Melinda Raab[1]
Carl J. Dunst[2]
Linda L. Wilson[3]
Cindy Parkey[4]

Early Contingency Learning and Child and Teacher Concomitant Social–Emotional Behavior*

Abstract

The value-added benefits of young children's response-contingent learning were examined in a study of three children (2 females, 1 male) with multiple disabilities and profound developmental delays. Contingency learning games were used to increase child operant responding, and both the children's and their teachers' concomitant social–emotional behavior associated with operant responding were mapped onto child learning. Results showed that the learning games promoted child learning and that collateral child and teacher behavior were predictably associated with operant responding. The manner in which the findings extend the results from previous research are described.

Key words: Response-contingent stimulation, learning games, operant behavior, social-emotional behavior.

Watson's (1972) seminal paper demonstrating the early operant learning capabilities of 3- and 4-month-old infants, and his observations of the concomitant social-affective behavior associated with operant responding, sparked interest in understanding the nature of the concomitant behavior. More than 30 years of research has consistently found that infants and young children with or without disabilities or delays manifest social–emotional behavior in response to behavior producing reinforcing consequences, where the clarity of the behavior/reinforcement relationship heightens the strength of responding (Dunst, 2007; Fagen, 1993; Gergely & Watson, 1999). It is now generally acknowledged that contingency detection (Tarabulsy, Tessier, & Kappas, 1996) and awareness (Watson, 2001), and a child's apparent recognition of his or her ability to

[1] Associate Research Scientist, Orelena Hawks Puckett Institute, Asheville, NC, USA
[2] Research Scientist, Orelena Hawks Puckett Institute, Asheville, NC, USA
[3] Director, Even Start Program, Burke County Public Schools, Morganton, NC, USA
[4] Assistant Branch Head, Infant/Toddler Program, North Carolina Department of Human Services, Raleigh, NC, USA

* The research described in this paper was supported, in part, by funding from the U. S. Department of Education, Office of Special Education Programs, Research to Practice Division (H024B0015). Appreciation is extended to the teachers who participated in the study. Special thanks to Mark Wolery for his comments and feedback on an earlier version of the paper. Correspondence to: Melinda Raab, Ph.D., Orelena Hawks Puckett Institute, 8 Elk Mountain Road, Asheville, NC, USA 28806 (email: mraab@puckett.org).

affect environmental consequences (Fagen, 1993), are the source of a sense of a child's enjoyment or pleasure.

Researchers have also consistently found that young children's caregivers manifest positive affect in response to child displays of competence and most notably newly acquired behavior (Stern, Hofer, Haft, & Dore, 1985). Goldberg (1977) and others (e.g., Granic, 2000; Mowder, 2005) noted as well that when the efforts of persons caring for infants and young children have intended effects, the caregivers derive gratification in seeing the consequences of their efforts. Dunst, Cushing, and Vance (1985), in a study of the operant learning of young children with profound developmental delays and multiple disabilities, noted that when parents "see their child for the first time manifest behavior competencies…[they] often manifest a sense of pleasure and enjoyment in [response to] their child's newly learned behavior" (p. 44).

Findings from a number of recently completed studies indicate that both children and their caregivers (parents and teachers) display a host of social–emotional behavior in response to child operant learning (Dunst, Raab, Trivette, Parkey et al., 2007; Dunst, Raab, Trivette, Wilson et al., 2007). The participants in these studies were young children with profound developmental delays and multiple disabilities, none of whom demonstrated intentional or instrumental behavior or contingency awareness or detection (Tarabulsy et al., 1996; Watson, 1966) as determined by formal testing, behavior observations, or parent or teacher report. The parents and teachers both implemented learning games with the children that were characterized by behavior-based contingencies where the delivery of reinforcement or the production of an interesting consequence was dependent on the children's behavior. Observations of the children and caregivers were used to collect information about the children's operant behavior and both the children's and caregivers' social–emotional behavior. In nearly every analysis, the larger the percentage of game trials that resulted in a reinforcer, the more the children and caregivers displayed positive affect (smiling and laughter) and the more they produced positive vocalizations (children) and verbalizations (caregivers).

