



## Risk-tasking and Assessment in Toddlers During Nature Play: The Role of Family and Play Context

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### ABSTRACT

Risk-taking during the toddler years is crucial for the development of autonomy, initiative, and independence. However, the current culture in the U.S. seeks to minimize the risks young children are exposed to. This small-scale, mixed methods study examined parental attitudes towards toddler risk-taking and children's behavior during nature play. Each child in a young toddler classroom at a northern New England childcare program ( $n = 9$ ) was observed for 90 minutes and their parents ( $n = 17$ ) surveyed. Results show a wide range of risk-taking profiles for children in the same classroom. Parents were more concerned about children's play at heights and least concerned about rough and tumble play, the most and least frequent activities children engaged in. Parents who rated outdoor play scenarios as more risky tended to have children who exhibited more risk-aversion. Suggestions for working with parents to understand the benefits of risk-taking in outdoor play are discussed.

### KEYWORDS

Toddlers; nature play;  
outdoor play; parenting;  
risk-taking

### Introduction

The word 'risk' can bring with it negative connotations. The expression 'risky behavior' can trigger thoughts of challenges to children's safety and well-being, especially for very young children. In developed countries, the use of car seats, baby gates, and padded surfaces is commonplace; they are utilized as ways to protect infants and toddlers from experiences which can be potentially dangerous. However, it is crucial to consider that, as childhood progresses, taking risks and forming well-developed risk assessment skills enable children to be independent, resilient, happy, and healthy (Brussoni et al., 2015; Little & Sweller, 2015; Warden, 2010). Multiple factors influence the development of these skills including the child's developmental stage and caregivers' attitudes and actions in affording children the opportunity to take risks in a safe manner (Curtis, 2010; Nelson Nieheus et al., 2013; Warden, 2010).

The development of risk assessment skills is especially crucial for young children as they grow to understand their body's interaction with their environment and the impact their actions have on their health and safety. The move toward independent locomotion, which occurs developmentally from 8–24 months, makes risk-taking and assessment highly salient during infancy and toddlerhood. Sandseter (2007, 2009) describes risky play experiences during the early childhood years as including the components of newness, a feeling of fear, and some potential for injury. Additionally, Brussoni et al. (2015) notes that risks can either be real (objective) or perceived (subjective). While all environments afford some opportunity to take risks, outdoor play in natural environments afford more opportunities due to uneven terrain, elevation, and open space which can allow for increased

speed of movement (Kernan, 2010; Little & Eager, 2010; Sandseter, 2009). Parents and educators who are able to communicate their expectations and acceptable levels of risk to children are better able to create common, communicable goals for them (Curtis, 2010; Nelson Nieheus et al., 2013). In order to do this, parents and educators need to understand risk in play and find common terminology to describe acceptable risk-taking experiences.

### **The present study**

This paper describes a small-scale, mixed methods research study conducted by a teacher (the first author) in their classroom setting. It was undertaken to understand the role that parental attitudes about risk have in the development of risk-taking skills in young children. Young children were observed playing in unstructured, nature-based settings by the teacher-researcher, who was a full time educator at the center, and parents' perceptions of risks in outdoor play were explored through surveys using hypothetical scenarios. By engaging parents in discussions of hypothetical scenarios of risks young children may undertake, researchers can better understand parental attitudes towards risky situations, removed from actual situations which may jeopardize children's health and safety. Hence, this study provides insight into how family factors and play context influence risk-taking in toddlers.

This research project also fills a gap in the existing literature. While there is a great deal of research and theory on risk-taking and assessment in older children and adolescents (see Boyer, 2006; Morrongiello & Lasenby-Lessard, 2007; Romer, 2010; Steinberg, 2008), less is known about the processes and patterns during late infancy and toddlerhood. Fear of injury is a legitimate risk for very young children, with falls being the leading cause of injury for those between 1–4 years of age (Centers for Disease Control, 2015). In many western cultures parents value the development of independent, resilient children while simultaneously holding the safety of their child paramount. For example while 79% of American parents value independence, 94% feel being responsible is most important and 62% see themselves as overprotective (Pew Research Center, 2014; Pew Research Center, 2015b). The current culture in the United States seeks to minimize the risks that young children are exposed to (Brussoni et al., 2015; Little, 2010; Nelson Nieheus et al., 2013; Rizzo, Shriffrin, & Liss, 2012). However, exploring this topic can provide information to be used by nature-based and outdoor early childhood education programs to work more effectively with caregivers in creating common, communicable goals for young children.

### **Literature review**

Research in the field of risk assessment and its developmental value examines how the family, caregiving, and play context contribute to children's opportunities for and engagement in risk-taking (Kernan, 2010; Morrongiello & Lasenby-Lessard, 2007). The majority of the literature addressing risk assessment skills in very young children comes from countries outside the U.S. including Norway, Australia, New Zealand, and the U.K. (see Little, 2010; Morrissey, Scott, & Wishart, 2015; Nelson Nieheus et al., 2013; Sandseter, 2007, 2009; Waters & Begley, 2007). This suggests a difference in attitudes and practices around the world regarding the efficacy, developmental value, and safety of risky play for young children. The goal of this review is to explore the contributions of the family and caregiving context, including child temperament, attachment, parenting, and culture, on children's risk-taking. Further, the role which outdoor and nature play contexts have in the development of risk-taking and assessment skills during the infant and toddler years will be considered.

