2017

Developing Risk Assessment Skills: The Role of Parental Attitudes and Nature Play

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Introduction

The word "risk" usually brings with it negative connotations. There is no single definition of risk or risky behavior that has been accepted universally, particularly when considering the behaviors of young children. The expression "risky behavior" can trigger thoughts of risky sexual or drug-related behaviors in older children. However, a certain amount of risk encountered while young children interact with their environment does not always negatively impact the children's health and safety. Instead, taking risks – and forming well-developed risk assessment skills – allows children to be independent, resilient, happy, and healthy (Little & Sweller, 2015). Multiple factors influence the development of these skills, including parental attitudes towards risk and parents affording the child an opportunity to take risks in a safe manner through unstructured outdoor play (Nelson Nieheus et al., 2013).

Development of risk assessment skills is crucial for children as they grow to understand their physical body's interaction with their environment and the impact their actions may have on their health and safety. In compiling definitions from multiple authors in the field, Sandseter (2007) found that definitions of risky play within early childhood education include three main factors: newness, feeling of fear, and potential for injury. Some activities may not be frightening or dangerous for the child, but are still a new and previously undiscovered opportunity. Other opportunities may be familiar but still bring feelings of fear for a child. Finally, an activity may not evoke a significant feeling of fear, but may still pose a risk of potential injury. When any combination of these three feelings is present, the child can be considered to be undertaking risky behavior. Additionally, Brussoni, et al. (2015) notes that risks can either be real or perceived, subjective or objective. Regardless, the child is engaging in risky play because they are

perceiving a potential danger to themselves and choosing how to act given that perception, whether or not they could actually be harmed.

The natural environment provides opportunity for children to take risks. Prior studies have shown that outdoor play in natural environments affords more opportunities for risk-taking and risky play (Sandseter, 2009). Research indicates that when parents and educators are able to communicate their expectations and acceptable levels of risk for children, they are better able to create common, communicable goals for them (Nelson Nieheus et al., 2013). In order to do this, teachers and parents need to understand the value of risky play and find common terminology to describe acceptable risky play.

The goal of this research project is to better understand the role that parental attitudes and risk affordance have in the development of risk assessment skills in young children. Evaluating the influence of each of these factors will allow educators, administrators, and parents to create effective opportunities for children to develop risk assessment skills. By observing children playing in unstructured, nature-based settings and conducting surveys with parents, this project will examine the development of risk assessment skills.

Educators presented with opportunities to offer play which the student perceives as risky can use this research to better inform their own practices, as well as to communicate the value of this practice to concerned parents and administrators. Risky play can appear similar to dangerous play to those unfamiliar with best practices. By better informing educators, parents, and administrators, risky play opportunities can be effectively provided without misunderstanding or concern for the safety of the children.

This research project also fills a gap in the existing literature. While there is a great deal of research on the benefits of risky play for children, there is less known regarding the attitudes

of parents regarding risky play and how these attitudes influence children's play behaviors. Parents value the development of independent, resilient children while simultaneously holding the safety of their child paramount. By engaging parents in discussions of hypothetical scenarios of risks children may undertake, researchers can better understand parental outlooks and attitudes towards risky situations, removed from the health and safety of the parent's own child.

Including parental attitudes as a factor in an evaluation of risk assessment skills provides a more complete understanding of the development of these skills for young children. By evaluating specific factors and their effect on the development of risk assessment skills, nature-based and outdoor early childhood education programs will be better able to create effective educational environments for their students.

This research project will specifically address the relationship between nature play, parental attitudes, and the development of risk assessment skills. Not only will the study consider how and if parental attitudes and play environments influence the development of risk assessment skills, it will also consider how other factors may contribute to the development of risk assessment skills in young children.

Literature Review

Research in the field of risk assessment capability and its developmental value for young children can be broken into three specific, identifiable categories. They include (1) parental attitudes towards risk, (2) the value of nature play in the development of risk assessment skills, and (3) the value of risk in the development of the whole child. While each focuses on a different aspect of risk in young children's lives, they are intersectional, and many studies address more than one area.

It is worth noting that a majority of the literature addressing risk assessment skills in very young children comes from countries outside the United States including Norway, Australia, and New Zealand. While this fact in itself does not provide any support for the value of risky play in early childhood education, it does demonstrate a difference in attitudes around the world regarding the efficacy, developmental value, and safety of different forms of risky play for young children. This point is later addressed when considering the effect that cultural norms and expectations have on parental attitudes, which in turn effect affordances for children's risk-taking behaviors.

There is significant repetition of authors throughout this literature review, given that this is still a relatively new field of study within early childhood education. Only a handful of researchers are conducting legitimate, valuable research in risk and risky play for very young children. Studies used as reference literature for this review came from peer-reviewed publications. In order to gain a more thorough perspective on the influence of risk on child development, articles were not exclusively limited to those researching early childhood, but were weighted towards early childhood and away from adolescence. Finally, articles were filtered to look for bodily risk and risks taken in the natural environment and avoid articles focusing on risky behaviors involving sex, alcohol use, or drug use.

The research assessed in this literature review focuses on play that occurs outdoors, regardless of the specific setting. While many types of emotional and physical risk can occur from play indoors and in classrooms, the purpose of this review is to consider specifically the value of outdoor and nature play on risk assessment skills, and the way in which parental attitudes play a role in the development of these skills.

