

Influences of Contrasting Natural Learning Environment Experiences on Child, Parent and Family Well-Being

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Findings from a study examining the parent, family, and child well-being outcomes associated with different ways of conceptualizing natural learning environment practices are presented. One sample was asked to indicate the extent to which early intervention practitioners implemented their interventions in everyday family or community activities, and one sample was asked to indicate the extent to which everyday family or community activities were used as sources of child learning opportunities. Results showed that using everyday activities as sources of children's learning opportunities was associated with positive benefits, whereas practitioners' implementing interventions in everyday activities showed little or no positive benefits and in a number of analyses had negative consequences.

KEY WORDS: activity settings; natural environments; child well-being; parent well-being.

The purpose of the study described in this paper was to determine if different ways of implementing natural learning environment practices (see especially, Dunst *et al.*, 2001; Walsh *et al.*, 2000) had like or unlike effects on child, parent, and family well-being (Bornstein *et al.*, 2003; Diener, 2000). The Individuals with Disabilities Education Act (1997) requires Part C Infant/Toddler program participants be served in natural environments. The term *natural environments* refers to settings that are

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natural or typical for infants and toddlers without disabilities or delays and that are contexts for learning opportunities that occur either naturally or as a result of professional interventions. Well-being was the focus of investigation because it is considered a desired benefit of early intervention (Dunst *et al.*, 1988; Krauss, 1997; Krauss and Jacobs, 1990; Meyer *et al.*, 1994; Reynolds *et al.*, 2003) or a factor influencing the likelihood that interventions will produce expected outcomes (Davies and Cummings, 1998; Dunst *et al.*, 1997; Hauser-Cram *et al.*, 2001).

Research on the mediating and moderating effects of well-being on other aspects of functioning has been well documented (see e.g., Dunst and Trivette, 1988). Well-being is an especially important measure because positive child affect encourages adult responsivity (Field and Fogel, 1982), whereas negative child affect tends to elicit adult disengagement or punitive responses (Arnold and O'Leary, 1995). Similarly, parents who are experiencing heightened well-being are more likely to interact with their children in positive and supportive ways (Dunst and Trivette, 1988), whereas parents who are experiencing stress or depression tend to be unresponsive or interact with their children in inconsistent or unpredictable ways (Beardslee *et al.*, 1998; Herwig *et al.*, 2004). In those instances where child and parent positive affect and well-being are mutually engaging, optimal benefits are realized by both interactive partners (Estrada *et al.*, 1987; Feldman *et al.*, 1999; Kochanska and Aksan, 1995; Tronick *et al.*, 1982).

The study was conducted as part of a line of research examining the characteristics and consequences of different approaches to natural environment practices (Dunst *et al.*, 2000, 2001a, 2002). The research was guided by *development-in-context* perspectives of human growth and development (Alvarez, 1994; Bronfenbrenner, 1992, 1999; Dent-Read and Zukow-Goldring, 1997; Wozniak and Fischer, 1993) where the everyday activities making up the fabric of family and community life were considered principal contexts for child learning and development (Farver, 1999; Gallimore and Goldenberg, 1993). Findings-to-date have produced information about the sources of everyday learning opportunities (Dunst *et al.*, 2000); patterns of infant, toddler, and preschooler participation in everyday activities (Dunst *et al.*, 2002a); parents' and practitioners' perspectives of everyday natural learning environments (Dunst and Raab, 2004); and the characteristics and consequences of everyday learning on child, parent, and family functioning (Dunst, 2001b; Dunst *et al.*, 2001a, 2005, 2006; Trivette *et al.*, 2004).

The studies investigating the characteristics of everyday learning opportunities have produced evidence supporting Bronfenbrenner's (1993) contention that the factors most likely to produce optimal positive benefits are ones that "invite, permit, or [encourage] engagement in sustained,

progressively more complex interaction with an activity in the immediate environment” (p. 11). More specifically, the research that we have conducted indicates that participation in everyday natural learning environments that is interest-based, promotes and sustains child engagement with people and materials, provides contexts for competence expression, and encourages and supports child exploration and mastery, is associated with a range of positive child behavioral and development consequences as well as parent and family benefits (Dunst *et al.*, 2001a, 2002, 2005). For example, in our most recent study, rate of developmental progress of children with identified disabilities and delays was significantly greater in a group of infants, toddlers, and preschoolers whose participation in everyday activities was interest-based compared to a group of children whose participation was adult-directed (Dunst *et al.*, 2005).