The results from the Dunst, Raab, Trivette, Parkey et al. (2007) and Dunst, Raab, Trivette, Wilson et al. (2007) studies, although instructive, could be confounded or artifactual, because the research designs were correlational rather than experimental. The research design employed in the study reported in this paper permitted more experimental control, where the findings, if the same or similar to those reported in our other studies, would likely not be confounded. This would be the case since the design we used allowed causal inferences not generally warranted when using quasi-experimental designs (Horner, Halle, McGee, Odom, & Wolery, 2005).

The purpose of this study was to determine if child response-contingent learning was associated with collateral changes in behavior not the focus of conditioning. More specifically, we investigated contingency learning in three preschool children with profound developmental delays and multiple disabilities and determined the manner in which the social–emotional behavior of the children and their teachers providing the

children contingency learning opportunities was correlated with and mapped onto operant learning. Demonstrating such an intervention effect would be an example of value-added benefits to both the children and their caregivers.

Method

Participants

The participants were three children ("Amy," "Brenda," and "Cory") with developmental disabilities and their teachers. Amy was a 35 month-old female with cerebral palsy who had a developmental age of 5 months and a developmental quotient (DQ) of 16 as determined by the Griffiths (1954) developmental scales. Brenda was a 48 month-old female who had a developmental age of 4 months and a DQ of 9. She had cerebral palsy and a visual impairment. Cory was a 52 month-old male who had a developmental age of 3 months and a DQ of 6. He had cerebral palsy, a visual impairment, and a seizure disorder.

The children's teachers were three Caucasian females between 25 and 30 years of age. Amy's and Cory's teachers had high school degrees, and Brenda's teacher had a bachelor's degree in special education. Amy's teacher was the lead teacher in an inclusive preschool classroom at a community childcare program; Brenda's teacher was the special education teacher in a preschool classroom at a regional rehabilitation center; and Cory's teacher was the lead teacher in a classroom program at a residential center for children with visual impairments. The teachers had between 3 and 8 years experience working in the programs.

Design and Procedures

A multiple baseline design across participants (Barlow & Hersen, 1984; Horner et al., 2005) was used to assess the effectiveness of the learning games for promoting the acquisition of response-contingent child behavior and for mapping child and teacher social–emotional behavior onto operant responding. The study phases included baseline, intervention, and maintenance. The intervention phase was subsequently divided into acquisition and mastery phases for purposes of mapping social–emotional behavior onto operant learning. The acquisition phase involved a child first learning response-contingent behavior, and the mastery phase involved a child's repeated high-level use of response-contingent behavior.

Baseline consisted of observations of the teachers implementing routine learning activities with the children. Teachers were asked to implement 2 or 3 activities that they were currently using to affect changes in child behavior or promote child learning. The kinds of activities implemented by the three teachers included physically manipulating a child to pick up and drop an object, rocking a child back and forth on a therapy ball, and repeatedly tickling a child to elicit a behavioral response. A learning activity trial was defined as a discrete effort on the part of a teacher to elicit or evoke a child behavior.

The intervention sessions were implemented over the course of 30 school days. An intervention session typically included a teacher implementing one or two games with a child. The mean numbers of games for the children per session were 1.60 (*SD* = 0.63), 1.75 (*SD* = .62), and 1.86 (*SD* = 0.38) for Amy, Brenda, and Cory, respectively. A game could include up to 15 trials, but for various reasons, the number of trials varied game by game and session by session. The reasons 15 trials were sometimes not completed included, but were not limited to, the child not feeling well, the child or teacher being distracted while playing the games, the teachers having to stop and attend to other children, and the changes in the classroom schedule necessitating that a game be ended (e.g., the start of snack or lunch time). The mean number of trials completed per game was 12.89 (SD = 2.39), 11.33 (SD = 2.42), and 11.32 (SD = 2.05), respectively, for Amy, Brenda, and Cory. The number of intervention sessions for the three children, were respectively, 14, 12, and 7.

The maintenance phase included two follow-up observations of each child. Teachers were asked to implement 2 or 3 games that they currently were using to promote child learning.