Parental Attitudes Towards Risk

When considering how children move through their environments, a researcher must consider various influences on their behavior that effect their choices, what they are exposed to, and the allowances they are given. For very young children, the largest of these influences is typically parents or other full-time caregivers. Therefore, when considering the role of risk in young children's lives, it is important to understand how parental attitudes toward risk influence children's choices and development. For the purpose of simplicity and clarity, "parental attitudes" and "parents" will refer to the full-time caregiver of the child, whether they are parent, grandparent, legal guardian, or other form of primary caregiver.

When considering risk-taking behaviors, researchers look both at the children's opportunities to take risks, which is dependent on the environment, and the children's independent mobility license, which depends upon the adults caring for the child. While potential for risk-taking exists in most environments, that potential does not become actualized without mobility license being granted by the caregivers; permission must be given to take the potential risks (Sandseter, 2009). There are two main factors that influence when and where parents are able to give children this independent mobility license: their own experiences and cultural influences.

There are two terms that researchers use when discussing risk and risky behavior in children: telic behavior and paratelic behavior (Nelson Nieheus et al., 2013; Nelson Nieheus, Bundy, Broom, & Tranter, 2015). Children displaying telic behaviors are serious, cautious, and goal oriented. Children displaying paratelic behaviors are playful, adventurous, and activity oriented (Nelson Nieheus et al., 2013; Nelson Nieheus et al., 2015). Research by Nelson Nieheus et al. (2013) and by Nelson Nieheus et al. (2015) has shown that children's telic and paratelic behaviors are in large part the result of telic and paratelic motivations on the part of parents,

which stem from parental priorities for their children. 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, meaning that they are more likely to allow risk and risky play in order to foster these outcomes (Nelson Nieheus et al., 2015). However, research shows that parents who have led risk-averse lives themselves or are only comfortable experiencing minimal risk will struggle to allow their own children to experience risk (Little, 2010; Nelson Nieheus et al., 2015). Hence, research suggests that parents who themselves have experienced risk will not only be more tolerant of risk-taking behaviors in their own children, but may even choose riskier environments for their children, such as outdoor play and nature-based settings as opposed to manmade playgrounds.

Another important aspect of how parents influence their own children's risk taking is through cultural effects on parental attitudes. Parents who were interviewed regarding their willingness to let their child take risks frequently cited cultural pressure, fear of being judged as a bad parent, or even fear of lawsuits as reasons for not to letting their child take overt risks (Little, 2010; Nelson Nieheus et al., 2013). This cultural pressure to protect a child from any harm that may befall them varies, and seems currently to be felt particularly strongly in the United States. Parents today face not only pressure from the constant oversight of neighbors and friends, but also the continuous visibility that comes from social media (Brussoni et al., 2015). Additionally, cases have recently found their way to court suggesting neglectful parenting from acts as simple as allowing children to walk to a nearby playground unaccompanied (Wallace, 2015). This fear of criticism and retribution is capable of preventing parents from allowing their children to take risks which they might otherwise consider safe or even valuable out of concern for judgment or legal action against them.

Current literature does not take into consideration parents' opinions compared with their actual personal experiences. Parents who have not taken significant risks or who identify as risk averse may still value risk in the development of children, while parents who have taken significant risks or identify themselves as having led risky lives may not see the value of risk in child development. Most literature asserts that parents who have not taken risks in their own life struggle to allow their children to take risks, but do not present data on whether or not parents' view of the value of risk influences this decision (Little, 2010; Nelson Nieheus et al., 2013; Nelson Nieheus et al., 2015). Further insight is needed to better identify the ruling factor in parents' decisions about their own child's behaviors. There is also currently little data regarding whether or not parents value the role that nature has in building risk-assessment skills.

Value of Nature Play for Development of Risk-Assessment Skills

While research shows that children will find ways to take risks wherever they are, there is also evidence that points to the value of access to nature in risk-taking and risk assessment skills (Sandseter, 2009). Risky play behaviors are generally categorized by researchers in the field 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 (Sandseter, 2007). Within the categories, individual features can be identified in any play area that allow for these different types of risky play. For instance, swing-on-able features, climb-on-able features, jump-off-able features, and run-on-able features all present opportunities for risky play (Sandseter, 2009). While these types of features are frequently present in manmade play structures such as playgrounds, they are limited and frequently unused by the children who play in these spaces (Brussoni et al., 2015). However, children who engage in outdoor play and play in nature experience open-ended opportunities,

which not only allow for more independent mobility license, but also for greater development of social and problem-solving skills (Dowdell, Gray & Malone, 2011).

There are additional ways in which risky play can be categorized. For instance, any play which requires overcoming fear, involves a probability for harm or injury, involves attempting something a child has never done before, or attempts an act that feels out-of-control can be categorized as risky (Sandseter, 2007). When considering risky play utilizing these categories, it is easier to identify ways in which play in an unstructured, natural, outdoor environment would provide more allowances for risky play than play in a controlled, manmade structure.

Finally, it is worth noting the seminal research in the field of outdoor play and nature-based experiences. Wilson's (1984) Biophilia Hypothesis demonstrates the way in which humans seek and desire interaction with nature and benefit from such interactions. Wilson outlined the health benefits that come from a connection with nature, particularly for children, and the way in which humans naturally seek this connection. Modern day culture and technology have led to a severance of this connection, which leads to a lack of care and preservation of nature and – as Wilson claims – a deep urge to refresh this connection.

