

## Everyday Learning Opportunities of Young Children With and Without Developmental Disabilities or Delays

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### ABSTRACT

Young children birth to 6-years of age and their families were each studied for 6 months to identify the everyday family and community activities that were sources of informal everyday learning opportunities. The participants included 115 children with identified disabilities or developmental delays and 91 children without disabilities or delays. Including children with and without disabilities or delays permitted an assessment of similarities and differences in patterns of participation in everyday activities. The investigation was conducted at 14 research sites in eight states to insure geographic, economic, racial, and ethnic diversity. This involved in-vivo observations, interviews of the children's parents or other primary caregivers, collection of artifactual evidence, and other sources of information to identify the make-up of each child's everyday learning opportunities. Results showed that both groups of children routinely participated in the same number of everyday family and community activities. The family activities afforded both groups of children the same number of learning opportunities. Children without disabilities or delays were afforded more learning opportunities in community activities compared to children with disabilities or delays. Descriptive analysis of the learning opportunities found that the children participated in a variety of informal environmental learning activities involving nature, animals, insects and bugs, water, plants, natural play structures, and soil (sand, dirt, etc.) in different learning places (forests, meadows, parks, playgrounds, etc.). Implications for practice are described.

**Keywords:** everyday activity settings, informal learning, environmental education, young children, parents, grandparents, siblings

The study described in this paper was conducted as part of a research institute funded by the U.S. Department of Education, Office of Special Education Programs to investigate the use of everyday activities as sources of young children's learning opportunities beyond those used by early intervention and preschool special education practitioners with infants, toddlers, and preschoolers birth to 6-years of age with identified disabilities or documented developmental delays. Case studies of the children and their families were conducted throughout the United States with families differing in race and ethnicity, socioeconomic backgrounds, and place of residence.

As part of the explanation of the institute to early childhood intervention practitioners to recruit children for the case studies, many practitioners often would say that families do not typically engage their children in learning activities in their homes or the community. What we quickly learned, however, was that most of the children's lives were rich in informal everyday learning opportunities, including many informal nature-related learning opportunities. What we observed and what parents described to research staff ran counter to what we were told we would find. To be assured that the types of learning opportunities we identified were similar or different compared to young children without disabilities or delays, we recruited a sample of typically developing children and their families residing in the same geographic areas as the children with disabilities or delays who also were similar in terms of family background characteristics. The results from these comparisons were expected to shed light on both the number of everyday activities and number learning opportunities afforded young children with and

without disabilities or delays and to determine if there was variability in these events and experiences for different subgroups of study participants.

### **Informal Everyday Child Learning**

The everyday lives of most infants, toddlers, and older preschoolers are made up of hundreds of everyday experiences, events, and activities that are sources of naturally occurring and informal, unstructured learning opportunities (e.g., Crinall & Somerville, 2019; Laird, McFarland-Piazza, & Allen, 2014; Wilson, 2018). Informal learning is embedded in meaningful and functional activities, is guided by a child's interests and preferences, involves guided participation by a parent, caregiver, or sibling, has no predetermined goals or expectations for the learner, and does not involve direct teaching or instruction (Callanan, Cervantes, & Loomis, 2011; Rogoff, Callanan, Guitierrez, & Erikson, 2016). In contrast, formal learning is didactic and involves teaching or instruction to promote a learner's acquisition of predetermined knowledge or skills. Findings from research syntheses of both nature and non-nature related activities show that young children benefit from informal, everyday learning opportunities (Dunst, Hamby, Wilkie, & Dunst, 2017; Sawitri, 2017).

Activity setting theorists describe informal (ordinary), everyday activities as sources of learning opportunities and context for early childhood development (Farver, 1999; Maynard, 2005). These types of activities are context-specific experiences, events, and transactions that involve a child's interaction with people, the physical environment, or both. These activities provide a child opportunities to learn about his or her behavior capabilities as well as the behavioral propensities of other people (Bronfenbrenner, 1999). This also includes outdoor activity settings where "children of all ages and abilities play and learn by engaging with and manipulating diverse natural elements, materials, organisms, and habitats" (Moore, 2014, p. 5). This study focused on the everyday learning of young children with and without disabilities or delays to determine similarities and differences in patterns of participation in everyday activities.

Young children experience everyday activities on both a routine and non-routine basis in and around children's homes (e.g., family mealtimes, water play, planting flowers, shared book reading, riding a trike) and in children's neighborhoods and broader-based communities (e.g., visiting friends or relatives, community vegetable garden, petting zoo). Dunst, Hamby, Trivette, Raab, and Bruder (2000), in a national survey of more than 3300 parents of young children residing in 49 of the 50 United States and two Jurisdictions, identified 11 categories of home and family activities and 11 categories of neighborhood and community activities. The home and family activities included things such as food shopping, yard work, and outside play. The neighborhood and community activities included such things as visiting nature centers, parent and child playgroups, neighborhood walks, and attending sporting events.

