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Exploring outdoor play: a mixed-methods study of the quality of preschool play environments and teacher perceptions of risky play

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ABSTRACT

Risky play, accompanied by thrilling feelings with real or perceived risks, is beneficial for children's development. Playground quality and teachers' attitudes about risk can influence preschoolers' risky play opportunities. In this study, 10 U.S. preschools' outdoor environments were rated using the Seven Cs Scale. Playgrounds scored lowest in challenge, demonstrating a lack of risky play opportunities and highest in context and connectivity, exhibiting adequate safety measures and pathways. The Tolerance for Risk in Play Scale was used to assess 58 teachers' attitudes. The average score was 29 (on a scale of 0 to 100, highest risk tolerance). Across risky play categories, teachers were most accepting of rough-and-tumble play and least accepting of play with dangerous tools. During a focus group, teachers also expressed concerns regarding overly restrictive safety regulations. The findings highlight the need for further teacher education concerning risky play.

KEYWORDS

Risky play; nature play; outdoor play; play; risk; preschool; early childhood

Introduction

Outdoor play allows children to flourish physically (Fjørtoft, 2001; Louv, 2008; McClain & Vandermaas-Peeler, 2016). Outdoors, young children can challenge themselves, take risks and play imaginatively, as well as build gross and fine motor skills. However, outdoor play opportunities are influenced by a variety of factors in children's lives, and two of the most important in an early childhood context include teacher perceptions of play and the quality of outdoor preschool play environments (Logue & Harvey, 2009; Sandseter, 2009). Children's access to outdoor play environments are determined in part by their family's socioeconomic context, which can influence school and neighborhood environments and resources (Sutton, Smith, Dearden, & Middleton, 2007). There is a dearth of research on the intersection of these topics and how they impact preschool children's play opportunities in the United States (U.S.). The present study aimed to address these gaps with a mixed-methods study investigating teacher perceptions of play and observations of outdoor environments in preschool programs serving low-income families in one region of the U.S.

Benefits of outdoor and risky play

Outdoor and nature play has many benefits for child development. Children who spend time in and near natural outdoor areas experience lower stress levels (Corraliza, Collado, & Bethelmy, 2011; Wells & Evans, 2003). Outdoor play can also positively impact prosocial behavior, and children identify

outdoor environments as social spaces where they play in specific ways (Thompson & Thomas, 2004). During outdoor play, children facilitate their own social belonging and enhance their collaborative and social awareness skills (McClain & Vandermaas-Peeler, 2016; Waite, Rogers, & Evans, 2013). Outdoor play is also advantageous for motor development. Play in natural outdoor environments provides opportunities to engage in physical challenges and take risks and leads to improvements in children's balance skills (Fjørtoft, 2001; Little & Sweller, 2015; Sutterby & Frost, 2002).

Risky play is accompanied by thrilling feelings with a real or perceived level of risk (Brussoni et al., 2015). Risky play includes swimming in deep water, climbing trees, rough-and-tumble play, running at high speeds, playing with dangerous tools and elements, playing games that involve disappearing and getting lost, and play at great heights (Sandseter, 2007). Researchers have identified cognitive, social and physical benefits of engaging in risky play (Sandseter, 2009). Through risky play, children learn how to overcome initially frightening situations, and this experience decreases anxiety and promotes self-confidence (Sandseter & Kennair, 2011). This type of play allows children to experience the natural world, develop physically and experience positive, exciting feelings (Brussoni et al., 2015; Sandseter, 2009; Sandseter & Kennair, 2011).

Outdoor play environment quality

High-quality natural outdoor play environments promote physical activity and foster affordances for risky play (Fjørtoft, 2001; Louv, 2008; Sandseter, 2009). In a comparison of Norwegian and American playgrounds, researchers found that playgrounds in natural environments offer affordances for risky play through structures including cliffs, lakes, fire pits, large rocks and hillsides (Sandseter, 2009). Natural play environments also provide opportunities for learning and child-teacher interactions. Waters and Maynard (2010) found that natural environments with loose parts, including berries, sticks and rocks, afforded children opportunities to converse with teachers and share their interests. The loose materials enhanced children's opportunities for creative play (Waters & Maynard, 2010).