### ***The family and caregiving context***

Risk-taking in infants and toddlers is dependent on children's physical environment, motor skills, temperament, and caregiving context. While the potential for risk-taking exists in most

environments, that potential does not become actualized without mobility license being granted by caregivers and affordances being provided (Kernan, 2010; Little & Sweller, 2015; Morrissey et al., 2015; Thelen & Smith, 1996). Factors which influence when and in what contexts children experience independent mobility license include the child's temperament or behavioral predispositions, parents' own experiences, and cultural influences.

Children's temperament or behavioral predisposition has been conceptualized as ranging from telic or behavioral inhibition to paratelic or exuberant (Fox, Henderson, Marshall, Nichols, & Ghera, 2005; Lahat et al., 2012; Nelson Nieheus, Bundy, Broom, & Tranter, 2015; Nelson Nieheus et al., 2013). Using this framework, children displaying telic behaviors or high degrees of behavioral inhibition are conceptualized as serious, cautious, and goal oriented while those who are paratelic or exhibit an exuberant temperament are viewed as playful, adventurous, and activity oriented (Fox et al., 2005; Lahat et al., 2012; Nelson Nieheus et al., 2015, 2013). Nelson Nieheus et al. (2013, 2015) have shown that children's telic and paratelic behaviors are in large part the result of motivations on the part of parents which stem from their priorities for their children. Their work suggests parents who prioritize resiliency, ability to overcome fear, flexibility, and ability to cope with anxieties are more likely to strive towards paratelic behaviors in their children, allowing risk-taking and risky play in order to foster these outcomes.

However, caregivers and parents who have led risk-averse lives themselves will struggle to allow their own children to experience risk (Curtis, 2010; Little, 2010). It is important to consider that parenting is multiply determined, with parents' developmental history as only one factor which interacts with the child's biological predispositions and characteristics to determine parenting behavior and choices (Belsky, 1984). Differences in cultural beliefs and attitudes also influence parents' perspectives on risk-taking and the affordances they provide. Parents may adopt more protective parenting practices due to high standards for parenting in western cultures and fear of being judged as a bad parent (Little, 2010; Nelson Nieheus et al., 2013; Rizzo et al., 2012).

This cultural pressure to protect children from challenging experiences varies but seems to be particularly strong in the U.S. The culture of parenting in the U.S. has been influenced by parents' real or perceived fears and concerns about judgement of their caregiving choices by family members, neighbors, and friends (Brussoni et al., 2015; Levin, 2010). Parents of infants and toddlers are especially concerned, with survey data indicating 90% of mothers and 85% of fathers feel judged by others for their parenting behavior (Zero to Three & the Bezos Family Foundation, 2016). Fear of judgement may heighten their estimation of the risks of an activity such as exploring an incline, splashing in a small container of water, or climbing up on a short stool. Fear of criticism, coupled with concerns about the risk of severe injury, may prevent parents from allowing their children to fully explore their environment.

### ***The play context and risk***

While young children may find ways to take risks wherever they are, Sandseter (2007, 2009) highlights how access to nature and outdoor experiences affords more opportunities for risk-taking than other contexts. She categorizes risky play behaviors in outdoor environments as falling into six main categories: (1) play at great height, (2) play at great speed, (3) play near dangerous elements, (4) rough and tumble play, (5) play with harmful tools, and (6) play where a child might disappear or get lost. Within these categories, she and others identify features which allow for different types of risky play such as swing-on-able features, climb-on-able features, jump-off-able features, and run-on-able features (Kernan, 2010; Little & Eager, 2010).

Children who engage in outdoor and nature play experience more open-ended opportunities, allowing for greater independent mobility license, affordances, and the development of social and problem-solving skills (Dowdell, Gray, & Malone, 2011). For example, toddlers in a nature-based play environment will experience risk with the changing of the seasons, as their play spaces

transform from dry to wet, or from muddy to icy. Trees, stumps, low rocks, and edging provide opportunity for play at height, climbing, and jumping. Sharp tools such as rakes, spades, or shovels can be used to push earth, sand, leaves, and snow. Access to large, open spaces with varying terrain such as earth, grass, sand, gravel, and mulch will also allow toddlers to experiment with movement on different surfaces, inclines, and how they react when they move at different speeds. While there is some general agreement as to the features of risky play, whether it is viewed as acceptable and allowable is situationally and contextually dependent (Little & Eager, 2010; Tovey, 2007; Warden, 2010).

### **Value of risk-taking to infant and toddler development**

Theoretical and empirical work suggests the value of risk-taking to children's cognitive, social, emotional, and psychobiological development (Boyer, 2006; Erikson, 1963). This work focuses on its role in the development of a sense of self and resiliency (Erikson, 1963; Nelson Nieheus et al., 2015). Without opportunities for experimentation, failure, and exploration of one's own tolerances, autonomy, initiative, and resiliency in the face of challenge may be hindered.