Dunst et al. (2000) employed an activity setting framework (Billick & Price, 2010; Blewitt, 2006; de Vos, Biggs, & Preiser, 2019; Farver, 1999) where different places and physical locations are considered sources of many different activity settings where any one activity setting is a source of many different learning opportunities. For example, streams, rivers, lakes, or ponds are viewed as sources of multiple activity settings (e.g., a body of water, shoreline, grassy areas, and trees or shrubbery) where different activity settings are viewed as sources of different learning opportunities (e.g., feeding fish or ducks, splashing in the water, digging in the sand, gathering leaves, and making mud pies) (Crinall & Somerville, 2019; Horvath, 2015).

According to Bronfenbrenner (1992, 1993), everyday activity settings, or micro-settings in his terminology, include a developing child, other people, and the objects and materials in both social and nonsocial environments. Bronfenbrenner (1993) noted that "The personal characteristics likely to be most potent in affecting the course...of [child] development...include those [features] that set in motion, sustain, and encourage processes of interaction between a [developing] person and two aspects of the proximal [social and nonsocial] environment: first, the people present in the settings; and second, the physical and symbolic features of the settings that invite, permit, or inhibit engagement in sustained and progressively more complex interactions with an activity in an immediate environment" (p. 11).

Findings from both quantitative and qualitative studies of young children's participation in everyday activity settings illustrate how the social and nonsocial characteristics of these different activities, experiences, and events are rich sources of informal, unstructured child learning opportunities (Crinall & Somerville, 2019; Ernst, 2018; Geerdts, Van de Walle, & LoBue, 2015; McClain & Vandermaas-Peeler, 2016; Schauble, Beane, Coates, Martin, & Sterling, 2013). Informal child learning in the context of everyday activities is defined as those settings where child interactions with people, objects, materials, organisms, and other entities (e.g., animals) provide opportunities to use or acquire behavior or skills to have environmental consequences where those consequences provide opportunities to learn about one's abilities and the response patterns of the social and nonsocial environment.

### **Informal and Formal Child Learning**

Informal, unstructured activities have increasingly been viewed as important sources of learning opportunities for typically developing young children (e.g., Born, 2018; Omidvar, Wright, Beazley, & Seguin, 2019; Schauble et al., 2013; Wilson, 2000). This is less true for young children with identified disabilities and developmental delays and is especially not the case for informal environmental learning activities. Findings from several studies indicate that early intervention and preschool special education practitioners view formal, structured activities as more important sources of learning opportunities compared to informal, unstructured activities (Dunst & Raab, 2004; Raab & Dunst, 2004; Sawyer & Campbell, 2009). Searches of the *Journal of Early Intervention*, *Topics in Early Childhood Special Education*, and *Infants and Young Children*, three publications focusing on young children with identified disabilities and developmental delays, found not a single paper on environmental education of children 6 years of age or younger. This indicates a need for studies of the informal learning opportunities of young children with disabilities or delays to ascertain if these children participate in unstructured learning activities like young children without disabilities or delays.

The same type of search for every issue of the *International Journal of Early Childhood Environmental Education* for studies of young children with disabilities or delays located no investigations specifically focusing on either group of children. Several authors, however, noted the need for studies of the informal learning of young children with disabilities and delays that included learning opportunities involving outdoor nature in different kinds of environments (Dernikos & Bhagwanji, 2018; Ernst, 2018). Dernikos and Bhagwanji (2018) in particular, noted a need for studies of young children with disabilities or delays to identify similarities and differences in the ways these children interact with and learn from nature compared to children without disabilities or delays. Jordon and Chawla (2019), as part of describing a nature-related research agenda, noted the need for an area of research to determine "how does nature exposure impact learning for children with special needs?" (p. 5).

### **PURPOSES OF THE STUDY**

The first purpose was to determine if young children with and without identified disabilities or developmental delays participated in similar or dissimilar numbers of everyday, informal family and community activities. The second purpose was to determine if everyday family and community activities afforded the study participants the same or different numbers of learning opportunities. The third purpose was to use descriptive results to illustrate the types of everyday activities of the children with a focus on informal environmental learning opportunities. Informal environmental learning encompasses activities involving nature, animals, insects and bugs, water, plants, natural play structures, habitats, organisms, and soil (sand, dirt, etc.) in different activity settings (forests, meadows, lakes, rivers, parks, playgrounds, gardens, etc.) (see especially Moore, 2014).

The study is part of a line of research and practice investigating the characteristics and consequences of everyday learning opportunities of young children with and without disabilities and delays with a focus on the importance of informal learning activities of young children with special needs and those at-risk for poor developmental outcomes (e.g., Dunst et al., 2001; Dunst, Hamby, Trivette, Raab, & Bruder, 2002; Dunst, Hamby, & Snyder, 2009; Dunst, Raab, Trivette, & Swanson, 2010; Trivette, Dunst, & Hamby, 2004). The results reported here include descriptions of the types of informal environmental and nature-related learning activities that were identified as part of case studies of the study participants.

## METHOD

### Sampling Procedure

A purposive sampling procedure was used to recruit young children with and without identified disabilities and developmental delays whose families differed in terms of place of residence, race or ethnicity, and focus of investigation (family activities or community activities). Participant recruitment was done by research assistants in 14 sites in Alaska (Ketchikan and Sitka), California (Los Angeles, Sacramento, and San Francisco), Connecticut (Farmington), Hawaii (Oahu), New Mexico (Albuquerque and Grants), New York (New York City), North Carolina (Asheville and Morganton), and Wisconsin (Madison and Milwaukee).