Several studies in our research on everyday learning have produced findings indicating that how natural environment practices are conceptualized and implemented matters a great deal in terms of parent and child consequences (Dunst *et al.*, [in press](#)). In these studies, using everyday family and community activities as sources of natural learning environments was related to parents’ positive judgements about their parenting capabilities, psychological health, and their children’s behavioral and developmental competence. In contrast, early childhood practitioners implementing interventions in everyday family and community activities had no discernable effect or had negative effects in these same areas of parent functioning. For example, parents’ judgments of their parenting competence was positively associated with their children’s participation in everyday activities as sources of learning opportunities. In contrast, there was no covariation between practitioner implementation of their interventions in everyday activities and parents’ appraisals of their parenting competence.

The reasons for the differential influences of the contrasting approaches to natural environment practices are best understood by considering the fact that everyday activity settings making up the fabric of child and family life are strongly influenced by a number of sociocultural factors (Göncü *et al.*, 1999; Martini, 2002; Rogoff *et al.*, 1991; Sprunger *et al.*, 1985; Tudge *et al.*, 1999). The cross-cultural literature highlights the fact that the make-up of everyday activity and the nature of participation in these activities are influenced and guided by personal, family, and cultural values, beliefs, rituals, routines, customs, and mores that shape expectations about how everyday activity settings are “played out” as part of daily life. According to Gallimore *et al.* (1993), the social construction and subjective reality of everyday activity settings have ascribed meaning because people come to expect certain practices and behaviors to be appropriate and desired. Disruptions in the context of activity settings can be disconcerting and

upsetting. This seems to have been the case for the families who experienced practitioners implementing their interventions in everyday family and community activities.

The study reported in this paper was both a replication and an extension of our previous study of the differential effects of contrasting approaches to natural environment practices (Dunst *et al.*, 2006). The same methodology used in this previous investigation was used in the present study to relate variations in the contrasting approaches to natural environment practices to variations in the outcomes constituting the focus of investigation. The present study, unlike our previous investigation, included a test of whether child developmental status (identified disability vs. developmental delay) interacted with the type of natural environment practice in influencing child, parent, and family well-being. Based on our previous research (Dunst *et al.*, 2006), as well as the research of others (e.g., Janes and Kermani, 2001), we hypothesized that using everyday activities as sources of infants' and toddlers' learning opportunities would be related to heightened positive well-being and attenuated negative well-being and that professionals implementing interventions in everyday activities would be related to increased negative and decreased positive well-being.

METHOD

Participants

Parents and other caregivers were recruited by early intervention providers and programs using mailing lists obtained from state infant/toddler program coordinators. Invitations were sent to randomly selected programs in all states. Interested providers distributed surveys to program participants who returned the surveys to the investigators in postage-paid envelopes.

The sample included 801 parents and other primary caregivers of IDEA early intervention program participants. The sample was limited to children three years of age or younger who had either an identified disability or developmental delay based on aggregate information provided by the survey respondents. The children were almost equally divided in terms of having an identified disability (51%) or developmental delay (49%). The children with identified disabilities include those with chromosomal abnormalities (14%), physical disabilities (11%), brain injury (6%), sensory impairments (5%), health related conditions (5%), pervasive developmental disorders (3%), other syndromes (2%), and children with multiple disabilities (5%). The children with developmental delays had delays in two or

Table I. Background Characteristics of the Study Participants

Participant characteristics	AS → EI (N = 482)		EI → AS (N = 319)	
	Mean	SD	Mean	SD
Child age (months)	24.36	8.10	24.67	7.90
Parent age (years)	30.81	6.93	33.43	6.60
Parent education (years) ^a	13.17	2.18	14.52	2.52
Married/living with partner (%)	80		92	
Working outside the home (%)	46		44	
Ethnicity (NonCaucasian) ^b (%)	19		13	

Note. AS → EI indicates that everyday activity settings were used as sources of early childhood learning, and EI → AS indicates that early intervention was implemented in everyday activity settings.

^aNumber of formal years of school completed.

^bIncludes African American, Hispanic/Latino, Native American, Asian, Pacific Islander, Biracial, and other.

more areas of functioning (26%) or delays in only one area (speech, motor, cognitive, etc.) (24%).

