays and disabilities, found not only increases in child social-emotional responding while the children were engaged in response-contingent behaviour (concomitant behaviour), but also increases in collateral (Bruner & Revusky, 1961) social-emotional responding when not engaged in a behaviour producing reinforcing consequences (e.g., Dunst et al., 2007a, 2007b; Dunst, Raab, Wilson, & Parkey, 2007c).

Concomitant social-emotional behaviour is typically manifested concurrently with contingency responding (e.g., laughing while producing an environmental consequence) or within 3 or 4 s after producing a reinforcing effect while simultaneously observing an environmental consequence (e.g., smiling and vocalizing while observing the movement of a mobile produced by a child behaviour). In contrast, collateral behaviour occur between response-reinforcement sequences but are not directly related to contingency responding (Iversen, 1976; Stein & Landis, 1973). That is, collateral behaviour is correlated with contingency responding but is not the result of an environmental consequence (e.g., smiling at a parent following a child's behaviour activating a switching device to produce an environmental effect).

1.1. Purpose of the study

The analyses described in this brief report build on and extend previous research by investigating the relationships between (a) contrasting types of response-contingent interventions and rates of both (b) child response-contingent learning and (c) child concomitant and collateral social-emotional behaviour as part of a randomized controlled design efficacy trial of the two different types of interventions (Raab, Dunst, & Hamby, 2016, 2017). The contrasting interventions used either existing child behaviour or missing/delayed skills as the target child behaviour for producing reinforcing consequences. Eloff and Ebersöhn (2001) described the two approaches as asset-based and needs-based early intervention practices respectively.

Children in the asset-based intervention were observed in their homes and their parents queried to identify children's behaviour (head turns, vocalizations, arm and leg movements, etc.) but not used intentionally to produce environmental consequences. Behaviour manifested most often were selected as intervention targets and reinforced as part of response-contingent learning games. Children in the needs-based group were administered a developmental scale where emerging behaviour or behaviour just above the ceiling level of performance were selected as intervention targets and reinforced as part of response-contingent learning games. Lancioni, O'Reilly, Oliva, and Coppa (2001) described the differences between the two types of interventions in terms of asset-based practices not requiring excessive child effort to control environmental consequences and needs-based approaches requiring excessively high levels of child effort to control environmental consequences.

The study is part of a line of research and practice where parents and other primary caregivers have been taught to use response-contingent learning games to promote children's acquisition of behaviour to increase engagement and interactions with people, toys, and other materials (Dunst, 2007a). Parent-implemented early intervention for infants and toddlers with disabilities and older preschoolers with significant developmental delays is now common practice in most countries in most parts of the world (e.g., Faccini & Combes, 1998; Guralnick, 2005; Odom, Hanson, Blackman, & Kaul, 2003; Sukkar, Dunst, & Kirkby, 2017). Results from the research and practice were expected to identify which types of interventions under which

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