Birth to 3-year-old children with identified disabilities or developmental delays were recruited through Individuals with Disabilities Education Act (IDEA) Infant and Toddler Programs and children between 3 and 6 years of age were recruited through IDEA Preschool Special Education Programs. IDEA is a federal program where state agencies are awarded formula grants who have responsibility for establishing and funding local, community-based programs for young children who meet state eligibility criteria for early intervention or preschool special education. Children without disabilities or delays were recruited through childcare programs, preschool programs, Early Head Start Programs, and Head Start Programs in the same neighborhoods and communities where children with disabilities and delays resided.

Site directors (doctoral-level psychologists or educators) provided research assistants at each of the 14 field sites a child age x race/ethnicity x type of activity matrix (family or community) with specific cells identified for participant recruitment. This was done to ensure that the samples of children with and without disabilities or delays had similar child, parent, and family background characteristics within and between research sites.

### Procedure

A mixed-methods place-based case study research methodology was used to obtain information about the everyday learning opportunities of the study participants (Billick & Price, 2010; de Vos et al., 2019; Yin, 2011, 2014). This involved observations, interviews, and interactions with the children's parents or primary caregivers where the children and families resided (family activities) or visited (community activities) as part of their everyday lives.

A funnel format data collection system was used where different places were coded in terms of the activity settings in each place or location where each activity setting was coded in terms of the different informal child learning opportunities afforded a child in the settings (Baxter & Babbie, 2004). Each child and family was considered an individual case (unit-of-analysis) where the focus of investigation was the social and nonsocial ecology of child learning and development.

Research assistants used a structured data collection protocol to obtain as complete a list of activity settings as possible that were part of each child's (family or community) life and as complete a list of the learning opportunities in each activity setting. The activities were ones that the children experienced as part of either family life or community life as observed during visits or as described by the children's parents or other primary caregivers.

Each family was visited on six occasions over a 5- to 6-month period of time for a total of more than 16 hours per family. The six visits included observations of the children in everyday activities, interviews of the parents or other primary caregivers, coding of artifactual evidence (photographs, physical objects, etc.), and other information to identify the everyday activity settings that "made up" either a child's family life or a child's community life. About half of the families in both groups of children were asked about family activities and half of the families in both groups of children were asked about community activities. Parents and other caregivers were provided no definition or description of what constituted family or community activities since families from different cultural and ethnic backgrounds define the boundaries of these social settings differently (e.g., Bloch, 1989; Göncü, 1999).

As part of visits to the families and after the activity settings and learning opportunities were identified, the children's parents or other primary caregivers were queried to affirm each child's participation in the activities and to confirm the learning opportunities afforded the child while engaged in the activities. The types of activity settings and learning opportunities that were the focus of investigation were informal, unstructured learning experiences (e.g., happening upon a puddle after a rainstorm and getting to play in the water). Formal activities provided as part of IDEA early intervention and IDEA preschool special education for children with disabilities or developmental delays were not included as part of data collection (e.g., instructing a child to complete a puzzle).

Research assistants received extensive training on the use of the data collection protocol prior to visits with the families. The author and two other senior research staff reviewed and coded all of the data collection protocols until there was complete agreement in terms of both the specific activity settings for each child and the specific learning opportunities in each activity.

### Participants

The final sample included 115 children with identified disabilities or developmental delays (57 for family activities and 58 for community activities) and 91 children without disabilities or delays (46 for family activities and 45 for community activities). There was no difference in the proportions of children in the four subgroups of study participants,  $\chi^2 = 0.02$ ,  $df = 1$ ,  $p = .888$ .

Table 1 shows the number of children according to child age, child condition, and focus of investigation (family activities or community activities). There was no difference the proportion of children with disabilities or delays according to age and type of activity,  $\chi^2 = 4.40$ ,  $df = 5$ ,  $p = .197$ , or the proportion of children without disabilities or delays according to age or type of activity,  $\chi^2 = 5.23$ ,  $df = 5$ ,  $p = .233$ . There were also no differences in the proportion of children with and without disabilities or delays for the family activity group,  $\chi^2 = 0.94$ ,  $df = 5$ ,  $p = .967$ , or the community activity group,  $\chi^2 = 9.04$ ,  $df = 5$ ,  $p = .107$ .

Table 1

Number of Study Participants By Child Age, Child Condition and Type of Everyday Activities

Child Age (months)	Children with Disabilities		Children without Disabilities	
	Family Activities	Community Activities	Family Activities	Community Activities
0 to 12	8	4	5	9
12.1 to 24	8	13	9	11
24.1 to 36	13	14	11	5
36.1 to 48	9	10	8	4
48.1 to 60	13	8	9	11
60.1 to 72	6	9	4	5

The distributions of the children according to child condition or diagnosis and parent ethnicity and race are shown in Table 2. The children with identified disabilities had many different etiologies and diagnoses that made them eligible for early intervention or preschool special education. These conditions included motor impairments, language impairments, autism spectrum disorders, vision impairments, hearing impairments, intellectual disabilities, and children with multiple disabilities and impairments. The children with developmental delays without identified disabilities and those at-risk for environmental or medical reasons all met eligibility criteria for either IDEA early intervention or IDEA preschool special education in the States where they resided.