It is important to consider children's access to natural outdoor play environments. In this study, we investigated Outdoor Learning Environments (OLEs), as one type of play environment that affords children with opportunities for risky and nature play. By definition, OLEs meet certain state requirements including 75 square feet (6.97 square meters) of outdoor play space per child, appropriate fencing, safety accommodations and shading standards. OLEs must also 'provide a variety of play experiences that can promote children's development socially, emotionally, intellectually, and physically' (Division of Child Development, 2009). Additionally, OLEs provide opportunities for teacher training on outdoor and risky play. In order to learn more about opportunities for preschool teacher education in the region, the present study included observations of an OLE and an interview with an OLE specialist.

Teacher perceptions of play

Sociocultural expectations regarding risk influence adults' beliefs about play and therefore, the opportunities they afford young children. American school systems are often hyper-focused on safety regulations. This safety emphasis influences teacher beliefs regarding play, which in turn impact children's experiences (Waite et al., 2013). Research confirms that teachers' attitudes about play, including risky play, influence the play behaviors children are allowed to engage inside and outside the classroom (Logue & Harvey, 2009). DiCarlo, Baumgartner, Ota, and Jenkins (2015) conducted a study of different types of risky play and found that teachers are likely to interpret rough-and-tumble play as aggression. Likewise, Logue and Harvey (2009) identified that teachers' attitudes about play influenced whether they allowed rough-and-tumble play in the classroom. They found that teachers viewed their educational training as the largest influence on their beliefs about

risky play (Logue & Harvey, 2009). These findings reveal the need for teacher education surrounding risky play.

In addition to risky play opportunities, children's access to natural outdoor play environments is influenced by teacher perceptions of play. Dijk-Wesselius, Berg, Van Den Maas, and Hovinga (2020) found that teachers were hesitant to implement play in 'green schoolyards', or playgrounds with green space due to various barriers including a lack of outdoor play education, a lack of familiarity with natural outdoor play, and an absence of time to play in these spaces. Researchers identified solutions to these barriers including incorporating natural play into school schedules and adding nature play to school curricula (Dijk-Wesselius et al., 2020).

Socioeconomic status (SES)

Children's access to play environments may be impacted by socioeconomic status (SES), but research regarding the influence of SES on outdoor play opportunities is limited. Furthermore, there are conflicting results within extant research. Wijtzes et al. (2014) utilized data from over 8,000 children born between 2006 and 2009 to study the impact of SES on children's outdoor play participation. Children from low-SES backgrounds participated in fewer hours of outdoor play than children from higher-SES backgrounds (Wijtzes et al., 2014). Similarly, Parsad, B. & Lewis, L. (2006. *Calories in, calories out: Food and exercise in public elementary schools*, 2005) utilized survey data from U.S. public schools to study children's physical health. They discovered that schools with high concentrations of children from low-SES environments were afforded less or no recess time when compared to children from other schools (recess may have occurred in outdoor and/or indoor environments).

However, not all research points to children from low-SES backgrounds engaging in less outdoor play. Kimbro, Brooks-Gunn, and McLanahan (2011) used data from the Fragile Families and Child Wellbeing (FFCW) study of over 4,000 children to explore connections between children's health, outdoor play time, screen time and neighborhood characteristics. They found that children living in public housing engaged in 13% more outdoor play time than children in non-public housing. Researchers discovered that children from low-SES families had more unstructured play time than children from higher-SES families, which likely was related to the increase in outdoor play time.

In addition to the amount of outdoor play time, research indicates that SES can influence children's access to outdoor play environments and the types of play they engage in. Sutton et al. (2007) observed children's play in high-SES and low-SES school settings. Children attending low-SES schools were more likely to play in the street and in outdoor public places than other children. The street play observed included socialization with others and disappear and get lost play (i.e. hide-and-seek) (Sutton et al., 2007). This finding demonstrates opportunities for risky play in low-SES play environments.

The present study focused on low-SES preschools in a southeastern region of the U.S. and aimed to answer the following questions: 1) What opportunities for risky outdoor play do children have in preschool environments serving low-SES families? and 2) What attitudes do preschool teachers have about risky play in these contexts? In order to answer these questions, a mixed-methods study including a survey, focus group, an interview with an Outdoor Learning Environment (OLE) specialist and observational methodologies was implemented.