Table I shows the background characteristics of the study participants. The children, on average, were about two years of age at the time the respondents completed the surveys. The parents were, on average, about 32 years of age, and had completed an average of about 13–14 years of formal schooling. The majority of the parents were either married or living with a partner, and about half of the survey respondents reported that they worked outside the home either full or part time. The parents’ demographic characteristics were very similar to those involved in early intervention programs throughout the United States (Hebbeler *et al.*, 2003). Approximately 14% of the study participants reported their ethnicity or race was other than White or Caucasian, which is almost exactly the percentage of non-white persons in the general population (Grieco and Cassidy, 2001).

Natural Environment Measures

The participants in the study completed either a survey asking them to rate the extent to which early intervention practitioners implemented services in activity settings (Early Intervention in Activity Settings) or a survey asking respondents to indicate the extent to which everyday activity settings were used as sources of learning opportunities (Activity Settings as Early Intervention). Engaging a child in range of motion exercises during the child’s bath time or a practitioner having a child name objects in a kitchen are examples of implementing early intervention in activity settings. A child watering flowers or vegetables with a garden hose and feeding fish

or ducks at a community pond are examples of using activity settings as everyday learning opportunities.

The survey question asking respondents to indicate the extent to which early intervention was implemented in activity settings was stated as follows: "How often do the early intervention staff working with your child do their work in the following settings or locations?" The survey question asking respondents to indicate the extent to which activity settings were used as sources of child learning opportunities was stated as follows: "How often is each of the following activities a setting where your child's learning takes place?"

The surveys included both family and community activity-setting items that were used to construct natural learning environment practices measures. The community and family activity-setting items on the surveys used as natural environment indicators were identical so as to have comparable measures for each sample. The community activity items included grocery shopping, library or bookstore story hours, playground or recreational activities, neighborhood walks, eating out, running family errands, etc. The family activity items included meal times, children's bath times, children dressing and undressing, playing outside around the house, family gatherings or "get togethers," etc. Principal components factor analyses were performed to produce standardized natural learning environment scores for each survey sample. All analyses produced single factor solutions with coefficient alpha's of .70 and .71 for the family activity items and .67 and .79 for the community activity items. The factor scores were used as the independent measures in the analyses described below.

Dependent Measures

The five measures constituting the focus of analysis were child positive affect, child negative affect, parent positive well-being, parent negative well-being, and family quality of life. For all five measures, either factor scores or standardized *z* scores were used as the dependent measures in the analyses described below. This was done to center the data to prevent errors in statistical inference (Cohen *et al.*, 2003; Jaccard *et al.*, 1990; Kraemer and Blasey, 2004).

Child Positive Affect

Positive child affect was measured by asking respondents to indicate on a 5-point scale how often his or her child produced four different behaviors (smiles, laughs, gets excited, enjoys being around people). Principal

components factor analyses produced single factor solutions and alpha coefficients of .73 and .77.

Child Negative Affect

Negative child affect was measured by a single item asking respondents to indicate on a 5-point scale how often his or her child became easily upset or frustrated. The parents' ratings were standardized so as to have a mean of zero (0) and a standard deviation of one (1).

Parent Positive Well-Being

Positive well-being (Bradburn, 1969; Diener and Emmons, 1985) was measured by asking respondents to indicate on a 5-point scale how often they experienced four different positive psychological feelings (excited, pleased, happy, content). Principal components factor analyses produced single factor solutions with alpha coefficients of .70 and .75.

Parent Negative Well-Being

Negative well-being (Bradburn, 1969; Diener and Emmons, 1985) was measured by asking respondents to indicate on a 5-point scale how often they experienced four different negative psychological feelings (lonely, stressed, upset or angry, bothered by "little things"). Principal components factor analyses produced single factor solutions with alpha coefficients of .58 and .63.

Family Quality of Life

Quality of life was measured by a single item asking respondents to indicate on a 10-point scale the extent to which their family had the worst or best life possible (Cantril, 1965; Diener, 1984). The parents' ratings were standardized to have a mean of zero (0) and a standard deviation of one (1).

Method of Analysis

The extent to which variations in the types of natural learning environment practices reported by the survey respondents (Activity Settings as

Early Intervention [AS \rightarrow EI] vs. Early Intervention in Activity Settings [EI \rightarrow AS]) were associated with variations in the well-being measures was determined using least squares linear regression analysis (Cohen *et al.*, 2003). All analyses were performed using either the principal components factor analysis results or standardized scores described above where each independent and dependent variable had a mean of zero (0) and a standard deviation equal to one (1).

Four analyses were performed. First, we assessed whether the standardized regression coefficients (slopes of the regression lines) for the contrasting approaches to natural learning environment practices in each study differed significantly from one another. These analyses provide a test of whether the relationship between the independent and dependent variables are the same or different for the two types of natural learning environment practices. This is a test of the null hypothesis that $\beta_1 - \beta_2 = 0$.