The parents' ethnicity and race were quite diverse as a result of the purposive sampling procedure used to recruit children and their parents. A comparison of the parents' ethnicity or race by type of activity (family or community) found no significant differences in the proportion of parents in the two subgroups of participants,  $\chi^2 = 5.22$ ,  $df = 6$ ,  $p = .157$ .

Table 2

**Selected Characteristics of the Child and Parent Participants**

Child and Parent Characteristics	Number	Percentage
<b>Child Condition/Diagnosis<sup>a</sup></b>		
Typically developing	91	44.2
Identified disabilities (e.g., Down syndrome)	76	36.9
Developmentally at-risk (e.g., Low SES <sup>b</sup> )	19	9.2
Developmental delays	11	5.3
Medically at-risk (e.g., Low birth weight)	9	4.4
<b>Parent Ethnicity/Race</b>		
African American	36	17.5
Asian American	19	9.2
Caucasian/White	49	23.7
Latino or Hispanic	48	23.3
Middle Eastern	9	4.4
Native American/Alaska Native	30	14.6
Native Hawaiian/Pacific Islander	15	7.3

<sup>a</sup>All of the children with disabilities, delays, and those at-risk for poor outcomes were enrolled in IDEA Infant and Toddler Programs or IDEA Preschool Special Education Programs.

<sup>b</sup>Social Economic Status.

**Data Analysis**

Both quantitative and qualitative analyses were undertaken to determine similarities and differences in child participation in everyday family and community activities. Statistical analyses of the case study data were used to determine if the everyday activities and learning opportunities for the children with and without disabilities or delays and for the family and community activities were the same or different. Content analyses of the case study data were used to identify types and patterns of informal, unstructured learning opportunities. Pattern coding was used to conduct the content analyses to establish the links (relationships) between physical locations, activity settings, and learning opportunities. Descriptive findings of the content analyses of the case study data were used to identify types and patterns of informal, unstructured learning opportunities. Pattern coding was used to conduct the content analyses to establish the links (relationships) between physical locations, activity settings, and learning opportunities. Descriptive findings of the content analysis were used to illustrate the types of everyday family and community activities that provided the study participants with informal, unstructured learning opportunities.

The dependent measures for the quantitative analyses were the total number of activity settings per child and the total number of learning opportunities afforded in the activity settings per child. Between subgroup tests were used to compare both children with and without disabilities and family and community activities to determine if child condition or type of activity were related to differences in the number of activity settings and the number of learning opportunities afforded the children.

Between-group *F*-tests were used to make comparisons between the differences in the mean number of activity settings and the differences in the mean number of learning opportunities for both child condition and type of activities. Between-group *F*-tests were also used to make comparisons between the differences in the variability around the mean scores for both dependent measures. The *F*-tests for the equality of two variances are measures of whether the range of scores around the means is the same or different and provides evidence whether the variability in the number of activity settings and learning opportunities are similar or different for the children with and without disabilities or delays and family or community activities.

These statistical tests were supplemented by Cohen's *d* effect sizes for evaluating the differences between child condition and the differences between type of activity comparisons. These metrics were used since it is now generally accepted practice to report effect sizes "For readers to appreciate the magnitude of a study's findings" (American Psychological Association, 2020, p. 89). The estimated effect sizes for the number of activity settings and

the number of learning opportunities were computed as the differences between the average scores for these measures divided by the pooled standard deviation for the average scores (Vacha-Haase & Thompson, 2004). The estimated effect sizes for the differences in the variances around the mean scores were based on the *F*-test statistic for the between variance comparisons. As a general rule of thumb, effect sizes between .20 and .49 are considered small, effect sizes between .50 and .79 are considered medium, and effect sizes greater than .79 are considered large.

The structured data collection protocol was used to develop, for each child, a list of the activity settings and the types of learning opportunities each child experienced in each activity. The results reported in Dunst et al. (2000) were used to categorize the settings and activities into subgroups of family activities (e.g., gardening activities, parenting routines, parent-child play activities) and community activities (e.g., nature activities, children's attractions, family excursions). Comparisons of the activity settings and learning opportunities in the activities for the children with and without disabilities or delays were used to identify and describe the types of informal, everyday learning opportunities that were common for most children, the types of activities that were child-specific, the types of nature-related activities the children experienced, and the factors that were associated with child participation and learning the activities. Photographers accompanied research assistants to each research site on different occasions to document the everyday activities of the study participants. The photographs were used in this study to illustrate the types of informal environmental learning activities that were part of the study participants' everyday lives.

## RESULTS

### Quantitative Findings

**Between Group Comparisons.** Table 3 shows the results for the comparisons between the children with and without identified disabilities and developmental delays for the family activities. There was no statistically significant difference in the mean number of activity settings for the two groups of children or the number of learning opportunities afforded the children in the family activities.

There were between-group differences in the variability of the numbers of family activity settings and the number of learning opportunities experienced by the children with and without disabilities or delays as evidenced by statistically significant *F*-tests and the small sizes of effects. In both analyses, there was more variability in both learning measures for children with disabilities or delays compared to children without disabilities or delays. These results were as expected given the diversity of the children's disabilities and etiologies (see Table 2).