Attachment theorists and researchers highlight the interplay between the exploratory and attachment systems in understanding infant and toddler behavior and adaption (Bolby, 1982; Ainsworth, Blehar, Waters, & Wall, 1978; Sroufe, 2005). Sensitive, responsive caregiving in the first years of life enables children to develop a sense of security in caregivers and a sense of self-efficacy and social competence (Sroufe, 2005), allowing children to venture further from caregivers and take more risks as they seek to understand and master their environment. Theory and research suggests the provision of scaffolded risk-taking experiences early in development can actually decrease later dangerous sensation-seeking by building cognitive and emotional skills such as executive functioning (Boyer, 2006; Lahat et al., 2012; Romer, 2010).

### ***Aims of the present study***

Parents and educators frequently state that they value risk-taking and see it as critical to the development of the whole and healthy child (Nelson Nieheus et al., 2015, 2013). However, they often limit young children's exposure to risk on a daily basis, fearing judgement about their caregiving and child injury (Brussoni et al., 2015).

Individual differences in the family and caretaking context may serve to guide the opportunities and risk affordances children experience. Studying the connection between the two is particularly important during the toddler years when risks for injury are high (CDC, 2015) and negotiating the balance between independence, both physically and socially, is highly salient (Bowlby, 1982; Erikson, 1963; Thelen & Smith, 1996). Characteristics of the play context, including the presence of natural risks such as uneven terrain, elevation, water hazards, and open space, which can allow for increased speed of movement, heighten the opportunities for children to engage in risk-taking (Sandseter, 2007, 2009).

Hence, the present study examines parents' views on risk and the degree of risk they attribute to four hypothetical scenarios examining risks present in the natural play environment of toddlers (playing at height, near elements, with sharp elements, and rough and tumble play). Parents were surveyed regarding their attitudes and beliefs about the value of risk-taking in children's development. The association between these factors and children's risk-taking behaviors during nature-based play experiences was examined using naturalistic observations when parents were not present. As a teacher action research project (see Creswell, 2015) this study sought to understand parents' perspectives on risk-taking, young children's risk-taking behavior, and how educators can use this information to understand typical patterns of behavior, parents' concerns, and how to best educate caregivers regarding how to safely promote risk-taking.

## **Methods**

### ***Setting and population***

This study took place at a child care center in northern New England, serving a private liberal arts college and its employees, both faculty and staff. Children from twelve weeks to five years old attend, divided into four different rooms depending on age of the child. Children moving through the center as they age experience continuity of care, with caregivers moving from room to room with each class. This research project took place in the Young Toddler (YT) room which serves children who are one to two years old. Four educators care for the children each day.

### ***Subjects and recruitment***

All families in the YT room at the childcare center where the teacher-researcher was employed were asked to participate in the research study. It was made clear that a decision to participate would not mean any change in care or routine for their child as data collection for children involved naturalistic observation. Of the nine children/families enrolled in the room, all chose to participate and signed consent forms for their child to be observed. Of the 18 parents in these families, 17 out of 18 signed informed consent forms to be included in the research and filled out a survey regarding attitudes and perspectives on risk in nature play.

Parents ranged in age from 29 to 48. The average age of mothers was 37.2 ( $R = 31-44$ ) and 37.4 ( $R = 29-48$ ) for fathers. Families were all two-parent; one family was comprised of two same sex parents. All children observed had at minimum of one parent who had a bachelor's level degree or higher; three children had at least one parent with a doctoral degree. The children ranged from 18-27 months in age; their average age was 22.2 months. Eight of the children were female. All were able to walk independently in an outdoor environment.

### ***Protection of human rights***

The teacher-researcher completed the NIH Training Course on Human Subjects and had the project approved by the Institutional Review Board (IRB) for the university. All survey responses and observation data were kept confidential through the use of a coding system in which each family was given a random numerical code. Observational and survey data within a family could be connected by the researcher after observations were completed but were kept confidential, without names attached. The research was conducted with written permission from the director of the center as well as the individual families.

## ***Instruments***

### ***Parent survey***

The survey utilized was developed by the researcher for this study. It consisted of demographic questions, four hypothetical risky play scenarios, and two questions to assess parents' experience with risk, both personally and as a parent.

The four hypothetical scenarios described a child playing at height, playing in the elements (water), with sharp objects, and engaging in rough and tumble play (See Table 1). Parents were asked to rate how risky they felt each scenario was, with a focus on how dangerous they felt the behavior would be to a child using a 10-point scale (1 = no risk/safe, 10 = high risk/extremely dangerous). They were also asked if they had further comments on each scenario and what they would like an educator to do. Hypothetical scenarios of risks young children may undertake were used to better understand parental attitudes without fear of injury to their own child. Parents were then asked to rate the value of risk-taking in child development on a 10-point scale (1 = no role, 10 = critical role). Finally, they were asked to rate the amount of physical risks they had taken or

**Table 1.** Hypothetical risk scenarios.

Type of Risk	Scenario
Height	A child is standing on top of a picnic table, considering whether they want to jump. The height of the picnic table is slightly taller than the height of the child.
Elements (Water)	A child is standing in knee deep still water. They are exploring their balance, feeling the water and ground under their feet, and searching for toys that have sunk under the surface.
Sharp Object	Several children are working on shoveling dirt. Each child is holding a metal trowel, using it for digging, dumping, and moving dirt around in one small area.
Rough and Tumble Play	Two children are pretending to be puppies, tumbling over each other and growling. Both children are repeatedly sliding and falling to the ground on top of each other. Both children are smiling.

experienced in their own life on a 10-point scale (1 = no risk, 10 = extreme risk). Parents were given space after each rating to add further comments or an explanation.