Settings and Materials

The learning games used to promote the children's acquisition of contingency behavior were developed together by the teachers and investigators. The children were first observed to identify behavior the children were capable of producing, the things (people and materials) the children seemed to enjoy, and stimuli that maintained the children's attention. The behavior most often exhibited by the children was selected as behavior targets, and learning games were developed that involved the use of the behavior to produce reinforcing consequences. None of the child behavior were used intentionally to affect environmental consequences as determined by investigator observations, teacher reports, or formal testing (Griffiths, 1954). That is, the behaviors were manifested randomly rather than intentionally and did not result in the production of a reinforcer.

The games used to affect child contingency behavior were implemented in a number of different locations in the classrooms, including the circle time area, gross motor area, and play table area. The children, depending on the game, were lying on the floor, sitting in an adapted seat, sitting on the teacher's lap, or held in the teacher's arms while playing the games. The particular position was in part determined by both the behavior selected as an operant and the materials used as part of a game.

Learning games that included the targeted operant behavior either resulted in a nonsocial reinforcing consequence (e.g., activating a mechanical switch to make a toy move or light up) or were reinforced by the teachers (e.g., looking at the teacher followed by the teacher talking to the child). Procedures described by Dunst (1981) and Lancioni (1980) were used as guidelines to develop the learning games. The interventions were implemented by the teachers at times set aside for the study. The number of different games the children played during the course of the study was 5, 4, and 4, respectively, for Amy, Brenda, and Cory.

The child behavior that were used as operants included batting or swiping at a mobile or activity bar, visually fixating on an adult's face, generalized body movements, and hand presses or arm pulls to activate a switch device. The reinforcers included the movement of a toy, the movement and sound of a wind chime or a toy attached to an activity bar, illumination of a light, the teacher responding socially or verbally to a child (e.g., saying "Go boom" and touching the child), recorded music or the voice of a familiar person, and the movement of air from a small battery-operated fan. Each game was characterized by behavior-based temporal contingencies where a child's behavior produced or was followed by a reinforcer (Tarabulsy et al., 1996).

Response Definitions and Measurement

Observations of both the children and teachers were made by the investigators during the baseline, intervention, and maintenance sessions. During the observations, child learning and both child and teacher social–emotional behavior were coded.

Activity and game trials. A baseline activity or intervention phase game trial was defined as a teacher introduction of a stimulus intended to elicit or evoke child behavior. A trial was operationalized as stimulus introduction followed by a teacher pause to discern a child's response to the stimulus. Pauses during the baseline were usually less than a few seconds whereas those during the intervention phase were 3 to 5 seconds.

Child contingency behavior. A contingency behavior was defined as a behavior that produced or elicited a reinforcement during an activity or a game trial and that was unprompted or unaided by the teachers. The measure of child learning was the percent of activity or game trials per session that were coded as an operant behavior.

Child and teacher concomitant behavior codes. The child concomitant behavior codes included smiling or laughter and vocalizations. A behavior was coded as a smile or laugh if there was a closed or open upward turning of the corners of the mouth with or without an audible laughing sound or an audible laughing sound without smiling. A behavior was coded as a positive vocalization if the child emitted an audible open vowel sound (other than laughing). Each concomitant behavior was coded as occurring or not occurring during an activity or game trial or immediately following the end of a trial.

Teacher behavior codes included social–emotional behavior (smiling or laughter) and positive teacher comments (recognition of child competence or teacher gratification in facilitating operant learning) displayed as part of or in response to child behavior. A behavior was coded as a smile if there was closed or open upward turning of the corners of the mouth and a behavior was coded as a laugh if there was an audible vocalization indicative of joy or exuberance. A behavior was coded as competence recognition if a teacher verbalized about a child's operant responding (e.g., "Amy has figured out how to do it."). A behavior was coded as gratification if a teacher commented about her efforts being successful (e.g., "I can't believe I got Cory to do that."). Concomitant teacher verbal behavior did not include any behavior that was used as reinforcers but rather were

comments made about child display of competence to other adults. Each of the four behaviors was coded as not occurring (0), occurring once (1), or occurring more than once (2) during a learning game.