The results for the between-group comparisons for the two community activity measures are also shown in Table 3. There was no significant difference between groups for the mean number of activity settings. There was, however, more variability in the number of activity settings for the children with disabilities or delays compared to the children without disabilities or delays as evidenced by a small size of effect.

There was a significant between-group difference for the number of learning opportunities afforded the children in the community activity settings. Children without disabilities or delays experienced more learning opportunities compared to children with disabilities or delays as evidenced by a statistically significant *F*-test and a medium size of effect. There was, however, similar variability in the range of learning opportunities for the two groups of children.

**Between Type of Activity Comparisons.** The differences between the number of family and community activity settings and the number of learning opportunities within settings for the children with and without disabilities or delays are shown in Table 4. There were both similarities and differences in the pattern of results for both the type of activity and child condition.

There was no statistically significant difference in the mean number of family and community activity settings for children with disabilities or delays. There was a statistically significant difference in the variability of the number of activity settings for these children as evidenced by the *F*-test result and a small size of effect. In contrast, there was

a significant difference in the mean number of family and community activity settings for children without disabilities or delays. These children participated in more community activity settings than in family activity settings.

Table 3  
**Number of Activity Settings and Learning Opportunities for the Children with and without Disabilities**

Measures	Child Condition		<i>F</i> -test	<i>p</i> -value	Effect Size
	Children with Disabilities <sup>a</sup>	Children without Disabilities			
<b>Family Activities</b>					
<b>No. of Activity Settings</b>					
Mean	31.05	27.98	1.06	.301	.20
Standard Deviation	17.58	11.12	2.50	.002	.31
<b>No. of Learning Opportunities</b>					
Mean	100.40	102.33	0.06	.801	.05
Standard Deviation	46.22	28.92	2.55	.001	.32
<b>Community Activities</b>					
<b>No. of Activity Settings</b>					
Mean	30.59	32.91	0.92	.338	.19
Standard Deviation	12.98	10.91	1.42	.232	.24
<b>No. of Learning Opportunities</b>					
Mean	70.21	86.49	6.58	.011	.51
Standard Deviation	31.64	32.31	1.04	.873	.19

<sup>a</sup>Includes children with developmental delays and those at-risk for poor developmental outcomes enrolled in either IDEA Infant and Toddler Programs or IDEA Preschool Special Education Programs (see Table 2).

Table 4  
**Number of Activity Settings and Learning Opportunities in Everyday Family and Community Activities**

Measures	Sources of Everyday Activities		<i>F</i> -test	<i>p</i> -value	Effect Size
	Family Activities	Community Activities			
<b>Children with Disabilities</b>					
<b>No. of Activity Settings</b>					
Mean	31.05	30.59	0.03	.873	.03
Standard Deviation	17.58	12.98	1.83	.024	.25
<b>No. of Learning Opportunities</b>					
Mean	100.40	70.21	16.76	.000	.76
Standard Deviation	46.22	31.64	2.13	.005	.27
<b>Children without Disabilities</b>					
<b>No. of Activity Settings</b>					
Mean	27.98	32.91	4.56	.036	.45
Standard Deviation	11.12	10.91	1.04	.900	.21
<b>No. of Learning Opportunities</b>					
Mean	102.33	86.49	6.08	.016	.52
Standard Deviation	28.92	32.31	1.25	.459	.23

The children with and without disabilities or delays both experienced more learning opportunities in family activity settings compared to community activity settings as evidenced by statistically significant *F*-tests and medium sizes



of effects. In both analyses, the children with and without disabilities or delays had about 100 learning opportunities in family activities compared to 70 to 86 learning opportunities in the community activities.

There was more variability in the number of learning opportunities experienced by the children with disabilities or delays in the family activities compared to the community activities as evidenced by a statistically significant *F*-test and a small size of effect. There was no difference in the variability in the number of learning opportunities in family and community activities for the children without disabilities or delays.

### **Descriptive Findings**

The family and community activities both included a mix of different routine, commonly experienced everyday experiences. The family activities included such things as meal preparation, family mealtimes, parent-child floor play, parent-child lap games, child bathing and dressing, bedtime stories, household chores, caring for family pets, and family gatherings. The community activities included such things as visiting friends and family, neighborhood walks, water play, visiting playgrounds or parks, attending farm shows, and eating out.

Many of the everyday activities of the children and families were the same or similar but geographic specific. Animals (other than pets) were often part of young children's everyday experiences but the types of activities depended on where the children's families lived. Children whose families lived in urban areas often interacted with animals at petting zoos or community nature centers. Children whose families lived in more rural areas often experienced animals on farms or animal reserves.

Water activities were experienced by nearly all the children but also were geographic specific. Depending on where the children's families lived, the water experiences occurred at oceans, lakes, rivers, community pools, water parks, backyard pools, or other bodies and sources of water. The learning opportunities at these different locations also differed. These included, but were not limited to, feeding fish or ducks, wading or swimming in the water, digging in the sand or along shorelines, and dropping or throwing stones in the water.

Food growing or food gathering activities were part of many of the children's lives. The types of food growing activities included planting and harvesting vegetables, tomatoes, and berries. The learning opportunities afforded the children included such things as mixing soil, watering plants, and picking ripe produce. Food gathering activities included such things as foraging berries, nuts, roots, and mushrooms. Children learned about wild food sources, what is and is not edible, and preparing the gathered food for consumption.