Surveys were sent home to families. Each packet included an explanation of the project, two parent surveys, and consent forms. Parents were asked to fill out and return the packet in an envelope to the researcher within three-weeks. Sending surveys home allowed parents to fill them out with the most possible time, flexibility, and comfort.

The content validity of the survey was ensured in several ways. Survey questions were constructed using the work of Sandseter (2007, 2009) and designed to assess parents' attitudes towards four types of risky behavior (height, elements, sharp object, and rough and tumble play) which have been identified in the literature. The survey was also reviewed by several educators and experts in the field. This multi-step process was designed to minimize ambiguity and maximize clarity and response rates.

#### ***Child outdoor observation***

Child observations took place outdoors in the months of February and March in northern New England, with the setting in constant flux as nature changed and shaped it. The children entered the outdoor play space down a short ramp, which led onto a mixed surface of dirt, pine duff, and sand under a canopy of large pine and oak trees. Different areas of the play space contained sand piles, riverbeds filled with round stones, and loose parts such as stumps, branches, and rocks. Two picnic tables and one climbing structure were spread out in the area on which the children were allowed to climb and place ramps. The children could choose to use tools such as metal shovels, buckets, cups, and spoons. At times during the observation period the play yard was covered in snow, which educators helped shape into banks for sliding and jumping, and pathways for running.

All six types of children's risk-taking in play (height, speed, sharp objects, elements, rough and tumble, and potential for getting lost/disappearing), widely recognized by researchers in the field (Brussoni et al., 2015; Sandseter, 2007, 2009), were examined. The teacher-researcher recorded written observations each time a child engaged in one of these forms of play using child tracking and behavior mapping as discussed by Morrissey et al. (2015). The method involves tracking one child's behavior at a time and how they interacted with the features and characteristics present in the outdoor environment. The occurrence of interaction or participation in each type of play was noted as a risk taken. Each time a child actively refused one of these forms of play, the occurrence was noted as a risk avoided. Risk avoidance or active refusal was coded using the work of Little (2010, Little & Eager, 2010). Any act where the child verbally refused to engage, physically removed themselves from the area of the activity, or sought out the attention of a caregiver for assistance was coded as a risk avoided.

Each child was observed for 45 minutes in the morning and 45 minutes in the afternoon (90 minutes per child), though not necessarily on the same day. Risks taken and risks avoided in the six categories of risk were recorded within that time frame. During observations, the teacher-researcher chose a place to observe where they could see all movements and choices of the child



being observed, moving only as necessary to maintain a line of sight. The overriding philosophy of outdoor play at the center was for teachers to offer security and comfort while interrupting children's play as little as possible. Teachers' set-up loose parts and tools in a way to engage children in the morning and did their own 'work' outside as children used the space. Hence, the observations focused on children's independent choices and activities in the setting.

Student observations took place in a familiar setting with a trusted caregiver (besides the teacher-researcher) present. The teacher-researcher interacted with the children in the same way they would on any typical day, minimizing interference with children's independently chosen behaviors. The teacher-researcher was blind to the information parents' provided regarding their attitudes and beliefs regarding risk-taking, minimizing the effects of bias in observations. The large natural play area allowed for a broad spectrum of risks which could be taken or avoided. Which child would be observed during any given observation period was chosen randomly before the teacher-researcher joined the children outside. Given the young age of the children, no other observer was introduced into the situation to minimize any negative emotional reactions children may exhibit during the observation period due to stranger anxiety.

## Results

### *Parental perceptions, experience of risk, and risk assessment*

Average scores for parental perceptions of the value of risk, their own experiences with risk, and responses to the hypothetical dilemmas can be found in Table 2. Several trends can be noted. First, mothers and fathers differed in their views regarding the value which risk-taking has on child development, with mothers viewing risk-taking as having a greater value than fathers. Second, most parents in this highly educated sample felt that they had experienced or engaged in a moderate amount of physical risk-taking, with mothers and fathers having similar ratings.

Third, parents' responses to the four hypothetical scenarios varied widely, even within families. Of the scenarios examined, rough and tumble play was considered the least risky or dangerous activity for children. Even when parents had concerns, they were dependent on how the child reacted as the activity progressed. As a parent noted 'As long as both are happy, that's good. This kind of behavior [though] can change quickly, however, and one child could suddenly decide it isn't fun or injury could happen unexpectedly'. Element or water play had the widest range of responses in terms of its riskiness. For example, while one parent noted 'This sounds like a lovely play experience and a chance to explore different elements, movements, and types of objects' another stated 'Any and all standing and moving water poses risk for drowning'.