Methods

Participants

Two groups of federally funded preschools in neighboring counties in one southeastern state consented to participate in this study, and subsequently, early childhood educators from nine preschools were invited to complete a survey. Fifty-eight educators (57 female-identified and one

male-identified) participated in the study. Of the respondents, 41 identified as Black/African American, 7 as white, 2 as Asian/Pacific islander, 2 as Native American/First Nation, 1 as Latino/a/Hispanic and 1 as multiracial. Four teachers did not respond to this question. The average age of participants was 41 ($M = 40.58$, $SD = 10.51$) and the range was 23 to 64. In terms of their educational background, 18 participants had bachelor's degrees, 18 had associate's degrees, 3 had master's degrees and 6 had attended some college.

In addition to the survey, teachers were invited to participate in a subsequent focus group. Ten teachers (all female-identified) consented to participate in one focus group. An OLE specialist was also interviewed to enhance understanding of regional preschools' play spaces and their affordances for risky play, as well as opportunities for teacher training. The specialist works for a local nonprofit organization focused on advancing child development through education, play, and learning.

Materials

The Tolerance for Risk in Play Scale or TRiPS scale (Hill & Bundy, 2012) was administered via an online survey. The measure consists of 31 survey items with 'yes' or 'no' answers (e.g. 'Would you let the child walk on slippery rocks close to water?' and 'Would you let the child climb up a tree within your reach?'). Survey questions were designed to correspond to Sandseter's (2007) six categories of risky play: rough-and-tumble, great heights, high speeds, dangerous tools, dangerous elements, and disappear and get lost. Five open-ended questions were added to the survey regarding teacher perceptions of play, information teachers would like to have about risky play, and frequency of risky play in preschool playground environments.

The Seven Cs rating scale was used to assess the outdoor play environment quality of the participating preschools (Herrington, Lesmeister, Nicholls, & Stefiuk, 2007). The Seven Cs Scale consists of 32 items assessing playground quality. This scale measures the quality of outdoor play environments by considering character, context, connectivity, clarity, change, chance and challenge. Character demonstrates the aesthetic qualities of a play space including light quality, contrasts in color and the presence of soft materials. Context represents the relationship between a play space and its physical environment, including climate and the ways a play area connects to its surroundings. Connectivity assesses how children can move around the play area (paths, connection of indoors to outdoors, etc.). Clarity refers to the organization of play equipment and zones within a play space. Change indicates how children interact with a space at different ages and developmental levels. Chance includes opportunities for play with different types of natural materials (water, dirt, etc.) and opportunities for exploration. Finally, challenge involves opportunities for risk (Herrington et al., 2007).

Procedure

Observational methods

After the project was approved by the university Institutional Review Board, all playgrounds in the participating preschools were observed, unless closed or under construction ($n = 4$). Data were collected over a 3-month period using the Seven Cs Scale. No children were observed on the playgrounds. Observations took approximately 20 minutes per school.

Survey implementation

The TRiPS survey was sent via an online link to early childhood educators who were employed at one of the participating schools. Before beginning the survey, participants signed an informed consent agreement; participation was anonymous and voluntary. Participants had the right to omit questions and to withdraw at any time. The survey consisted of the 31 TRiPS questions, 5 open-ended questions and 6 demographic questions.

Focus group

Survey participants who indicated interest were invited to a focus group 1 month after survey data collection was completed. Ten early childhood educators participated in the focus group conducted by both researchers at one of the participating preschools. Semi-structured questions were asked about teachers' perceptions of risky play and their preschools' outdoor play environments (see Appendix A). The focus group was audio-recorded for subsequent coding and analysis.

Interview

A semi-structured interview was completed with a local OLE specialist at an educational development center (the center OLE scored 91.6 out of 100 on the Seven Cs Scale). The interview was recorded with the participant's consent and the specialist answered questions about the OLE and teacher training opportunities. The specialist also led the researcher through the organization's OLE while describing play space features and opportunities for outdoor play.

Coding and analyses

Seven Cs scale. Two researchers observed and independently rated nine play environments using the Seven Cs scale to establish inter-rater reliability. The two raters reached 91% agreement and through a process of discussion and recoding all disagreements were resolved through consensus. Play environments were scored on 32 items on a scale of 1 to 5. A '1' score indicates that a play space is lacking in the quality or presence of a particular element, whereas a '5' score indicates high quality in that category. At some playgrounds, a particular item could not be rated (e.g. no 'outdoor toy storage space'). Thus, total scores were adjusted for these omissions by calculating proportions rather than using raw scores.