The functions of the same activities also differed for the children and their parents or other primary caregivers. For example, fishing was a recreational activity for some families but was a subsistence activity for other families. The same was the case for children's involvement in gardening activities. For some families, this was a leisure experience (e.g., flower garden) whereas for other families the activity involved growing vegetables and other food for meals.

The everyday family and community activities for most of the children included a variety of informal environmental and nature-related learning experiences and opportunities in addition to routine child, parenting, and family activities. Figure 1 shows selected examples of these types of activities occurring as part of family life. The family activities included such things as planting and tending flower and vegetable gardens, planting backyard shrubs or trees, finding and exploring bugs and insects, playing with a family pet, digging in the family garden, and playing in water. Nearly all of the family activities were informal, unstructured learning experiences that provided the children learning opportunities involving different aspects of nature. For example, the photograph of the young boy and his grandmother in the upper left-hand corner of Figure 1 shows the boy's response to the grandmother modeling digging a hole to plant some flowers by digging a hole himself. The two photographs at the bottom of Figure 1 show a mother of an infant and the mother of a toddler engaging their children in similar types of activities that are age-appropriate for each child.

Figure 2 shows selected examples of different types of activities in the children's broader-based communities. The community activities included such things as nature trail walks, various kinds of water activities, visiting farms,

tending a community garden, wandering through stalks of corn, walking through the woods, picking wildflowers, and visiting petting zoos or horse farms. The two photographs at the bottom of the figure show a toddler being given a piece of bread by his mother to feed ducks at a lake and an older preschool-aged girl feeding fish at a community pond. The little boy is sitting at the edge of the lake where he turns toward his mother to be handed a piece of bread and then turns toward the lake to drop the bread in the water where ducks converge on the foodstuff. Feeding fish at the community pond is a favorite activity for the girl in the adjacent photograph where her mother routinely engages her daughter and son in this community activity.

Examination of the photographic evidence of the children's experiences in everyday family and community activities showed that most children participated in a wide range of nature-related activities that provided the children with many different kinds of learning opportunities. These included, but were not limited to, water play (rivers, ponds, lakes, oceans, puddles, etc.); interactions with animals (e.g., feeding pets, ducks, geese, chickens, fish); gardening activities (e.g., watering vegetable, flower, berry, and herb plants); family and child outings (trike rides, wagon rides, biking, etc.); plants (e.g., climbing on trees and logs, picking wildflowers, eating wild berries); digging in dirt, sand, and other types of soil; collecting leaves and stones on neighborhood walks; and picking berries and wildflowers on nature trail walks or walks in the woods. These activities involved parents, older siblings, grandparents, friends, and neighbors as interactive partners where the partners modeled desired behavior, facilitated child engagement in setting-specific activities, and provided the children opportunities to practice existing abilities and acquire new capabilities.

Closer examination of the everyday activities from an activity setting frame of reference indicated the experiences mirrored what Bronfenbrenner (1993) described as the key ingredients of development-enhancing activity settings (developing child, an interactive partner, and the physical settings and materials in the settings) for promoting child competence. Three key characteristics, in particular, emerged as factors influencing child participation and learning in the activities: Child interests, the interestingness of the activities, and the role parents and other caregivers played in promoting child participation in the activities.

**Personal Interests.** Children's personal interests proved especially important as a factor influencing the types of everyday activities the children experienced. Child personal interests included activities children liked to do, enjoyed doing, and preferred to do (Renninger, 1992). Parents of the children in the case studies often used a child's preference or desire to participate in different activities to afford his or her child different kinds of learning opportunities (e.g., taking a child to a community pond to feed fish knowing that this an activity his or her child enjoys; using a child's interest in water to introduce the child to activities at a stream at a local park).

**Interestingness of Everyday Activities.** The interestingness of different types of activities also proved to be a factor influencing child participation in everyday activities. Situational interests include the characteristics of a setting or activity that arouse interest in engaging or participating in an activity (Schraw & Lehman, 2001). Parents in the case studies often engaged their children in everyday activities to elicit situationally interesting responses (e.g., taking a child on a nature trail walk and happening upon a natural play structure that elicited child climbing; getting to pet, feed, and interact with a never before seen animal at a petting zoo). These are just a few examples of how situationally interesting activities were used to engage young children in informal environmental and nature-related activities.

**Interactive Partners.** Parents and other caregivers played important roles as part of providing their young children everyday learning opportunities. This included guided participation (Rogoff, 1993), scaffolding child behavior in everyday activities (Kermani & Brenner, 2009), responsiveness to child engagement in the activities (Chak, 2001), and modeling nature-related behavior and practices (Meltzoff & Williamson, 2008). Nearly all of the family and community activities were contexts for modeling setting-specific behavior and provided opportunities for parents, grandparents, older siblings, and other primary caregivers to describe, explain, and engage young children in conversations about and engagement in the activities. The focus of child-adult and child-sibling activities was



*Figure 1.* Examples of family activities that provided young children everyday environmental learning opportunities.



*Figure 2.* Examples of community activities that provided young children everyday environmental learning opportunities.

engaging young children in age-appropriate interactions with the social and nonsocial environment. For example, the photograph in the upper right hand corner of Figure 2 shows an older sibling modeling behavior for his younger brother.