Value of Risk-Taking in Development

Finally and most importantly is the actual value of risk and risk-taking on children's cognitive, social, emotional, and psychobiological development (Boyer, 2006). Research on the value of risk-taking in the development of young children focuses on one main point: resiliency (Nelson Nieheus et al., 2015). Without opportunities for experimentation, failure, and exploration of one's own tolerances, resiliency and the ability to stand up and dust oneself off, so to speak, cannot form.

One self-titled multi-perspective review considered a range of research in the field, assessing the developmental value of risk-taking from a cognitive, emotional, psychobiological, and social point of view (Boyer, 2006). According to research, psychobiological and social processes in development lead to increased risk-taking behavior, while cognitive and emotional processes in development lead to decreased risk-taking behavior. This review looks at risk up until a child reaches adolescence, leading to multiple paradoxes of development (for instance, why children take more risks even as they learn that they should not). Despite this change in age, the value of risk is still evident for young children. Given that young children have not yet developed many of the psychobiological or cognitive structures assessed in the review, the social and emotional aspects are more applicable. Therefore, when considering risk-taking behavior, considerations for risky behaviors depend upon whether or not social or emotional urges and attachments develop first. If social urges develop first, young children will be more likely to take risks due to the influence of peers and social attachments (Boyer, 2006). If emotional urges develop first, young children are less likely to take risks, due to the emotional response to consequences tempering decision making (Boyer, 2006). This order of development will be unique for every child, both due to nature and nurture, and therefore will be influenced by parental attitudes and parenting style.

Summary

When asked about the value of risk in the development of children, 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., 2013; Nelson Nieheus et al., 2015). However, regardless of this understanding, parents and educators still limit exposure to risk on a daily basis, mainly due to the fears and pressures of the surrounding culture (Brussoni et al., 2015).

Parents are afraid of being judged and educators are afraid of being sued for children's injuries that may result from risky play. However, research shows that these injuries are not as likely or as severe as nervous parents and educators might imagine. In a review of research on risky play, it was found that there were no serious injuries to children reported among the 25,782 children observed (Brussoni et al., 2015).

Given the existing literature and gaps in the literature in this field, this research project was designed to consider potential connections between the way in which parents value risk in development, assess hypothetical risk, or have personally experienced risk and how their child takes risks. Therefore, data was collected from both parents through surveys and children through observation of outdoor play to see if any connections between parental attitudes, experiences, or values and children's behaviors in outdoor nature play.

Study Design

This action research study was conducted using a quantitative approach (Creswell, 2015). The researcher used a survey of parents and coded observation of children's behavior to assess any possible relationship between parents' attitudes surrounding risk in play and their children's actualized risk-taking behaviors.

Methods

Setting and Population

The childcare center where the research took place is located in northern New England. The center serves a college and its employees, both faculty and staff. Therefore, the majority of the population of the center is group of individuals with a focus on academic achievement and living an upper-middle class lifestyle. This population does not necessarily reflect the population of the surrounding town, but instead exists as bubble within the larger population of the region.

The center serves children from six weeks to five years old, with 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 contains children who are one to two years old. This room contains four educators who care for the children each day. Two of these educators had cared for this group of children since they entered the center, and two were new to this group of children at the beginning of the school year.

Subjects and Recruitment

The subjects used for the research were recruited as a convenience sample: all families in the YT room at the childcare center were asked to participate in the research study. It was made clear that a decision not to participate would not have any effect on their place at the center. Additionally, it was made clear that a decision to allow their child to participate would not mean any change in care or routine for their child, as that piece of the research design was purely observational. Of the nine families enrolled in the room, all nine chose to participate and signed consent forms for their child to be observed. Of the 18 parents in these families, 17 out of 18 chose to sign informed consent forms to be included in the research and filled out the attached survey regarding attitudes and perspectives on risk. Nine children between the age of 1 and 2 years participated in this study, and 17 parents participated. The consent rate for children was 100%, the consent rate for parents was 94.4%. Adult informed consent forms can be found in Appendix A, parent informed consent forms can be found in Appendix B.

Protection of human rights. The primary investigator for this research project completed the NIH Training Course on Human Subjects. 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 but was kept confidential, without names attached. Parents were given assurances that at no time would the conduction of this research study influence the care being given to their children at the childcare center. The research was conducted with written permission from the director of the center. All data will be destroyed after three years.

Instruments and Procedures

Parent survey. The survey utilized was developed by the researcher for this study (see Appendix C for a copy). The survey consisted of demographic questions, four hypothetical scenarios of risky play, and two questions to assess parents' personal experience with risk and how much they value risk as a factor in child development.

The four hypothetical scenarios described a child playing at height, playing in water, playing with sharp objects, and engaging in rough and tumble play. Parents were asked to rank how risky they felt each scenario would be on a scale from one to ten, with one being no risk and ten being extremely dangerous. They were also asked if they had further comment on each scenario, and asked what they would like an educator to do in each scenario. Parents were then asked to rank the role of risk in child development, again on a scale from one to ten, with one being no role at all and ten being a critical role. Finally, they were asked to rank the amount of risk they had experienced in their own life, with one being no risk at all and ten being extreme risk. Parents were given space after each ranking to add further comments or explanation if they chose. No definitions or parameters were given for the final question in terms of how personal risk experiences were defined: parents were simply asked if they felt they had experienced risk in their own life, regardless if that was real or perceived.