Even within the same family, parents differed in their views regarding element or water play. While the mother in one family rated the activity as low risk, noting 'there's not much risk here if [an] adult is present' the father in the same family rated the activity as dangerous. He stated 'Again, age plays a factor, but water can be dangerous'. Play at heights was considered the most risky or dangerous scenario for both mothers and fathers. Fathers rated the water and sharp tool scenarios as posing more risk to children than mothers. However, mothers still had concerns about sharp tools, with one noting 'Assuming a bunch of kids in a small area, all holding metal objects they fiddle around with; sounds like a recipe for accidents to me'.

Table 2. Average scores for value of risk, personal risk experience, and hypothetical risk scenarios.

	Average Score/Range For Mothers (n = 10)	Average Score/Range for Fathers (n = 7)
Value of Risk to Child Development	9.5 (7-10)	7.71 (6-10)
Personal Experience with Risk	7.28 (4-9)	7.29 (3-10)
Height Risk Scenario	6.17 (4-9)	5.71 (3-8)
Water Risk/Play in Elements Scenario	3.78 (1-9)	5.00 (2-9)
Sharp Risk Tool Scenario	3.22 (2-6)	4.57 (2-8)
Rough and Tumble Risk Scenario	2.39 (1-5)	2.43 (1-5)

Of the 55 parent comments across all four scenarios 49.1% discussed how the degree of risk is dependent on a range of factors including the play surface, age/developmental stage of the child, supervision, and children's emotional reaction to the activity. However, more parent comments focused on the potential for physical harm inherent in the activity than the potential benefits, with 27.3% mentioning the potential for broken bones, head injury, drowning, cuts, and scrapes. Only 14.5% comments discussed potential benefits of engaging in the activity such as emotional enjoyment and the chance to develop confidence by testing personal boundaries; however no parents mentioned potential cognitive benefits of engaging in the activity such as learning about the effects of gravity or the properties of water or soil. In 9.1% of responses parents noted that they did not see any risks associated with the activity.

### *Children's risk-taking behaviors*

The nine children observed as part of this study enjoyed all that New England in the winter and early spring has to offer. They splashed, jumped, ran, and dug with shovels. The children's observed risk-taking and risk-avoiding behaviors can be seen in Figure 1. As this figure demonstrates, each child interacted with their outdoor environment in a unique way, choosing different risks to take or avoid, taking more risks than they avoided. All children took risks which involved the elements, which in this case involved playing in accumulated or falling snow and rain, as well water play in the wide puddles and flowing rivers which occurred as the snow melted during the observation period. Only one child did not take a risk involving play at height, which was observable as the children climbed, play on, or jumped off the picnic tables, a climber, and snow banks. Figure 2 shows children ranked from those who engaged in the least to the most risk-taking behaviors. There were no age-related trends in risk-taking for the group.

### *Parental attitudes and their association with children's risk-taking behaviors*

Table 3 shows the average number of risks children undertook in 90 minutes of observation by type and how parents rated those activities in terms of their riskiness. Parents, as a group, were more concerned about children's play at heights and least concerned about rough and tumble play; these also happened to be most and least frequent activities children engaged in outside.

In order to examine the relationship between the behavior of individual children and their parents' ideas regarding risk, parental responses to the four scenarios were ordered using the data in Figure 2. Hence, mothers' and fathers' ratings of the riskiness of each scenario were displayed on a continuum from the child who engaged in the fewest risks (Child 6) to the one who engaged in the most (Child 2). While descriptive and exploratory, some interesting patterns emerged, as seen in Figure 3. In general, children who took many risks had parents who gave hypothetical scenarios

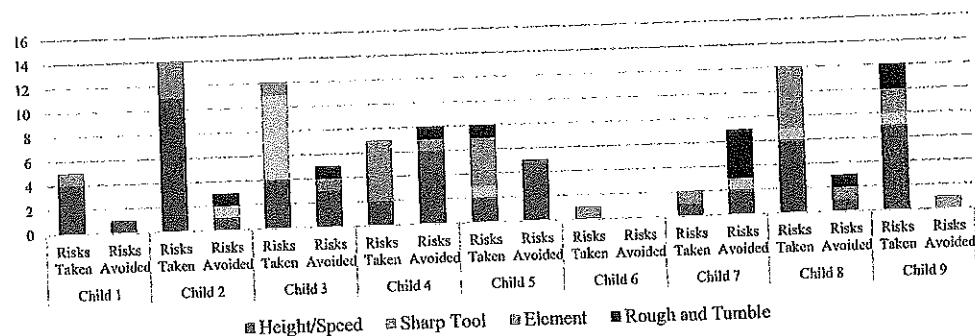


Figure 1. Individual patterns in children's risk-taking and risk-avoidance behavior.