## DISCUSSION

Two purposes of the study were to determine if the number of activity settings and the everyday, informal learning opportunities afforded young children in the settings differed (a) between children with and without identified disabilities or developmental delays and (b) between study participants who were asked about either family or community activities. Results showed that the everyday social and nonsocial experiences of children with and without disabilities or delays were more similar than different. Results also showed that family activities provided children more learning opportunities than did community activities.

The third purpose was to use the qualitative results to illustrate the kinds of everyday activities of young children with a focus on informal environmental and nature-related learning opportunities. The descriptive findings indicated that children with and without disabilities or delays participated in a wide range of environmental and nature-related activities. The findings also helped identify the child, adult, and setting factors that were associated with child participation in everyday activities. Results were consistent with the factors hypothesized to have development-enhancing characteristics: Children's personal interests, the interestingness of the nonsocial environment, and the behavior of the people interacting with the children in everyday activity settings (Bronfenbrenner, 1992, 1993; Chawla, 2008; Rogoff, Radziszewska, & Masiello, 1995). Chawla (2008), for example, described the same kinds of person and environmental characteristics as the key ingredients of child nature-related learning and highlight the important role adult, adolescent, and older sibling behavior play in promoting young children's participation and learning in nature-related activities.

The results from the study differ from other investigations comparing the participation of young children with and without disabilities and delays in everyday activities in several ways that most likely account for differences in reported results (e.g., Bart, Jarus, Erez, & Rosenberg, 2011; Benjamin, Lucas-Thompson, Little, Davies, & Khetani, 2017; Ehrmann, Aeschleman, & Svanum, 1995; Guichard & Grande, 2018; Soref et al., 2011). In these as well as other studies, results showed that young children with disabilities or delays participated in fewer everyday activities compared to young children without disabilities or delays.

A methodological difference, however, seems to account for the contradictory findings. All of the above-cited studies employed self-report measures of participation that contained *a priori* lists of everyday activities including a mix of informal, unstructured activities and formal, structured activities (Chien, Rodger, Copley, & Skorka, 2014; Lami, Egberts, Ure, & Conroy, 2017; Morris, Kurinczuk, & Fitzpatrick, 2005). The dependent measures were summary scores of ratings of participation in both types of everyday activities. In contrast, the research methodology described in this paper captured the day-in and day-out child and family-specific experiences that made-up the everyday lives of the study participants and how these experiences provided the children development-enhancing learning opportunities (Bronfenbrenner, 1992, 1993).

The fact that the family activities provided children with and without disabilities or delays more learning opportunities compared to the community activities was as expected. This was the case because most young children spend more time in their homes compared to time outdoors (Huston, Wright, Marquis, & Green, 1999; Moya, Bearer, & Etzel, 2004). Moya et al. (2004) compiled data from several studies where the results showed that young children spend, on average, between 19 and 20 hours per day indoors and, on average, between 3 and 5 hours per day outdoors. Findings from the present study nonetheless indicate that when outdoors, young children with and without disabilities or delays, participate in a host of different nature-related activities where those activities provide the children with many different kinds of learning opportunities. The fact that community activities afforded the children fewer learning opportunities is also likely the case because outdoor activities afford children more freedom to explore novel settings compared to indoor activities (see especially Zamani, 2016).

Comparisons of the results from the present study with those from other studies of everyday, informal learning in nature-related activities find that young children in many parts of the world have similar kinds of experiences. These include, but are not limited to, interactions with and learning about animals, plants, soil, water, loose parts, natural structures, and other features of the natural ecology (e.g., Born, 2018; Crinall & Somerville, 2019; Flannigan & Dietze, 2017; Geerds et al., 2015; McClain & Vandermaas-Peeler, 2016; Yidirim & Akamca, 2017). Findings from the present study add to this knowledge base by illustrating that young children with disabilities and delays have much the same kinds of learning opportunities. This was confirmed by the data collection protocol results (Tables 3 and 4), photographic evidence of the children participating in everyday activities (e.g., Figures 1 and 2), and examination of video recordings of the children in the present study.

As noted in the introduction, the present study is part of a line of research and practice on the characteristics and consequences of everyday, informal learning opportunities of young children from birth to age six years. This has included the sources of everyday learning opportunities (Dunst et al., 2000), patterns of child participation in everyday activity settings (Dunst et al., 2002), child learning in everyday activities (Dunst et al., 2001; Trivette et al., 2004), the role of personal and situational interests in promoting child learning (Dunst & Raab, 2012), the use of responsive caregiver interactions to engage children in informal learning opportunities (Swanson, Raab, & Dunst, 2011), and the relative effectiveness of informal and formal child learning opportunities (Dunst, Trivette, Hamby, & Bruder, 2006). Findings from the present study add to this research and practice by identifying the types of informal environmental and nature-related learning opportunities of young children with and without identified disabilities and developmental delays.

Increasing young children's participation in nature-related activities as one type of informal environmental learning can be accomplished by attending to four aspects of that participation: (1) the types of activities available to young children, (2) children's interest in and enjoyment of nature-related experiences, (3) the characteristics of nature-related activities that evoke child engagement, and (4) adult's roles in influencing learning while children are engaged in everyday informal environmental and nature-related activities. While any one of these practices would likely prove effective, the combined use would likely have value-added benefits.