***Procedure*.** Each family received an identical envelope with identical contents. The only non-standard portion of this package was a small numerical code written on each envelope to identify the respondents to the researcher. In each envelope was an explanation of the project with a content index, two parent surveys, two adult consent forms, and an informed consent form for the participation of their child. Parents were asked to fill out as much of the content as they felt comfortable with and return the envelope to the researcher within a three-week window.

Reliability and validity. In order to maximize optimal conditions, parent surveys were sent home in order to allow parents to fill them out with the most possible time, flexibility, and comfort. Student observations took place in a familiar setting with a trusted caregiver (other than the primary investigator) present.

Survey questions were constructed through the use of prior research from experts in the field, review by a research and advisor, and continued discussion with other educators. This multi-step process was designed to minimize ambiguity and maximize clarity and response rates. This led to a flexible, open-ended survey that contained both numerical response data and anecdotal responses, allowing for the greatest likelihood of valid data. Additionally, empirical evidence supporting the questions asked can be found in prior research in the field. The questions in the survey were designed to assess parents' attitudes towards four fields of risky behavior (height, water, sharp object, and rough and tumble play), which have been identified by experts in the field as being four of the five main categories of risky play.

Child Outdoor Observation Form. The observation of children took place outdoors in the months of February and March in Maine, meaning that the setting was in constant flux as nature changed and shaped the setting. Therefore, a simple coding system was created to better observe each individual subject (See Appendix D for a copy of the form used). The six observed

categories were play at height, play at speed, play with sharp objects, play in elements (in this setting, that meant water and ice), rough and tumble play, and play with the potential for disappearing or getting lost. These six categories are widely recognized by researchers in the field (Sandseter, 2007; Sandseter, 2009; Brussoni et al., 2015). Each time a child engaged in one of these forms of play, the occurrence 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.

***Procedure*.** Observations were conducted in the outdoor play space of the childcare center. Each child was observed for 45 minutes in the morning and 45 minutes in the afternoon, though not necessarily on the same day. Risks taken and risks avoided in the six categories of risk were recorded within that time frame. The primary investigator interacted with the children in the same way they would on any typical day in order to minimize interference and abnormal behaviors. All data was compiled into a spreadsheet for comparison and grouped by the numerical code for the family.

***Reliability and validity*.** The coded observations were conducted using a broad spectrum of risky play allowances, meaning that children could take or avoid risks in a variety of settings rather than on specific play structures or in specific locations. This allowed for flexibility within observations, but meant that some interpretation by the researcher occurred during observation. However, this made the observation applicable to a wider range of children and activity and allowed all children – regardless of ability or development level – to be included in the research.

Results

Parental Perceptions and Experience of Risk

Parent survey questions examining the role risk-taking has in child development were averaged separately for mothers and fathers. Six out of nine mothers ranked the role of risk-

taking in child development as a ten out of ten (1=no role, 10=critical role), with an average rating of 9.5. Fathers responded very differently; only one father out of eight ranked the role of risk-taking in development as a ten out of ten, with an average rating of 7.71.

Parents were also asked to assess their own personal experience with risk throughout their lives on a scale from one to ten (1=no risk, 10=extreme risk). No specific definition of risk was given, in order to encourage the respondent to answer based purely on their own personal evaluation. Most parents felt that they had lived moderately risky lives, with few outliers. Only one parent ranked their personal experience with risk as a ten out of ten. Only two parents ranked their personal experience with risk under five out of ten. Mothers and fathers did not demonstrate a significant difference in their personal experience rating. Mothers averaged a personal experience rating of 7.28, while fathers averaged a personal experience rating of 7.29.

Parental Attitudes on Risky Scenarios

Parents were asked to respond to four hypothetical scenarios of a child taking a risk and rate the risk on a scale of to ten (1=no risk, 10=extreme risk). These scenarios outline children playing in water, playing at height, playing with sharp tools, and engaging in rough and tumble play. The results varied widely, even within families. Rough and tumble play was considered the least risky scenario: ratings were only between one and five. Water play had the widest range, with ratings between one and nine. Average responses for each scenario can be seen in Table 1 below.

Table 1.

Average Scores for Hypothetical Risk Scenarios

	Average Score For Mothers	Average Score for Fathers	Average Overall Score
Height Scenario	6.17	5.71	5.97
Water Scenario	3.78	5.00	4.31
Sharp Tool Scenario	3.22	4.57	3.81

Rough and Tumble Scenario	2.39	2.43	2.41

The complete text of each scenario as presented to the parents can be found in Appendix C.

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. Observations of their behavior were recorded both when they chose to engage in risky play, and when they were given the opportunity and intentionally chose not to participate or avoided the activity all together. The children's observed risk-taking and risk-avoiding behaviors can be seen in Figure 1.