The measure of child concomitant behavior was the percentage of activity or game trials that included displays of child social–emotional behavior. The measure of teacher concomitant behavior was the sum of the ratings for the games played with the children divided by the total of the possible ratings for the games played during a study phase multiplied by 100. The two child concomitant behaviors (smiling/laughing, positive vocalizations) and two teacher concomitant behaviors (smiling/laughter, verbal recognition/gratification) were mapped onto child operant responding for each study phase to assess the relationship between child contingency behavior and child and teacher social–emotional behavior.

Inter-observer Agreement

Twenty-six percent of the games were observed by two raters for establishing inter-observer agreement. Agreement was determined for child contingency behavior, the two child concomitant behavior, and the two teacher concomitant behavior. Percent agreement was calculated as the number of agreements divided by the number of agreements plus disagreements multiplied by 100. The percent agreement for child contingency behavior was 91 (Range = 84 to 96). The percent agreement for the child concomitant behavior was 91 for smiling or laughter (Range = 89 to 94) and 91 for vocalizations (Range = 89 to 94). The percent agreement for the teacher concomitant behavior was 94 for smiling or laughter (Range = 87 to 100) and 98 for positive comments (Range = 85 to 100).

Results

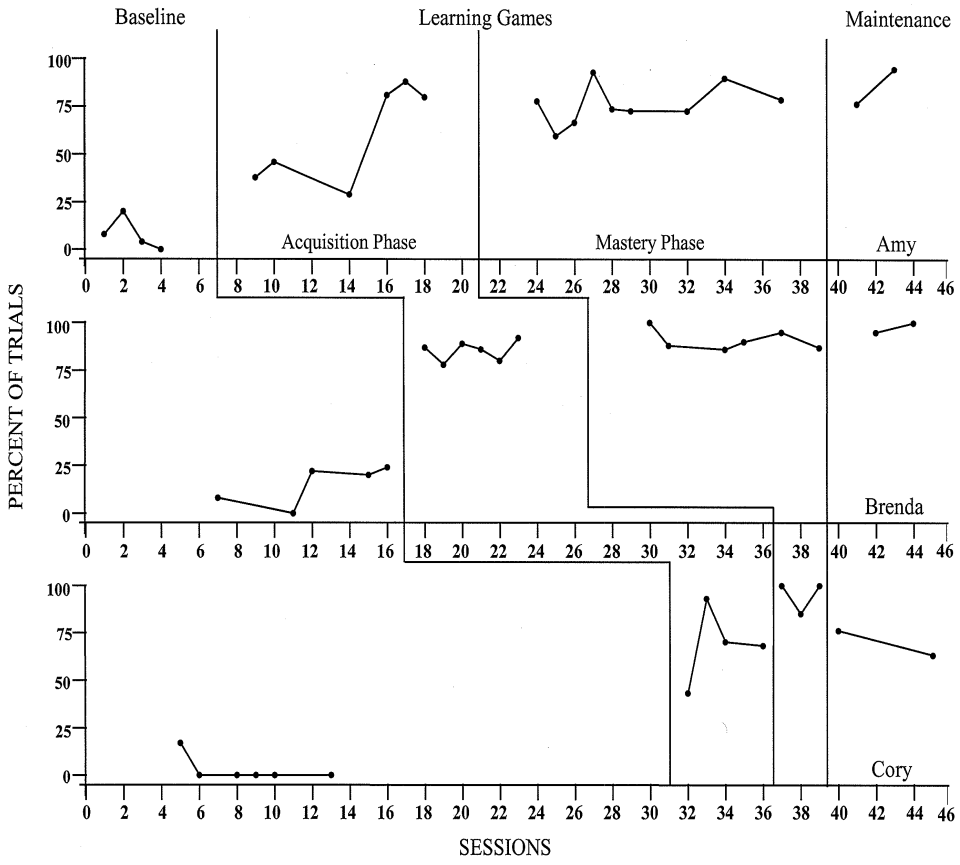
Child Learning

Figure 1 shows the results for the contingency game interventions. (The sessions that had missing data were due to child illness, family vacations, teacher work days, and school holidays or closings.) Small percentages of child behavior resulted in reinforcing consequences during the baseline condition. The largest majority of the practices used by the teachers during this phase of the study involved attempts to elicit child behavior using non-contingent stimulation (e.g., shaking a rattle to elicit head turning).