Parents' and early childhood practitioners' knowledge of the different types of nature-related activities that would be appropriate for young children, and especially for children with disabilities or delays, would significantly expand the range and variety of learning opportunities afforded young children. Moore (2014), Wilson (2018), and others (Cooper, 2015; Ernst, 2018; McClain & Vandermaas-Peeler, 2016) provide excellent guidance about multiple aspects of environmental learning for young children. Both the locations of environmental learning and the learning activities in these locations described by these experts include the same kinds of activities identified in the present study as sources of everyday learning opportunities. Moore (2014), for example, describes 24 categories of nature-related activity settings and the types of learning that occur in the settings. Dunst et al. (2010) compiled a list of more than 100 sources of everyday community activities that evolved from the results reported in this paper and elsewhere for providing parents and early childhood intervention practitioners examples of the kinds of learning opportunities that are appropriate for young children. The list of community activities includes many informal environmental and nature-related activities (e.g., nature trail walks, visiting zoos, collecting loose parts, community or backyard garden).

The factors identified as important for explaining child participation in informal everyday activities could help inform what parents and early childhood practitioners can do to provide young children nature-related learning opportunities. For example, many experts (e.g., Ernst, 2018; Horvath, 2015; Moore, 2014; Wilson, 2018) describe the role activity setting affordance plays in encouraging young children to engage in nature-related play and learning. Affordance refers to the characteristics and features of activity settings that invite child engagement and interactions with nature. Developmental psychologists describe this type of affordance as situational interests (Renninger, Hidi, & Krapp, 1992). Situational interests include those aspects of the social and nonsocial environment that attract child attention, curiosity, and engagement with people, objects, and settings in which a child is a participant. Nature trail walks, for example, provide a child many opportunities to "happen upon" natural structures, streams, small animals, and flowers or berries that would likely evoke engagement with the environment.

Personal or individual interests are also factors that influence child engagement with social and nonsocial environments (Renninger, 1992) and were development-instigating characteristics that parents and other caregivers used to engage children in informal everyday activities in the present study. Personal interests include a child's likes, preferences, favorites, and other child characteristics that encourage and sustain child participation in desired and appealing activities. Hidi and Renninger (2006) describe how situational interests become personal interests as a function of interactions with people, objects, and materials in a child's environments that are enjoyable. Research syntheses by Dunst, Jones, Johnson, Raab, and Hamby (2011) and Raab and Dunst (2007) found that interest-based child learning is associated with more positive child outcomes compared to non-interest-based learning opportunities.

A simple but effective way of using both types of interests to engage young children in everyday learning activities is to use an interest checklist to identify the people, materials, objects, etc. that are most likely to engage a child in interactions with social and nonsocial environments. The author and his colleagues have developed several methods for identifying young children's interests and engaging the children in interest-based child learning activities (see e.g., Dunst & Raab, 2013; Dunst, Raab, & Trivette, 2013; Raab, Swanson, Roper, & Dunst, 2006; Swanson, Raab, Roper, & Dunst, 2006). Dunst et al. (2010) include several checklists for identifying child interests in community activities that include many different informal environmental learning and nature-related activities. These checklists include lists of different activities where parents or early childhood practitioners indicate if each activity is something a child likes to do (personal interest) or is something a child might enjoy doing (situational interest). These checklists have proven effective for parents and other caregivers to understand the wide range of learning opportunities available to young children.

One can envision a similar type of checklist that includes only informal environmental learning and nature-related activities where the experiences and events described by Horvath (2015), Moore (2014); Wilson (2018), and others (e.g., Flannigan & Dietze, 2017; Yidirim & Akamca, 2017) are the sources learning activities to promote a child's interactions with the natural ecology. Items (activities) on these types of checklists function as prompts or reminders for a person to appreciate the full range of possible experiences that could be used as learning opportunities for young children. The use of checklists by parents and other primary caregivers often elicits responses like "I never thought about those kinds of activities" or "My daughter would really like to do [activity]". These types of responses provide opportunities to engage in discussions about where and how to engage a child in informal, unstructured learning activities.

The role adults play in engaging children in informal environmental learning and nature-related activities is yet another area that should be considered as part of everyday learning. Chawla (2008), for example, noted the importance of modeling nature-related behavior, adult-guided participation of children in nature-related activities, adult support and encouragement while children are engaged in learning activities, and strategies for providing children multiple kinds of nature-related learning opportunities to become environmentally responsible learners. Adult sensitivity and responsiveness, encouragement, support, and guided participation in child interactions and engagement in everyday activities are especially effective ways of sustaining child participation in everyday activities (see e.g., Chawla, 2008; Wilson, 2018).

## CONCLUSION

Young children with and without disabilities or delays participate in many different everyday activities where the activities provide the children with many different kinds of learning opportunities. Many of the activities and learning opportunities include informal environmental learning and nature-related experiences. Different child, adult, and social and nonsocial environmental factors influence how young children participate in the activities and what is learned as a result of participation. In addition to demonstrating the similarities and differences in patterns of young children's patterns of participation in everyday activities, the findings highlight the factors that ought to be considered as part of engaging young children with and without disabilities or delays in informal environmental learning and nature-related activities.

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