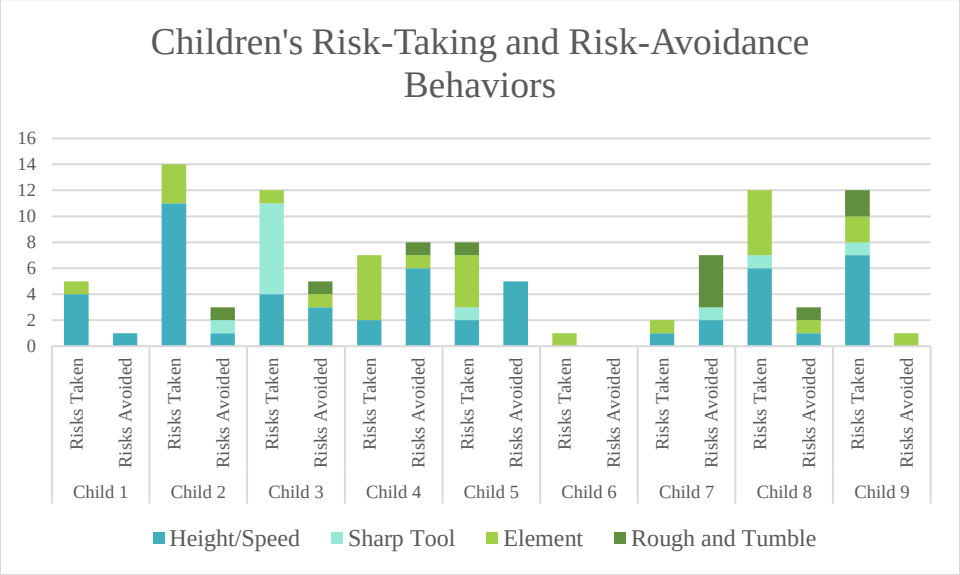

Figure 1: Children's risk-taking behavior is shown next to their risk-avoidance behavior to demonstrate the overall trends in observations of the entire group.

A trend is visible in Figure 1 among the children observed. Each child interacted with their outdoor environment in a unique way, choosing to take or avoid risks differently. However, children who took lots of risks (meaning they demonstrated 12 or more risk-taking choices)

tended to be less risk-averse (meaning they demonstrated five or fewer risk-avoiding choices). However, this trend did not occur in reverse. No child demonstrated significant risk-aversion without any risk-taking behavior. Only two children demonstrated more risk-avoidance choices than risk-taking choices.

Parental Attitudes and Their Influence on Children's Risk-Taking Behaviors

In order to compare children's behaviors with the parents' ratings of hypothetical risk scenarios, the children were ranked from the least risk-taking to the most risk-taking, as seen in Figure 2. When ranked in the same order as their children, mother's and father's ratings of how risky the scenarios are shows an inverse proportionality, as seen in Figure 3. Comparing Figure 2 and Figure 3 side by side shows that a strong relationship exists between mothers' attitudes towards risky play, and whether or not their children choose to engage in risky play.

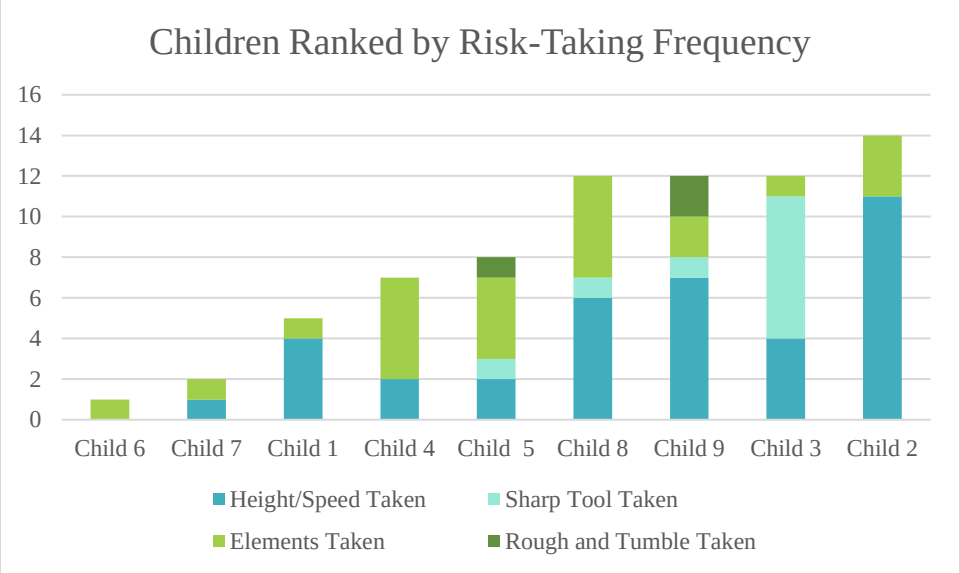

Figure 2: In this figure, children have been ranked from those who take the least risks to those who take the most risks.