The introduction of the contingency games had the intended effects for all three children. Operant responding increased five-fold or more for each child. The interventions for all three children were subsequently divided into an acquisition phase during which the children learned response-contingent behavior, and a mastery phase during which the children developed contingency awareness. At the end of the mastery phase (last three intervention sessions), 83% to 96% of the game trials resulted in a reinforcing consequence.

The percent of game trials during the maintenance phase that included child behavior resulting in a reinforcing consequence were 86, 97, and 70, respectively, for Amy, Brenda, and Cory. Both Amy and Brenda maintained their high levels of operant responding, whereas Cory showed a slight decrease. For all three children however, the levels of operant responding at follow-up were nonetheless considerably higher than during the baseline condition.

Figure 1. Child production of response-contingent behavior during the different phases of the study.



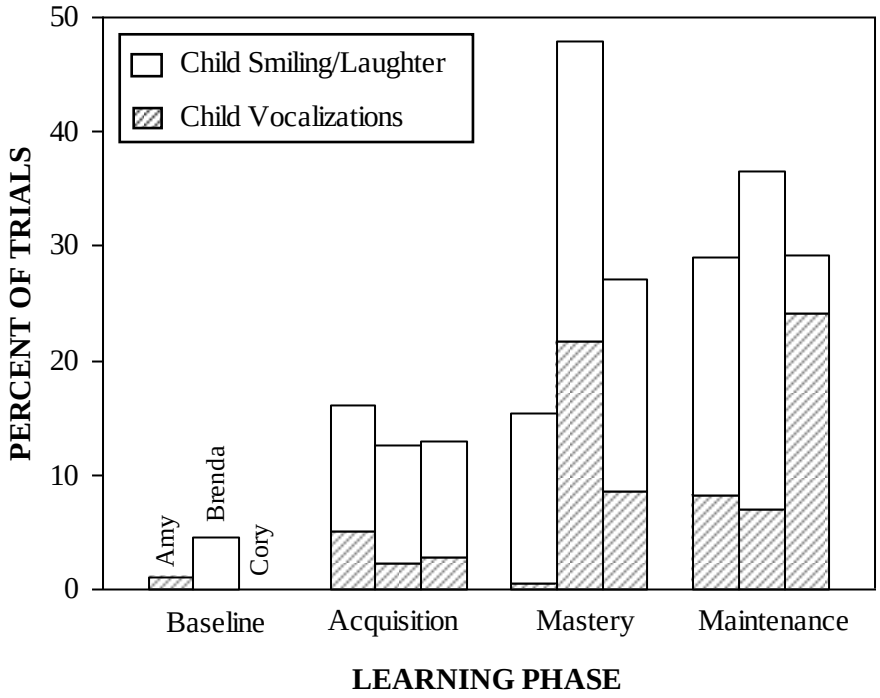
Child Concomitant Behavior

The manner in which child smiling, laughter, and vocalizations mapped onto child response-contingent behavior is shown in Figure 2. The percentage of game trials producing reinforcing consequences and associated with child concomitant behavior mapped onto child learning in a manner consistent with expectations. For all three children, the amount of social–emotional responding increased incrementally from the baseline to the acquisition to the mastery/maintenance phases of the study.