Survey. Scores on the TRiPS survey were calculated for risk acceptance among educators. Teachers' indicated levels of risk acceptance were assessed on a scale from 0 to 100. 'Yes' answers were coded as 1, and 'no' answers were coded as 0. Responses to open-ended questions were coded using in vivo coding, a process which utilizes participants' own words to generate initial categories of responses (Manning, 2017). After creating initial codes, larger themes were identified by grouping similar codes together in an iterative process. These themes included: benefits of risky play, worries about safety regulations and opportunities for teacher education surrounding risky play.

Focus group. Focus group responses were also coded for the presence of Sandseter's (2007) categories of risky play (rough-and-tumble, great heights, high speeds, dangerous tools, dangerous elements, and disappear and get lost), social play, imaginative play, competitive play and the relationship between personal attitudes and imposed safety regulations surrounding risky play. Emergent themes were identified in an iterative process by analyzing the teachers' responses across questions.

Results

Seven Cs scale

Scores for each of the nine playgrounds in the categories on the Seven C's scale are depicted in Figure 1, along with the average score across playgrounds. Playgrounds scored lowest in challenge, demonstrating a lack of risky play opportunities, and chance, opportunities for play with different types of natural materials and exploration. Playgrounds scored higher in context, indicating appropriate safety measures and clear boundaries, and connectivity, having appropriate entrances, exits and ample pathways.

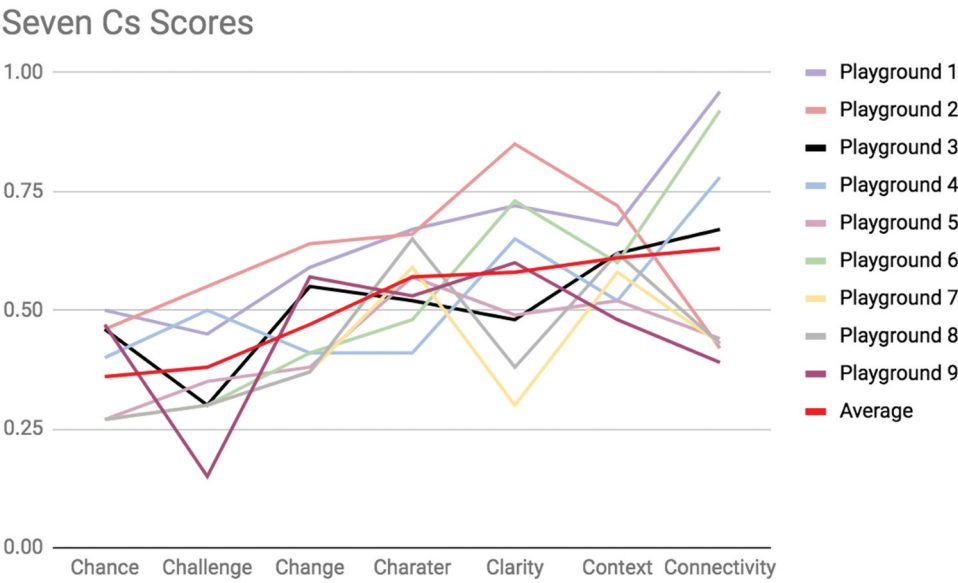


Figure 1. Seven Cs scores.

Survey

On average, teachers said 'yes' (indicating acceptance of risk) to 29% of questions, demonstrating a low level of risk acceptance ($M = .29$, $SD = .153$). Scores ranged from 3.4% to 76.7%, indicating individual differences in risk acceptance.

Risk acceptance scores were calculated for each of the six categories of risky play on the TRiPS survey (see Table 1). Teachers were least accepting of play with dangerous tools and play at high speeds. Although risk acceptance scores were relatively low, teachers were most accepting of rough-and-tumble play, followed by disappear/get lost play.

In addition to the TRiPS survey, five open-ended questions concerning teachers' perceptions of outdoor play were analyzed for themes related to risky play. When asked how often they worried when children engaged in risky play, over half of respondents reported that they worried very frequently, 14 worried sometimes and 2 reported no worries about children participating in risky play. Twenty-six out of 58 teachers said that risky play was beneficial for children, 8 said there might be a benefit and 10 said there was no benefit to risky play. One participant wrote that risky play benefits children through 'experience and lots of gross motor development'. Likewise, another participant wrote '... [risky play] provides opportunities for challenge, testing limits, exploring boundaries and learning about injury'.