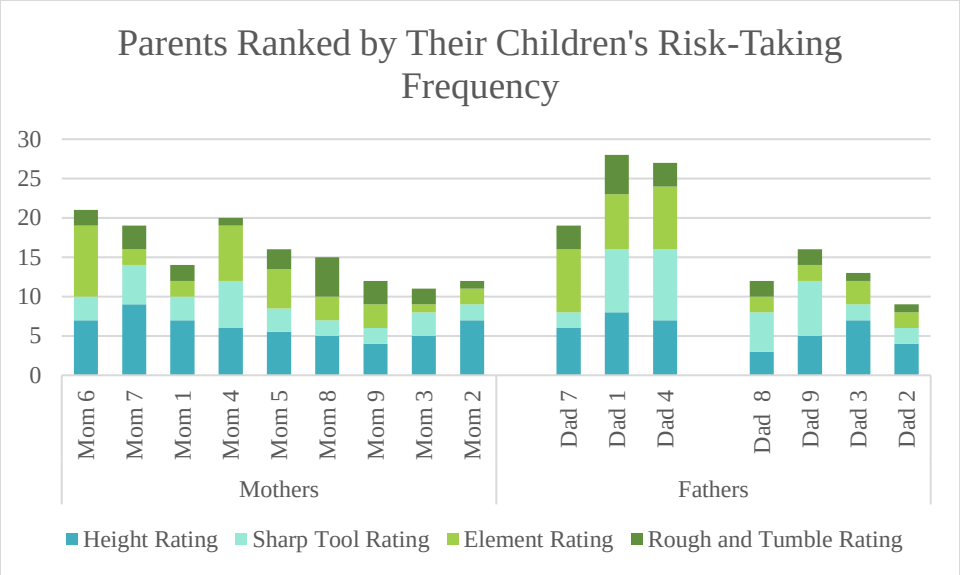

Figure 3: In this figure, mothers and fathers have been ranked in the same order as their children in Figure 2.

Children who take many risks have mothers who gave hypothetical scenarios a lower risk rating, while children who take fewer risks have mothers who gave hypothetical scenarios a higher risk rating. When ordered in the same way, fathers' ratings of hypothetical risk scenarios do not show as strong a relationship. This trend is also visible in Figure 3. However, the data still demonstrates that fathers who rated the hypothetical scenarios as very risky have children who displayed fewer risky play behaviors, and fathers who rated the hypothetical risk scenarios as not very risky have children who displayed more risky play behaviors. There is less data for fathers, as one father chose not to fill out the parental survey and one family unit does not contain a father.

Limitations and Mitigating Factors

This research study took place in a relatively small childcare center located in northern New England, in the young toddler room of the center. Because the children involved in the study were chosen based on their enrollment in this room rather than through a random process or intentional selection for characteristics, the results of this study are not representational for a

range of demographics. Additionally, families enrolled in the center have intentionally chosen a nature-based program, and have the financial stability to support such a choice. This further skews the enrollment data towards upper-middle class families who would tend to value outdoor play and the risks that nature play brings.

Additionally, the enrollment in the young toddler room is only nine families. Although all families agreed to participate and 17 out of 18 parents filled out the parental survey, this still is a very small sample. This limited sample size means that the data cannot be considered representational of broad trends or the general population. However, this does not mean that the relationships and trends noticed within that data are not noteworthy.

There are several children in the participant pool who demonstrate learning or developmental delays. These children were not assessed any differently during observations, and therefore provide some outlying data points.

Results for parents are divided between parents identifying as the father and those identifying as the mother. One father chose not to respond to the parental survey. One child had two mothers respond to the survey. For that child, the "mother" response data is an average of the two responses received.

Discussion

Observing children taking risks can be a fascinating, emotional, and stressful process. Children between the ages of one and two are experiencing a rapid and tumultuous period of development, much of which has to do with their exploration of the physical world. They are also testing the connection between themselves and their caregivers, meaning that 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). Results of this study

indicate that there may be a relationship between the attitudes of the parents concerning risk and the risk-taking behavior of their children. However, it is also important to consider the limitations and mitigating factors of this study.

This research project sought to identify what factors contribute to the development of risk-assessment skills in young children, and specifically how parental attitudes influence the development of risk-assessment skills. Objective examination of the connection between parents' attitudes and children's behavior was carried out by gathering quantitative data of parental attitudes and perceptions of risk and children's behavior. By comparing quantitative data, a topic that tends to be subjective and emotional for parents and educators was assessed in a strictly mathematical way. Therefore, the findings of the study can be used for further analysis and interpretation beyond this particular sampling pool, and to inform best practices for educators, administrators, and parents.

The results of this research project showed that a relationship exists between parents' hypothetical perception of risk and their children's behavior. This relationship existed for both mothers and fathers; parents who rated hypothetical scenarios as more risky tended to have children who exhibited risk-averse behaviors, while parents who ranked hypothetical scenarios as less risky tended to have children prone to taking risks. Given the age of the children in the sample, parents and caregivers still mainly control children's exposure to risk and their children's behavior in potentially risky environments (Sandseter, 2009). Therefore, it is likely that this relationship exists because parents who feel that activities are very risky are less likely to allow their child to participate, try their hand, or pursue challenging or risky acts. It is possible that this relationship will shift as children grow older and parents become more aware of and comfortable with their children's abilities. Further research and data collection regarding the

shift in parental attitudes of risk as their child ages is necessary to better understand the direction that this relationship might take.

In looking at individual patterns, some children made many risk-taking choices (12 or more) and few risk-avoiding choices (five or fewer), but no children demonstrated the reverse behavior. This trend demonstrates that there were two obvious behavior patterns observed. Some children took lots of risks, searching their environment for opportunities for risk and making lots of risk-taking choices. Other children did not actively seek risk, meaning that their behavior was neither composed of risk-taking choices or risk-averse behavior; they were likely to find comfortable, routine activities and spend time using familiar tools and materials. For this group, risks would occasionally come up due to changes in the environment or from other children, and they would make choices to participate or not. There were no children who spent time actively seeking risks but then making the choice not to participate. One likely explanation for this behavior pattern is identifiable developmental stages found by previous researchers. As Boyer (2006) noted, at this age some children are controlled by their social development and their attachment to adults and peers which leads them into risk-taking behaviors, while others are controlled by their emotional development and are using their emotional response to risk to decide whether or not to participate in risk-taking opportunities offered to them. Further research could be conducted to better understand children's specific risk-aversion behaviors, in which each child would be directly offered the same series of risks, and their choices to take or avoid them would be recorded. Because the children in this sample and their observed behavior were not intentionally influenced by adults or the primary investigator in any way, some children simply chose not to engage in either risk-taking or risk-avoiding behavior.