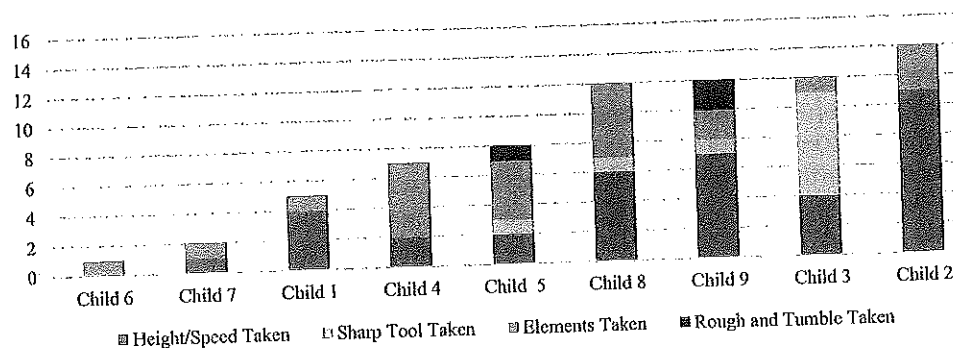


Figure 2. Individual children ranked by the frequency of risk-taking behavior.

Table 3. Average number of risks taken by children as compared to parents' risk assessment of the activity.

	Frequency of Activity During 90 Minutes of Observation (Average/Range) n = 9	Parents' Overall Score of Activity Riskiness on a 10-point Scale (Average/Range) n = 17
Height Risk	4.11 (0-11)	5.97 (3-9)
Water Risk/Play in Elements (Water, Snow, Rain)	2.55 (1-5)	4.31 (1-9)
Sharp Risk Tool	1.11 (0-7)	3.81 (2-8)
Rough and Tumble Risk Scenario	.33 (0-2)	2.41 (1-5)

a lower risk rating, while children who took fewer risks had parents who gave hypothetical scenarios a higher rating. However, fathers of the same children tended to rate the same activity as more risky than mothers.

### How parents expected early childhood educators to respond

For each hypothetical risk scenario presented, parents were asked what they would like an educator to do in the situation. Of the 50 strategies noted by mothers and 29 by fathers, there were differences in their approaches to risk. Both groups (50% of mothers, 34.5% of fathers comments) focused on the role of teachers to maintain physical and visual proximity to young children while risk-taking. However, fathers were also more likely to suggest that it was the role of the educator to assess the risk for the child (24.1% of responses) than mothers (6%). Mothers were also more likely to suggest that educators not intervene (18% of responses) than fathers (6.9% of responses).

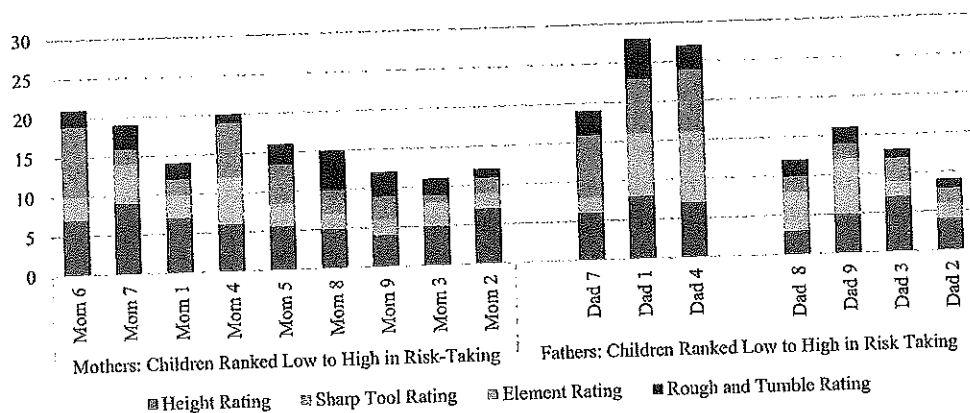


Figure 3. Children ranked low to high in risk-taking and their parents' overall view of the riskiness of each scenario.

While both groups felt guidance and encouragement were somewhat important during risk-taking experiences (14% of mothers' and 13.8% of fathers' responses), fathers were more likely suggest that teachers remove, redirect, or not allow children to take the risk (17.2%) than mothers (8%). For instance, in the risk at height scenario, a mother responded that she'd like the educator to 'Come close, assist child if she needs it, but allow her to navigate her way down if possible' while the father responded 'Remove the child from the table.' In the sharp object scenario, a mother responded 'Be close by; intervene if a child starts swinging the trowel around' while the father responded 'Don't let kids in this age group play with sharp metal shovels! Yikes!'. Hence, while mothers focused on educators working with their child to support them while taking the risk, fathers were more focused on educator's role in helping to avoid or protect them from risk.

## Discussion

Toddlerhood is an exciting, tumultuous, and rapid period of development, as children explore their physical world and their connection between themselves and their attachment figures (Bowlby, 1982; Erikson, 1963). The influence of a caregiver—particularly a parent—cannot be understated, especially when it comes to the behavior and physical activities of the child (Nelson Nieheus et al., 2013).