When asked what information about risky play would be helpful to them as educators, only 12% of participants reported that they wanted to know more about the benefits of risky play and 16% were concerned with establishing limits on risky play. One participant expressed that they were

Table 1. Mean risk category scores.

Category of Play	M	SD
Rough-and-Tumble	.32	.403
Great Heights	.10	.112
High Speeds	.04	.027
Dangerous Tools	.04	.023
Dangerous Elements	.07	.093
Disappear/get lost	.27	.345

curious about 'The difference between risky play that is harmful and risky play that helps child to grow and learn'. Participants were also concerned with liability in relation to risky play. One participant wrote, 'I would like to know if caregivers allowed more risky play, and children got hurt more, would that affect their jobs?' and another expressed 'If there is a small incident how do we get parents not to be upset?'

Focus group

The three primary themes that emerged in the focus group data included the benefits of outdoor play, safety regulations and limitations and the acceptance of risk in play. Additional themes identified in the data included the prevalence of social play, imaginative play and competitive play outdoors; acceptance of rough-and-tumble play; and a disconnect between personal beliefs about play and safety regulations concerning risk in play. Transcript examples are used to illustrate primary themes below. Multiple participants identified social play as an important component of outdoor play. One participant expressed, 'Outside, they have other kids to play with, so they don't just pick specific kids to play with . . . outside, they'll play with almost anybody'. Teachers saw specific aspects of social play emerging outdoors. Competitive play was viewed as a part of social play, as evidenced by one participant's sentiment: 'Their social and emotional becomes competitive, because they're like, "Oh, I can run faster," and so they kind of compete with each other'. Participants also noticed that imaginative play was prevalent when observing outdoor play, as illustrated in this quote: 'If they're playing Spiderman and they're inside, they can't . . . play Spiderman and do . . . all this other stuff. So, when they go outside . . . (children) pretend to be different characters a lot more'. Teachers also expressed some acceptance of risky play. One teacher identified the benefits of risk-taking for children's future decision-making, saying 'I'll be honest, I still let my kids do it, but . . . if they bump into somebody or they hurt someone . . . I'd be like, "Well, that's a natural consequence." That's why that happened, you know?' For her, taking risks in play was an important part of children's learning. Rough-and-tumble play was the most frequently discussed risky play category among participants. Participants were generally accepting of rough-and-tumble play with limitations. As depicted below, one participant allowed rough-and-tumble play to continue until someone was upset.

'We had a group one year that really loved to do [rough-and-tumble play] . . . we would always say, "You can play this until someone says stop or someone cries. If someone asks you to stop, then you have to stop, or someone cries and walks away."

Another participant also acknowledged that rough-and-tumble play occurs naturally:

'We have a bridge and they will go on one side and climb across the bridge or jump off the middle of the bridge from the outside . . . I mean they do rough-and-tumble play where, you know, they might be wrestling with somebody else'.

Teachers identified a disconnect between their personal beliefs of what safety precautions were appropriate and existing state regulations. For example, participants described play equipment that was not allowed due to choking hazard regulations and therefore, these tools could not be used to teach children to play safely. One participant expressed, 'So, we don't have jump ropes, because they may wrap around their neck. Well . . . that's a risk that they didn't learn. The hula hoops . . . that's a risk they didn't learn'.

Interview

The OLE specialist was interviewed about opportunities for risky play in regional preschool play-grounds, as well opportunities for teacher training in outdoor environments. She expressed that risky play is infrequently discussed with educators or parents directly, but that informal conversations about risk in play occur more frequently. The participant stated:

'I don't think [risky play has] come up a whole lot. I do think . . . that when you introduce certain aspects of outdoor learning, and having rocks to climb on and that sort of thing . . . And,

even with parents . . . people will ask, “Oh, is that safe? I’m scared that they’re going to get hurt on this”.

When discussing the inclusion of risk in play with teachers, the OLE specialist noted that there is often tension between safety concerns and the benefits of risk in play:

‘We want the teachers to feel comfortable with the materials that they have in the way that their space is set up . . . but we also want them to understand there is value in children learning how to take some risk and . . . manage that themselves, so they’ll know, when they’re faced with that decision alone, or risky decisions later on, they might be able to better make the right call’.