This study did not find a connection between children's behaviors and their parents' personal experience with risk or their parents' value of risk-taking in child development. While mothers tended to value risk-taking in child development more than fathers, mothers and fathers had an almost identical average of their own risk-taking experiences. Previous studies have found differences in parental attitudes and children's behavior based on the sex of the parents and child (Hagan & Kuebli, 2007). With this particular survey, little information about difference in risk-taking between sexes of parents or sexes of children can be gleaned. Since the question posed to the parents did not specify or define "risk-taking," parents ranked their own risk-taking experiences based purely on their own perspective. What one parent might consider prominent risk-taking, another might not. Further research into this topic could get less subjective data by asking parents about their specific risk-taking activities, or by asking a series of questions about specific behavior that would allow the primary investigator to rank parents' personal risk-taking behaviors.

The data from this study could be assessed in additional ways with added specificity. For instance, parents were asked to rank hypothetical scenarios of specific risks. The questions asked in the survey can be found in Appendix C. Because the children were not exposed to these specific scenarios, children's risk-taking behaviors within the identified categories of risk were not compared to their parents' answers for the category. This means that a child's behavior and choices in water was not compared to their parents' specific responses to the hypothetical scenario regarding water play. Further research involving risk-taking in each category compared with parents' responses could improve researchers' understanding of parental influence of children's behaviors.

Further research to investigate the linkage between parental behavior, attitudes, and children's risk-taking behavior can expand on this study's finding by investigating developmental changes, risk opportunities at various locations, and the influence of family dynamics, among many potential aspects. A longitudinal study assessing parental attitudes as their children age and a study that directly offered children various risks could add to the body of data collected by this study. In addition, further research looking for data regarding whether or not the observed children have siblings (and if so, whether the observed child was older or younger than their siblings), the gender of the child being observed, and the age of the parents would further build upon the observations found in this study.

Study Limitations

This study is limited in many ways. First, the sample is a group of parents who self-selected a nature-based program that would allow their child the opportunity to dig, climb, and explore in nature. Therefore, they may have been more comfortable with their child taking risks than parents who may not make the same choice. Secondly, all families were able to afford the high cost of tuition at the center, placing them in an upper-middle class financial bracket. Finally, the very small sample size meant that outliers in the data had a larger impact on the results. For example, one child with noted developmental delays was recorded as taking only one risk according to the observation sheet.

Another limitation for the study was the lack of time. Given the rapid physical, emotional, and social development occurring for children of this age, as well as the steep learning curve for parents of children of this age, a longer study would allow for more thorough data and a better understanding of the long-term benefits of parental attitudes surrounding risk-taking.

Despite these limitations, when simply comparing one child's behavior to their parents' responses, these findings and observable trends can still be used to inform best practices and help parents, educators, and administrators understand the influence that parental attitudes can have on their children's risk-taking behaviors, and therefore their ongoing development. It is important for parents, caregivers, and educators to understand the enormous impact of their attitudes, even if they intentionally work not to communicate these to their children. When a caregiver feels uncomfortable with a given risk-taking behavior, their discomfort can change the behavior of the child, regardless of the intention of the caregiver (Curtis, 2010). A better understanding of the value of risk, and a better personal understanding of one's own comfort zone can improve the relationship that caregivers have with risk-taking behaviors, and therefore improve their own teaching and care practices.

Conclusions

Research indicates that 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). The study indicates that children tend to take more risks if their parents are more comfortable with risky situations. Therefore, the implication of this study is that parents should consider more fully the ways to create healthy, developmentally appropriate attitudes about the value of some risk-taking, as well as the way in which they can allow their children ample opportunity to explore, experiment, and take risks.

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Appendix A

INFORMED CONSENT FORM FOR PARENTS AND GUARDIANS

You are invited to participate in a research project being conducted by Emily Murray at the University of Maine at Farmington.

The purpose of this research project is to better understand the factors – specifically parental attitudes and nature-based outdoor play opportunities – that influence the development of risk assessment skills in young children. Well developed risk assessment skills allow children to be independent, resilient, happy, and healthy. Evaluating the influence of each of these factors will allow educators, administrators, and parents to create effective opportunities for children to develop these skills.

You are being asked to fill out a questionnaire consisting of hypothetical scenarios involving different risks. Each scenario is followed by opportunities for you to give feedback and responses. This survey is an open-ended questionnaire and will take 15-20 minutes to complete.

Your participation in this project is voluntary. You may cease your participation at any time and for any reason. You may skip questions you prefer not to answer. Your decision to refuse participation will not affect your status or enrollment at Bowdoin College's Children's Center.

There are no direct benefits to you from participating in the study. However, your participation in this research will improve the research surrounding the development of risk assessment skills as it informs best practices.

All names and data collected through this study will be kept strictly confidential. Your name will be kept confidential by assigning all participants a designated letter and number. The documents and files from this study will all be kept at the residence of Emily Murray in a locked filing cabinet. All data from the study, including the participant key, will be kept for a maximum of three years and then destroyed.