Findings from this study suggest that there is wide variability to toddlers' risk-taking activities within the natural environment. However, the types of risks they take in an outdoor early childhood environment, especially within a landscape which changes seasonally, are ones their parents' perceive to be more dangerous or risky, especially fathers. Parents' ideas as to what risks are considered to be dangerous vary by both the type of activity and where they place it on the spectrum ranging from the potential for injury to enjoyment and personal growth. However, parents' of toddlers rarely note the learning value of the activities in making their judgments, with fathers particularly apt to see it as educators role to limit children in their risk-taking attempts. This is particularly important to attend to as parents' ideas about the perceived dangerousness of risk-taking activities, along with the play context, child factors, and the family context, all seem to contribute to children's risk-taking skills.

### *Variations in patterns of risk taking: influence of play context and child factors*

Some children made many risk-taking choices of a variety of different types, searching their environment for opportunities and selecting several different activities to participate in. Other children took fewer risks or focused on risk-taking in a limited number of play areas. Risk-taking at height and in the elements were common of this group of toddlers. While risk-taking involving height and speed are most common in preschoolers (Sandseter, 2007, 2009), toddlers in this sample did not focus on speed. Their challenges in navigating muddy or wintery terrain quickly may have limited this aspect of their exploration. Overall, differences in patterns may be explained by child factors such as temperamental differences (inhibited versus exuberant) (Fox et al., 2005; Nelson Nieheus et al., 2015, 2013), developmental differences in motoric capabilities from 12–24 months (Thelen & Smith, 1996) which constrained risk taking, and variations in social-emotional readiness to engage in risk-taking (Boyer, 2006).

Children who took fewer risks were often found engaging in comfortable, routine activities which held their attention, such as using buckets which they carried or filled with natural materials. This focus on exploratory play has been found to be common of infants and toddler interacting in greened settings, where they will manipulate natural elements (Morrissey et al., 2015). For this group, risks would occasionally come up due to changes in the environment, the play context (terrain, features, or tools present), or from ideas and examples provided by other children. Work exploring early childhood outdoor environments has found that the design of the environment and what is available are crucial in shaping children's physical activity choices (Kernan, 2010; Little & Sweller, 2015). All of the toddlers observed sought some challenge in their time outside and

often used the same items to provide different affordances depending on their needs, proclivity, and skills (Little & Eager, 2010; Morrissey et al., 2015). As such it is vitally important for early childhood educators working in outdoor environment to actively observe young children's interchange with their playspaces to consider more fully how it meets the needs of each child and the group as their skills evolve. The addition of loose parts, tools, and the arrangement of natural elements within the space provide needed transformations to ensure environments are intriguing, stimulating, and maintain some challenge.

Risk-taking is a complex process in which children learn how to balance their needs for attachment and security with their evolving capacity to emotionally self-regulate, control their impulses, make independent choices, and attend to cues in the environment (Boyer, 2006; Lahat et al., 2012). No children were observed in play for which they might be lost or disappear while in the group, suggesting attachment related concerns, as well as safeguards in place in a regulated and accredited child care center limited this type of risk-taking in toddlers (Little and Sweller (2015).

### *Parents' ideas regarding risk-taking*

Just as there were variations in children's behavior regarding risk, there were variations in parents' ideas. Mothers and fathers had different ideas about the riskiness of different experiences which may present themselves in children's nature-based play experiences. Play at heights was viewed as posing the most risk to the child for both mothers and fathers and a frequent risk their children engaged in. This type of play may have been viewed as more risky because it is one of the most contextually relevant risks parents currently experience and due to the reality that falls are the leading cause of injury for this age group (Centers for Disease Control (CDC), 2015).

Previous studies have found differences in parental attitudes and children's behavior based on the sex of the parents and child (Hagan & Kuebli, 2007; Morrongiello & Lasenby, 2007). In this study there were some differences in mothers' versus fathers' ideas about the risk inherent in engaging in play in the elements (knee deep water) and using a sharp tool (a trowel). Divisions of labor in the family context may differ between mothers and fathers, accounting for differences in their views. For example, mothers may be more likely to engage in caregiving activities such as giving children a bath and hence be more comfortable with children's water play. They may also be more likely to have young children assist in routine self-help tasks around the house which may involve metal utensils such as tongs, silverware, and gardening tools. U.S. data supports this division of labor, indicating mothers in two-parent working families take on more household responsibilities and play a greater role in children's scheduling and activities than fathers (Pew Research Center, 2015a).

An alternative explanation may be related to the gender of the children in the study. The group observed were primarily female. Research has found gender differences in parental encouragement of risk-taking. A comprehensive review by Morrongiello and Lasenby (2007) finds daughters are less frequently encouraged to take risks, possibly due to traditional gender stereotypes of females as vulnerable to injury. Work also suggests that fathers are more rigid than mothers in the type of play they encourage based on their child's gender (McHale, Crouter, & Whiteman, 2003), leading them to view outdoor athletic pursuits as less acceptable for girls than boys. However, other work has found that fathers of infant and toddler boys are more likely to stress safety when they are engaged in motor tasks (Ishak, Tamis-LeMonda, & Adolph, 2007).