The presence of risky play in OLEs demonstrates that there are opportunities for risky play in play spaces that meet state requirements. Natural elements in the OLE that promote risky play are visible in [Figures 2 and 3](#). As noted by the specialist:

I think there’s opportunities for children to take a risk to attempt to climb things that might not be something they could do in other spaces. There’s some branches that are lower and some tree-type shrubs that they’ve tried to start to get into, and stuff. (deleted rest of quote about playgroups)

Natural elements including terrain, greenery and dirt were viewed by the specialist as a major asset of the OLE, providing opportunities for children to explore and learn outdoors (see [Figure 4](#)). The specialist explained:

What is really great about our space is that it has varying slopes and things on the ground. So, textures, there’s mulch, there’s rocks, small rocks, there’s bigger rocks, there’s dirt, there’s grass. Right now, there’s lots of leaves in different spaces. So, they’re just different terrains . . . there’s roots that stick out because there’s trees, there’s branches that fall sometimes.

Other affordances in the OLE, including slides and hills, were identified as offering risky play opportunities, as illustrated in the quote below and in [Figure 5](#).

‘(Children) climb up the hill, and then they climb up the steps and then they go down the slide. So even our youngest, smallest ones manage it by themselves and some of them will come up this way because it’s not quite as steep, while others go right back up. I mean, they’ve rolled trucks down it, they roll their bodies down, they’ll go backwards. So that’s another form of risky play. They try to



Figure 2. Trees, bushes and branches.



Figure 3. Tree stumps.



Figure 4. Terrain.

figure out how they can manage it ... So I was able to go down on my bottom, they feel comfortable with that. Then they start like ... let me try and go backwards, or let me go on my stomach, let me try to climb back up. So this gives them an opportunity, once they've mastered the traditional way of using it, then they use it in another way too'.



Figure 5. Hill and slide. [Photograph of hill and slide] (n.d.). Retrieved from <http://www.alamancechildren.org/outdoor-learning-environment.html>

Discussion

This study considered children's opportunities for risky play in preschool environments serving low-SES families and assessed teachers' perceptions of risky play in these environments. Predominant findings included limited acceptance of risky play among surveyed teachers and a lack of affordances for risky play in the preschools' playgrounds. However, teachers also demonstrated openness to certain categories of risky play, including rough-and-tumble play and disappear-and-get-lost play. The findings demonstrate the need for preschool teacher education on risky play and enhanced risky play opportunities in the outdoor play environments.

Teacher perceptions of play

DiCarlo et al. (2015) found that teachers are generally unaccepting of risky play in the U.S. Results from the present study corroborated this finding and demonstrated that these attitudes extend to preschool teachers serving children from low-income families. Teacher education has been identified as an important factor in teacher perceptions of risky play and outdoor nature play (Dijk-Wesselius et al., 2020; Logue & Harvey, 2009). Our findings from the survey, focus group and an interview with an OLE suggest that teacher education could be beneficial in enhancing teachers' expectations regarding outdoor and risky play, ultimately affording children with opportunities for risky play in their preschool playgrounds.

The findings also revealed individual variation in teachers' perceptions of risky play. Survey and focus group results conveyed that while teachers are generally unaccepting of risky play, some are aware of the benefits and would like to implement more risky play outdoors. Furthermore, certain teachers allowed some risky play outdoors, including rough-and-tumble play. Interestingly, in the focus group, teachers identified a disconnect between their personal beliefs and the safety regulations they have to follow while supervising outdoor play. This resonates with previous findings that teachers must at times overlook their personal preferences to meet school standards (Logue & Harvey, 2009). Through a mixed methods approach, the present study enabled a smaller group of teachers to explain and contextualize their reasoning, whereas the forced-choice survey responses may have limited a more nuanced, contextual analysis.

Individual variation in risky play acceptance is an important finding of the study as it demonstrates the possibility for latitude in decision-making concerning risky play in preschool environments. Safety regulations appear to serve as a large barrier, suggesting the need for education at the level of policy developers and teachers. For example, the OLE specialist trains interested teachers and program directors on ways to create appropriate play spaces that meet state safety regulations, affording some level of risk within these spaces. More widespread use of OLE training could be beneficial for preschool teachers who wish to explore further opportunities for risky play.