If you have any questions about this study, please contact Emily Murray, Principle Investigator at the Department of Early Childhood Education, University of Maine Farmington (207-233-5621) or at emily.j.murray@maine.edu. If you would like a summary of the results, please make the request of the researcher at the contact information provided.

_____ _____

(Date) (Signature)

Appendix B

PARENT/GUARDIAN PERMISSION FORM

Dear Parent or Guardian,

For my research, I am requesting permission to observe your child playing outside in the play yard during the months of February and March. These observations will be conducted between the hours of 8:30 AM and 12:30 PM. I will be observing their interaction with the elements of the play yard, both natural and man-made. This observation will allow me to gather data on the ways in which nature play and outdoor play grant children the opportunity to hone their risk assessment skills.

I will not be interacting directly with your child during these observations. Your child will not be made uncomfortable in any way during this time. I will be collecting anecdotal notes and descriptions of behaviors that your children exhibit. All data collected in this study will be kept strictly confidential. Their name will be kept confidential through a coding process of all materials coded with a special number.

Please complete all portions of this form if you agree that I may observe your child as detailed above. Your participation in this research is voluntary. You may cease your participation, and that of your child's, at any time and for any reason. Your decision to refuse participation will not affect your status or enrollment at Bowdoin College's Children's Center.

If you have any questions about this study, please contact me, Emily Murray at emily.j.murray@maine.edu (207-233-5621). You may also reach my faculty advisor Donna Karno Ph. D. at donna.karno@maine.edu. You may also contact the chair of the University of Maine at Farmington IRB, Karol Maybury at karol.maybury@maine.edu.

Your signature below indicates that you have read and understand the above information. You will receive a copy of this form.

- I give permission for my child to be observed as part of this study: □ Yes □ No
- I give permission for my child to be part of this study: □ Yes □ No
- I understand that the results of this study may be shared with colleagues in the profession. □ Yes □ No
- I understand that I can withdraw my child from this study at any time. □ Yes □ No

Date : _____
Child's Name : _____
Child's Age : _____
Printed Name of Parent or Guardian : _____
Signature of Parent or Guardian : _____
Mailing Address and Email : _____

Appendix C

Thank you very much for your participation in my research. Please return all completed forms and surveys to Emily at the Bowdoin College Children's Center

Introduction: For each hypothetical scenario please assess how risky you view the behavior and explain why you gave the scenario this rating. Please feel free to answer all questions you feel comfortable with. All data will be kept strictly confidential.

Demographic Information

Age:
Number of children:
Age of children:
Circle one: Mom / Dad

Height

Scenario: 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.

1. How risky do you consider this behavior, with 1 being no risk at all and 10 being extremely dangerous?

   1 2 3 4 5 6 7 8 9 10

2. Comments on your ranking in question 1?

3. What would you want an educator to do in this scenario?

Water Play

Scenario: 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.

1. How risky do you consider this behavior, with 1 being no risk at all and 10 being extremely dangerous?

1 2 3 4 5 6 7 8 9 10

2. Comments on your ranking in question 1?

3. What would you want an educator to do in this scenario?

Sharp Object

Scenario: 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.

1. How risky do you consider this behavior, with 1 being no risk at all and 10 being extremely dangerous?

1 2 3 4 5 6 7 8 9 10

2. Comments on your ranking in question 1?

3. What would you want an educator to do in this scenario?

Rough and Tumble Play

Scenario: 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.

1. How risky do you consider this behavior, with 1 being no risk at all and 10 being extremely dangerous?

1 2 3 4 5 6 7 8 9 10

2. Comments on your ranking in question 1?

3. What would you want an educator to do in this scenario?

Personal Perception of Risk

1. Do you feel that risk-taking plays a role in child development, with 1 being no role at all and 10 being a critical role?

1 2 3 4 5 6 7 8 9 10

2. Comments on your ranking in question 1?

Personal Experience with Risk

1. Do you feel you have experienced or taken physical risks in your own life, with 1 being minimal risk and 10 being extreme risk?

1 2 3 4 5 6 7 8 9 10

2. Comments on your ranking in question 1?

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Appendix D

Child 1	Height	Speed	Elements	Rough and Tumble	Possibility to Disappear	Sharp Tools
Morning						
Afternoon						

Child 2	Height	Speed	Elements	Rough and Tumble	Possibility to Disappear	Sharp Tools
Morning						
Afternoon						

Child 3	Height	Speed	Elements	Rough and Tumble	Possibility to Disappear	Sharp Tools
Morning						
Afternoon						

Child 4	Height	Speed	Elements	Rough and Tumble	Possibility to Disappear	Sharp Tools
Morning						
Afternoon						

Child 5	Height	Speed	Elements	Rough and Tumble	Possibility to Disappear	Sharp Tools
Morning						
Afternoon						

Child 6	Height	Speed	Elements	Rough and Tumble	Possibility to Disappear	Sharp Tools
Morning						
Afternoon						

Child 7	Height	Speed	Elements	Rough and Tumble	Possibility to Disappear	Sharp Tools
Morning						
Afternoon						

Child 8	Height	Speed	Elements	Rough and Tumble	Possibility to Disappear	Sharp Tools
Morning						
Afternoon						

Child 9	Height	Speed	Elements	Rough and Tumble	Possibility to Disappear	Sharp Tools
Morning						
Afternoon						