Rough and tumble play was viewed as the least risky nature-based play scenario. In the scenario it was noted children engaging in activity were smiling. This may have biased respondents, leading them to conclude the activity was appropriate if children's affect during it was positive. Hence, emotional expression during nature-based play experiences may be important in parental determinations of risk in play. This was observed in parents' rationales as to why an activity was or wasn't considered risky.

More parents' comments focused on the potential for physical harm inherent in risk-taking activities than the potential benefits. When benefits were noted they centered on the potential to

develop children's motor skills or self-confidence, not toddler's cognitive skills. It is interesting to note that parents did not discuss the educational value of the activities. Rouse (2016) discussed how parents of infants and toddlers often do not fully understand how the outdoor environments used by young children and their teachers promotes learning. Many fathers in the sample also felt that the primary role of early childhood educators should be to stop or limit children's risk-taking behavior. It is likely parents may not be aware of the safety precautions which are taken by educators in designing the playspace. Rouse discusses how early childhood educators often use photos with descriptions of activities which they share with parents. However, she cautions that they may serve to limit parents' understanding of what is occurring outside to what their child is doing, not what they are learning. An alternative approach to documentation is the creation of a Learning Story (Carr & Lee, 2012; Carter, 2010).

A Learning Story uses pictures and narrative to describe children's words, actions, and learning within an activity. It extends photo documentation by not only recording what children do and say during an activity but an analysis of the children's learning and next steps, including how adults can support children's goals. Using Learning Stories is just one way to provide insight into the child's time in outdoor early childhood environments, open communication between parents and educators, and broaden their understanding of children's risk-taking abilities. Educators may also want to use care in the language they use in the culture they work. In the U.S., risk is often viewed as something to fear (Curtis, 2010; Levin, 2010), leading to injury. Reframing the concept as motoric problem-solving, self-discovery, and scaffolded challenges may be helpful in opening the conversation between parents and educators.

### ***Connections between parental attitudes and children's risk taking: role of family context***

Data collected as part of this small-scale study showed a relationship between parents' perception of risk and their toddlers' behavior in an outdoor setting in their absence. This relationship existed for both mothers and fathers; parents who rated hypothetical scenarios as more risky tended to have children who exhibited fewer risk-taking attempts. Given the age of the children in the sample, parents and caregivers primarily control children's independent mobility license and exposure to risk (Erikson, 1963; Sandseter, 2009; Thelen & Smith, 1996). These findings support those of Little (2010) who studied preschooler and their parents. It is likely that parents who feel that activities are very risky are less likely to allow their child to participate, encourage risk taking, or physically challenging acts. This relationship may shift as children grow older and parents become more aware and comfortable with their children's abilities. Again, the importance of assisting parents in understanding not only their children's emerging capabilities, but they can structure risk-taking experiences for their children through the use of incremental challenges, modeling, and joint problem-solving is crucial (Warden, 2010).

### **Limitations**

This study was limited in several ways. First, the sample was a group of parents who self-selected a nature-based program where their child would dig, climb, and explore in nature. Therefore, they may have been more comfortable with their child taking risks than other parents. Secondly, this program was located at prestigious liberal arts college with a cost of care which is higher than the state average. Hence most who utilize the program are upper-middle class. Most parents who utilize the center are college faculty, highly educated, and feel that they have taken physical risks themselves. Third, observations were conducted by only one observer due to their familiarity with the children and their skills. Finally, the small, primarily female sample size meant that outliers in the data may have had a larger impact on the results.

## Conclusions

Despite these limitations, this study highlights the role which the play context, child factors, and family context play in understanding young children's risk-taking behavior. It is important for parents, caregivers, and educators to understand the impact of their attitudes, even if unintentionally communicated, and how they may shape the behavior of the child (Curtis, 2010). A better understanding of the value of risk, and of one's own comfort with it can help parents and educators be more aware of their needs, sensitivities, and ways to improve their own teaching and caregiving practices.

Helping parents to understand what is a safe risk is key. Research by Ishak et al. (2007) suggests that parents of young children are more cautious in encouraging physical behaviors where pushing children too far beyond their limitations may lead to physical injury. Hence, they see scaffolding as an important approach to help parents see their child's capacities and to gradually help them to become more comfortable with children taking motoric risks. As educators we can assist in this process by keeping parents aware of the gradual changes in children's behavior and capabilities, explaining how risks can be taken safely and incrementally, and modeling how to structure situations so children can safely take motoric risks. Strategies such as photo, video, and Learning Story documentation may also be valuable to help parents understand the learning value inherent in risk-taking experiences within nature-based play (Carr & Lee, 2012; Carter, 2010; Rouse, 2016).

The development of independence, resilience, and well-being require the ability to tolerate uncertainty and occasionally failure; in short, the ability to take risks (Little & Sweller, 2015; Nelson Nieheus et al., 2015). U.S. parents tend to be somewhat nervous about risks due to cultural pressures. However, it is the job of outdoor educators to help parents consider what can be gained, not what can be lost, by allowing their children ample opportunity to explore, experiment, and problem solve.

## Disclosure statement

No potential conflict of interest was reported by the authors.

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