Teacher Concomitant Behavior

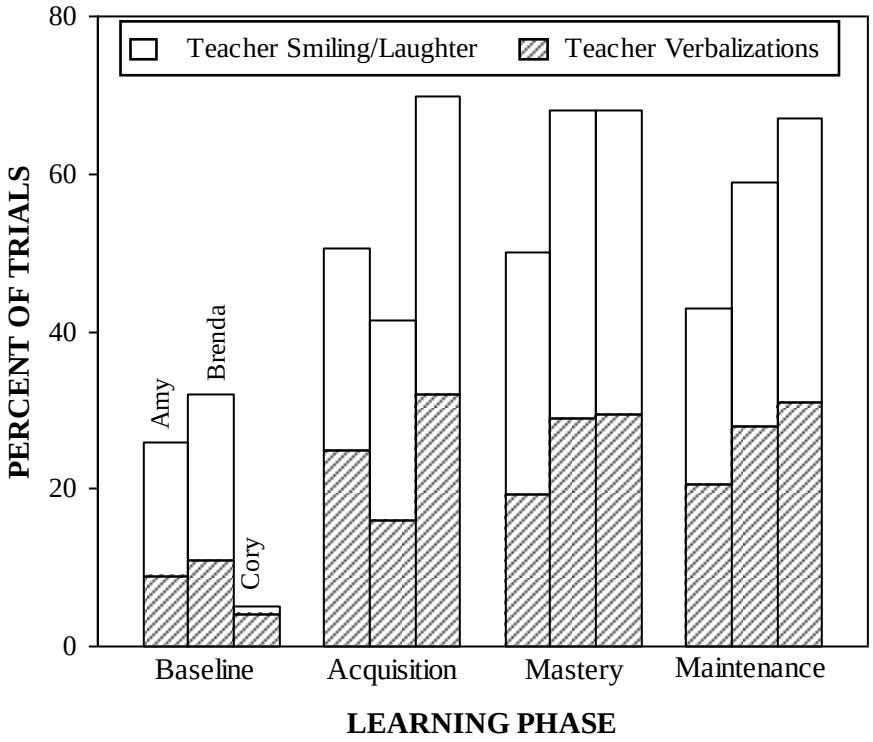
Figure 3 shows the manner in which teacher smiling/laughter and positive verbalizations mapped onto child operant learning. The amount of social–emotional behavior of each teacher during the baseline was proportional to the percent of child response-contingent behavior. Cory produced the least amount of operant behavior during the baseline, and his teacher displayed the least amount of social–emotional behavior. In contrast, Brenda produced the largest amount of operant behavior during the baseline, and her teacher showed the largest amount of social–emotional behavior.

Figure 2. Child production of social–affective and vocal behavior during the different phases of the study.



For all three children, the amount of social–emotional teacher behavior nearly doubled during the intervention and maintenance phases for both Amy and Brenda's teachers, and increased more than 8 fold for Cory's teacher. The marked increase in the social–emotional behavior of Cory's teacher is noteworthy because it reflects the pleasure and gratification derived from a child who essentially produced no operant behavior prior to the intervention and who learned instrumental behavior indicative of increased competence.

Figure 3. Teacher production of social–affective and verbal behavior during the different phases of the study.



Discussion

Results indicated that both child and teacher social–emotional behavior not the focus of response-contingent learning mapped onto child learning in a manner consistent with expectations. Findings support the hypothesis that response-contingent learning, and a child's recognition of his or her capabilities (contingency detection and awareness), evoked a sense of child pleasure and enjoyment, and that a caregiver providing a child learning opportunities that resulted in increased child competence derived gratification from both the child's and her own efforts. The collateral social–emotional behavior associated with response-contingent child behavior is indicative of the value-added benefits of the contingency learning opportunities for both the children and their teachers (Dunst, Trivette, Raab, & Masiello, 2008).

Findings reported in this paper both replicate and extend those reported by others (see Dunst, 2007, for a review). Most previous research of young children with disabilities has focused almost entirely on child social–emotional concomitants of response-contingent learning based on incidental observations of collateral behavior. The exceptions are studies by Hanson and Hanline (1985), Haskett and Hollar (1978), and

O'Brien, Glenn, and Cunningham (1994) who measured increases in child smiling and vocalizations during the conditioning phases of their studies. Results from this study extend those findings by demonstrating that child social–emotional behavior is correlated with differences during the acquisition and mastery phases of response-contingent behavior.

Results also extend previous research by demonstrating that the benefits of response-contingent child learning are manifested by children's caregivers as well. Teachers in this study both displayed enjoyment in seeing the children demonstrate competence and derived gratification in their abilities to effect changes in child behavior. Findings differ from previous research (Dunst, Raab, Trivette, Parkey et al., 2007; Dunst, Raab, Trivette, Wilson et al., 2007) by demonstrating this value-added benefit experimentally rather than nonexperimentally. The results are consistent with theory and research regarding caregivers' attributions about their role in promoting child learning and development (Hassall & Rose, 2005).