Play environment observations

The observed play environments varied in their Seven Cs scale scores. Playgrounds generally scored highly in context, demonstrating appropriate safety measures and clear boundaries, and high in connectivity, illustrating appropriate entrances, exits and ample pathways. These results echo previous findings that children from low-SES backgrounds are afforded opportunities for outdoor play (Kimbro et al., 2011; Sutton et al., 2007). However, playgrounds scored lowest in the category of challenge, demonstrating a lack of opportunities for risky play. Through risky play, children can develop self-confidence and become less fearful of challenges (Sandseter & Kennair, 2011). Risky play also allows children to experience nature, develop physically and experience positive exciting feelings (Brussoni et al., 2015; Sandseter, 2009; Sandseter & Kennair, 2011). The lack of opportunities for risky play in preschool play environments offers evidence of the need to promote risky play within current safety regulations. This task might include promoting rough-and-tumble play, which is somewhat accepted by teachers, and play with existing types of equipment (e.g. bikes for high speeds or slides for great heights). Additionally, disappear-and-get-lost play was more accepted by teachers than other categories of risky play. Promoting this type of play outdoors, including allowing children to play in places where they are not always visible to the teacher (e.g. in trees or bushes), is another feasible way to promote risky play in preschool contexts.

The playgrounds also scored low in 'chance', demonstrating a lack of opportunities to play with natural materials. This discovery reflects previous findings that children often do not have access to natural outdoor spaces with loose parts. Furthermore, Dijk-Wesselius et al. (2020) found that a lack of teacher education surrounding nature play serves as a barrier to children playing in natural spaces. This finding is concerning considering the plethora of evidence suggesting that outdoor nature play is beneficial for children's mental, social and motor development (e.g. Corraliza et al., 2011; Fjørtoft, 2001; Thompson & Thomas, 2004; Wells & Evans, 2003). The results offer further support for the necessity of preschool teacher education on the importance and feasibility of nature play in early childhood.

Limitations

The diversity and size of the sample are significant limitations to generalizability. This study was conducted with federally funded preschools in one region of the U.S., and therefore does not represent other types of preschools or regions of the country. Furthermore, all but one of the 58 participants in the study was female-identified. Although the specific gender ratio of the participating preschool is unknown, generally in the U.S. there are more female-identified preschool teachers than male-identified (Kim, 2013). Further research with larger samples including a greater diversity of preschools and teachers is needed to provide a more comprehensive picture of teacher attitudes and preschool environments in the U.S.

The measures used in the study may have influenced the results. The TRiPS survey was created in a Scandinavian context, where opportunities for risky play are often associated with preschool education (Fjørtoft, 2001; Hill & Bundy, 2012; Sandseter, 2009). Although the intent of this study was to examine the construct of risk in play, certain questions on the TRiPS survey may not have resonated with teachers in the U.S. context, over-emphasizing danger as opposed to risk (e.g. climbing very tall trees or playing near broken glass). Additionally, the Seven Cs scale was created to rate playgrounds in Canada (Herrington et al., 2007). Although some items were not applicable to

all playgrounds observed in this study, the broad categories of character, context, connectivity, clarity, change, chance and challenge can be applied across multiple cultural contexts. Further research and survey development is needed to explore culturally nuanced views of risky play.

Implications

The findings highlight the importance of the sociocultural context for outdoor play opportunities, and the need for more teacher education on the importance of risky play for children's development. The results demonstrate that although teachers have varied attitudes concerning different types of risky play, the majority were relatively unaccepting of risky play behaviors overall. Some teachers identified a disconnect between their personal beliefs and the safety regulations governing children's outdoor, nature and risky play. Although playgrounds afforded ample opportunities for outdoor play, they generally scored lowest in the categories of chance and challenge, limiting children's abilities to play with natural materials and take risks. Further research about teachers' play perceptions and the affordances in children's preschool play environments is warranted to better understand potential avenues for encouraging risky play in these contexts.

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Disclosure of potential conflicts of interest

No potential conflict of interest was reported by the author(s).

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Appendix A: Focus Group Questions

- (1) What do you think playgrounds should look like? What opportunities should children have on playgrounds?
- (2) Introduce the idea of risky play and six categories (disappear and get lost, high speeds, dangerous tools, dangerous elements, rough and tumble, heights). What are your reactions to these categories of play?
- (3) Do safety rules or regulations impact how you allow children to play outside?
- (4) Do you allow children to play outside differently at school than you would in another setting?
- (5) Do you think risky play could have benefits in your school setting? If so, how would it benefit children?
- (6) Do you think implementing more risky play in your play space is possible? If so, how?