Second, we assessed whether the type of natural environment practices (EI \rightarrow AS vs. AS \rightarrow EI) interacted with the degree to which study participants reported experiencing the practices to determine if a conditional relationship existed between the independent and the dependent measures. Tests for interactions were performed following procedures described by Cohen *et al.* (2003) for determining whether *type* and *amount* of practice had equivalent influences on the outcome measures. The presence of an interaction provides a test of a conditional relationship between the type of practice and its consequences.

Third, we ascertained the relationship between the degree of natural learning environment practices experienced by the children and variations in the different outcomes by computing the standardized regression coefficients (beta's) for each study sample. The beta's, or slopes of the regression lines, were tested using t-tests to determine if there was a statistically significant relationship between the independent and dependent variables. This is a test of the null hypothesis that the regression coefficient is zero.

Fourth, we determined if child condition (disabled vs. delayed) was associated with variations in the five dependent measures and if child condition interacted with either study condition (AS \rightarrow EI vs. EI \rightarrow AS) or amount of natural environment practice in explaining differences in well-being.

RESULTS

The main findings from the between and within sample analyses are shown in Table II. Taken together, the different analyses indicated that the influence of the two contrasting approaches to natural environment

Table II. Regression Results for the Analyses of the Influence of Natural Learning Environment Practices on Well-Being

Outcome measure	Between slope Comparison <i>F</i> -test	Group × degree of intervention interaction <i>F</i> -test	Type of intervention				<i>t</i> -test
			AS → EI		EI → AS		
			Beta	<i>t</i> -test	Beta	<i>t</i> -test	
Family activity settings							
Child positive affect	5.53**	10.91***	.36	8.46†	.13	2.22**	
Child negative affect	2.61	5.14*	-.12	2.59**	.05	0.84	
Positive parent well-being	15.35†	30.41†	.32	7.39†	-.07	1.28	
Negative parent well-being	13.91†	26.61†	-.17	3.80***	.20	3.55***	
Family quality of life	14.46†	28.92†	.29	6.66***	-.09	1.60	
Community activity settings							
Child positive affect	6.69**	13.37†	.29	6.69***	.04	0.65	
Child negative affect	0.36	0.64	.01	0.16	.07	1.18	
Positive parent well-being	30.83†	61.34†	.35	8.21†	-.19	3.40***	
Negative parent well-being	17.19†	33.37†	-.18	4.03†	.23	4.14†	
Family quality of life	16.02†	32.04†	.30	6.76***	-.10	1.73	

Note. AS → EI indicates that everyday activity settings were used as the sources of child learning opportunities, and EI → AS indicates that early intervention was implemented in everyday activity settings.

**p* < .05.
 ***p* < .01.
 ****p* < .001.
 †*p* < .0001.

practices on well-being was not the same. More specifically, for both the family and community activity-setting analyses, the relationship between the use of two practices and variations in the well-being measures was dissimilar (between slope comparisons) where the relationship was conditioned on both type and amount of practice (group \times degree of intervention interaction).

The nature of the differences was apparent in the standardized regression coefficients (betas). In 9 of the 10 analyses, the use of everyday family and community activity settings as sources of natural learning opportunities was associated with enhanced child, parent, and family positive well-being and decreased child and parent negative well-being. In contrast, professionals implementing early intervention in everyday community activity settings were associated with attenuated positive parent well-being, and professionals implementing early intervention in family and community activities were associated with heightened negative parent well-being. In only one analysis was implementing interventions in everyday family activities associated with heightened positive well-being (child positive well-being). The strength of the relationship, however, was not nearly as strong as that for using everyday activities as sources of natural learning opportunities.

The analyses for child condition (disabled vs. delayed) produced significant main effects for only two well-being measures. Parents of children with developmental delays reported more negative child well-being than did parents of children with identified disabilities, $\beta = .15$, $t = 4.03$, $p < .0001$. In contrast, parents of children with developmental delays reported more positive parent well-being compared to the parents of children with identified disabilities, $\beta = .07$, $t = 2.01$, $p < .05$.

The 10 analyses produced only three interactions between child condition and the activity-setting measures: (1) a family activity setting \times child condition interaction for child negative well-being, $F(1, 781) = 4.41$, $p < .05$; (2) a community activity setting \times child condition interaction for parent well-being, $F(1, 773) = 4.31$, $p < .05$; and (3) a community activity setting \times child condition interaction for parent negative well-being, $F(1, 773) = 10.28$, $p < .001$. In all three cases, the moderating effects of activity-setting participation on increased positive well-being and decreased negative well-being was more pronounced for the subsample of children with identified disabilities compared to the children with developmental delays.