The results from this study taken together are consistent with theories of behavior and development that explicitly consider the consequences of behavior as a source of information for determining efficacious acts (e.g., Horowitz, 1987; Mowder, 2005; Skinner, 2005). The reinforcement provided the children in response to their behavior increased and maintained high levels of contingency behavior where the child's recognition of his or her capabilities (vis-à-vis social–emotional behavior) presumably mediated continued interactions with people and objects. Similarly, the teachers' recognition of child competence as well as their recognition of their ability to affect changes in child learning presumably functioned as reinforcers for the teachers maintaining the provision of child learning opportunities. It is now generally recognized that behavior is best understood in the context of transactional interactions between a person and the social and nonsocial environments in which his or her learning takes place (Sameroff & MacKenzie, 2003). This study illustrates a few of the characteristics and consequences of these kinds of person/environment transactions.

The results have direct implications for practice. The interventions and results show that rather simple and easily implemented contingency learning games can have rather dramatic effects on child learning, which included extended benefits to both the child and his or her caregivers. Interestingly, many of the interventions used with young children with profound developmental delays and multiple disabilities do not include the promotion of child behavior competence (Dunst, Raab, Wilson, & Parkey, 2007; Winefield, 1983). Rather, the interventions typically involve noncontingent stimulation to evoke child behavior or passive manipulation of child movements. The consequences are often behavior suppression rather than enhancement. This can be illustrated by further examination of the data from the study reported in this paper.

Secondary analyses of the intervention and baseline phases of the study found that it would require between 105 and 150 game trials to evoke 100 contingency behaviors during the intervention phase but would require between 600 and 3,000 trials of

noncontingent stimulation to evoke 100 contingency behaviors during the baseline (Dunst, Raab, Wilson et al., 2007). This suggests that response-contingent learning opportunities, and especially for children who demonstrate few instrumental behavior, is warranted as a form of early childhood intervention. The reader is referred to Dunst et al. (2008), Hodapp and Goldfield (1983), Lancioni (1980), and Watson, Hayes, and Vietze (1982), for examples of methods and procedures for using active child learning games as a means to promote child competence and affect changes in child and caregiver social-emotional behavior.

References

Barlow, D. H., & Hersen, M. (1984). *Single case experimental designs: Strategies for studying behavior change* (2nd ed.). New York: Pergamon Press.

Dunst, C. J. (1981). *Infant learning: A cognitive-linguistic intervention strategy*. Allen, TX: DLM.

Dunst, C. J. (2007). *Social-emotional consequences of response-contingent learning opportunities* (Winterberry Research Syntheses Vol. 1, No. 16). Asheville, NC: Winterberry Press.

Dunst, C. J., Cushing, P. J., & Vance, S. D. (1985). Response-contingent learning in profoundly handicapped infants: A social systems perspective. *Analysis and Intervention in Developmental Disabilities, 5*, 33-47.

Dunst, C. J., Raab, M., Trivette, C. M., Parkey, C., Gatens, M., Wilson, L. L., French, J., & Hamby, D. W. (2007). Child and adult social-emotional benefits of response-contingent child learning opportunities. *Journal of Early and Intensive Behavior Intervention, 4*, 379-391.

Dunst, C. J., Raab, M., Trivette, C. M., Wilson, L. L., Hamby, D. W., Parkey, C., Gatens, M., & French, J. (2007). Characteristics of operant learning games associated with optimal child and adult social-emotional consequences [Electronic version]. *International Journal of Special Education, 22*(2), 13-24.

Dunst, C. J., Raab, M., Wilson, L. L., & Parkey, C. (2007). Relative efficiency of response-contingent and response-independent stimulation on child learning and concomitant behavior. *Behavior Analyst Today, 8*, 226-236.

Dunst, C. J., Trivette, C. M., Raab, M., & Masiello, T. (2008). Early child contingency learning and detection: Research evidence and implications for practice. *Exceptionality, 16*, 4-17.

Fagen, J. W. (1993). Reinforcement is not enough: Learned expectancies and infant behavior. *American Psychologist, 48*, 1153-1155.

Gergely, G., & Watson, J. S. (1999). Early socio-emotional development: Contingency perception and the social-biofeedback model. In P. Rochat (Ed.), *Early social cognition: Understanding others in the first months of life* (pp. 101-136). Mahwah, NJ: Erlbaum.

Goldberg, S. (1977). Social competence in infancy: A model of parent-infant interaction. *Merrill-Palmer Quarterly, 23*, 163-177.

Granic, I. (2000). The self-organization of parent-child relations: Beyond bidirectional models. In M. D. Lewis & I. Granic (Eds.), *Emotion, development, and self-organization: Dynamic systems approaches to emotional development* (pp. 267-297). Cambridge, MA: Cambridge University Press.

Griffiths, R. (1954). *The abilities of babies: A study in mental measurement*. London: University of London Press.

Hanson, M. J., & Hanline, M. F. (1985). An analysis of response-contingent learning experiences for young children. *Journal of the Association for Persons with Severe Handicaps, 10*, 31-40.

Haskett, J., & Hollar, W. D. (1978). Sensory reinforcement and contingency awareness of profoundly retarded children. *American Journal of Mental Deficiency, 83*, 60-68.

Hassall, R., & Rose, J. (2005). Parental cognitions and adaptation to the demands of caring for a child with an intellectual disability: A review of the literature and implications for clinical interventions. *Behavioural and Cognitive Psychotherapy, 33*, 71-88.

Hodapp, R. M., & Goldfield, E. C. (1983). The use of mother-infant games as therapy with delayed children. *Early Child Development and Care, 13*, 17-32.

Horner, R. H., Halle, J., McGee, G., Odom, S., & Wolery, M. (2005). The use of single-subject research to indentify evidence-based practice in special education. *Exceptional Children, 71*, 165-179.

Horowitz, F. D. (1987). *Exploring developmental theories: Toward a structural/behavioral model of development*. Hillsdale, NJ: Erlbaum.

Lancioni, G. E. (1980). Infant operant conditioning and its implications for early intervention. *Psychological Bulletin, 88*, 516-534.

Mowder, B. A. (2005). Parent development theory: Understanding parents, parenting perceptions and parenting behaviors. *Journal of Early Childhood and Infant Psychology, 1*, 45-64.

O'Brien, Y., Glenn, S., & Cunningham, C. (1994). Contingency awareness in infants and children with severe and profound learning disabilities. *International Journal of Disability, Development, and Education, 41*, 231-243.

Sameroff, A. J., & MacKenzie, M. J. (2003). Research strategies for capturing transactional models of development: The limits of the possible. *Development and Psychopathology, 15*, 613-640.

Skinner, B. F. (2005). *Science and human behavior*. Cambridge, MA: B. F. Skinner Foundation.

Stern, D. N., Hofer, L., Haft, W., & Dore, J. (1985). Affect attunement: The sharing of feeling states between mother and infant by means of intermodal fluency. In T. M. Field & N. A. Fox (Eds.), *Social perception in infants* (pp. 249-268). Norwood, NJ: Ablex.

Tarabulsy, G. M., Tessier, R., & Kappas, A. (1996). Contingency detection and the contingent organization of behavior in interactions: Implications for socioemotional development in infancy. *Psychological Bulletin, 120*, 25-41.

Watson, J. S. (1966). The development and generalization of "contingency awareness" in early infancy: Some hypotheses. *Merrill-Palmer Quarterly, 12*, 123-135.

Watson, J. S. (1972). Smiling, cooing, and "the game". *Merrill-Palmer Quarterly, 18*, 323-339.

Watson, J. S. (2001). Contingency perception and misperception in infancy: Some potential implications for attachment. *Bulletin of the Menninger Clinic, 65*, 296-320.

Watson, J. S., Hayes, L. A., & Vietze, P. (1982). Response-contingent stimulation as a treatment for developmental failure in infancy. *Journal of Applied Developmental Psychology, 3*, 191-203.

Winefield, A. H. (1983). Cognitive performance deficits induced by exposure to response-independent positive outcomes. *Motivation and Emotion, 7*, 145-155.