DISCUSSION

According to Bronfenbrenner (1992), human development and functioning is influenced by both person and environment factors where the

aim of an ecological science of human development is the “systematic understanding of the *processes* and *outcomes* [italics added] of human development” (p. 188). In the study described in this paper, child condition was a person factor and activity-setting practices were an environment factor. Results showed that the environment factor was a more important determinant of variations in child, parent, and family well-being and that the different types of activity-setting practices had differential effects on the well-being measures constituting the focus of investigation. More specifically, parents who reported using everyday activities as sources of naturally occurring learning opportunities also reported more positive and less negative well-being. In contrast, parents who indicated that professionals implemented their interventions in everyday activities reported more negative and less positive parent well-being. The patterns of findings were identical to those found in a previous investigation (Dunst *et al.*, 2006).

In both the present and previous study, the natural learning environment variables were constructed so as to be conceptually and procedurally distinct. Measuring the use of everyday activity settings as naturally occurring learning opportunities was intended to mirror the kind of learning opportunities most children experience as part of everyday living (e.g., Göncü, 1999; Lancy, 1996; Morelli *et al.*, 2003; Rogoff *et al.*, 1993; Tudge *et al.*, 1994). In contrast, measuring professionally implemented interventions in everyday activity settings was intended to mirror the ways in which many IDEA Part C interventions as well as other home-based interventions are conducted with infant and toddlers in the United States (e.g., Campbell and Halbert, 2002; Hebbeler and Gerlach-Downie, 2002; McBride and Peterson, 1997). These are, of course, only two of many variants of how natural environment practices can and are conceptualized and implemented (see especially, Dunst *et al.*, 2001b). The extent to which other variants have positive or negative effects deserves investigation in light of the findings reported in this paper and in our previous report.

Results demonstrating a positive relationship between AS \rightarrow EI and the well-being outcomes constituting the focus of investigation add to a burgeoning body of evidence indicating that this way of operationalizing natural learning environment practices has desirable benefits for both children and their parents (e.g., Dunst, 2001a, 2001b; Dunst *et al.*, 2001a, 2002b, 2006; Trivette *et al.*, 2004). The findings showing that EI \rightarrow AS had negative consequences in certain areas of functioning are consistent with findings from other studies indicating that in certain instances, professional efforts to be helpful can have unintended negative consequences (e.g., Dunst *et al.*, 1998; Janes and Kermani, 2001; King *et al.*, 1999; Law *et al.*, 2003). Taken together, the pattern of findings in available studies indicates that it matters how interventions are conceptualized and

implemented if they are to have intended and expected benefits. And this especially seems to be the case when intervening in settings that have strong sociocultural foundations like everyday activity settings.

Advances in our understanding of the conditions under which planned interventions are most likely to have optimal positive benefits make possible the provision of experiences and opportunities that promote rather than hinder growth and development (e.g., Dunst, 2004; Guralnick, 1997, 2005; Odom and Wolery, 2003). This is now the case in terms of natural environments and how these settings function as sources of everyday child learning opportunities. The natural environment provision of IDEA is a well meaning effort to ensure infants and toddlers with disabilities or delays have learning opportunities similar to their age peers without disabilities or delays. Notwithstanding the well meaning intent, operationalization of the natural environment provision has proceeded mostly in an atheoretical and nonevidence-based manner (see e.g., Dunst *et al.*, 2001b, for a review of contrasting practices). As a result, infants and toddlers participating in Part C early intervention programs may not be receiving the kinds of natural learning environment experiences having optimal development-enhancing characteristics and consequences (Dunst *et al.*, 2001b).

Findings that run counter to commonly held beliefs are often discounted as suspect or impugned (Chinn and Brewer, 1993). The data from this study no doubt will be responded to in this way by many interventionists, especially those who strongly believe that in the absence of direct professional intervention children with disabilities and delays will not and cannot progress in their development. The kinds of practices that have emerged from research on everyday learning opportunities—our own and that of others—have a strong research foundation that highlights those characteristics, features, and elements of the practices that will likely contribute to and produce positive consequences. The challenge is not building an evidence base, but rather changing the ways interventionists practice their crafts. Hopefully, with enough evidence, the “tipping point” will occur.

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