

A Risk Worth Taking? Caregiver Perspectives on Risky Outdoor Play for Toddlers with Developmental Disabilities in an Urban U.S. Setting

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ABSTRACT

Background: Risky outdoor play supports autonomy, emotional regulation, and resilience in early childhood, yet little is known about how caregivers of toddlers with developmental delays or disabilities make decisions about such play in urban settings in the United States. The study explored how caregivers in the St. Louis, Missouri metropolitan area perceive the socio-ecological factors shaping their attitudes toward risky outdoor play for children aged 13–47 months with developmental delays or disabilities.

Methodology: A mixed methods cross-sectional study design was used. An online survey containing adapted validated items and open-ended questions was distributed through early intervention networks and community organizations. Of 38 surveys initiated, 11 formed the final analytic sample after eligibility and completion exclusions and were analyzed using descriptive statistics and reflexive thematic analysis guided by a socio-ecological model of risk and safety in children's play.

Results: Four themes were identified: (1) recognizing the developmental value of risky outdoor play; (2) negotiating the balance between supervision and independence; (3) navigating external scrutiny and cultural expectations; and (4) managing variability in community infrastructure and institutional support.

Conclusion: Results showed caregivers generally valued risky outdoor play but navigated tensions related to developmental readiness, safety concerns, sociocultural expectations, and uneven access to inclusive play environments. Findings highlight the need for equity-focused and disability-informed strategies to promote developmentally meaningful outdoor play experiences.

Keywords: developmental disabilities, socio-ecological influences, urban play environments, early childhood participation, caregiver risk tolerance

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INTRODUCTION

Play, defined as “intrinsically motivated, internally controlled, and freely chosen” activity (American Occupational Therapy Association [AOTA], 2020, p. 34) is a fundamental occupation of childhood, essential for physical, cognitive, and emotional development (Yogman et al., 2018). During early childhood, play is especially critical for the development of emotional regulation, problem-solving, cultural belonging, and school readiness, remaining central to children’s health and well-being (Brussoni et al., 2015; Makomo, 2025; Yogman et al., 2018).

Risky play refers to thrilling and challenging forms of physical activity that involve uncertainty and the possibility of injury. It provides children with opportunities to test their limits, exercise autonomy, and develop competence (Sandseter, 2010). Importantly, risk is shaped by the child’s subjective experience of challenge rather than by the activity itself (Sandseter & Kennair, 2011). Through participation in developmentally appropriate risk, children may strengthen their confidence, problem-solving abilities, and emotional regulation, particularly in outdoor environments that offer variability, unpredictability, and opportunities for exploration (Brussoni et al., 2015; Sandseter et al., 2020). In the United States, however, children’s opportunities for risky outdoor play have declined because of increased screen use, intensified academic demands, and heightened caregiver concerns about safety. This decline may have adverse implications for children’s physical and mental health (Bassett et al., 2015; Gray et al., 2015).

Caregivers play a critical role in shaping access to risky outdoor play (Jerebine et al., 2022b), and more positive parental attitudes toward risk are associated with greater adventurous play and higher physical activity

levels in children (Jerebine et al., 2024). For children with developmental delays, these play opportunities are particularly important (Schaaf & Mailloux, 2015; Yogman et al., 2018), yet their caregivers may experience heightened concerns about injury, stigma, and limited access to inclusive environments (Grady-Dominguez et al., 2020). These concerns, shaped by personal beliefs, the physical and social environment, and cultural norms, function as evaluative judgments that guide whether children are permitted or restricted in risky outdoor play (Bringolf-Isler et al., 2010; Sterman et al., 2016).

Although research on risky outdoor play is growing, much of the existing literature has focused on older children in Australia (Bundy et al., 2015; Little & Stapleton, 2023), Canada (Brussoni et al., 2021), and Europe (Sandseter, 2010). Comparatively little is known about the experiences and perspectives of caregivers of toddlers with developmental delays or disabilities in the United States. For these families, concerns about safety, accessibility, and unequal access to suitable parks and play spaces may further restrict opportunities for outdoor play (Grady-Dominguez et al., 2020). This evidence gap is particularly important in urban settings such as St. Louis, Missouri, where the enduring effects of racial segregation, economic disinvestment, and neighborhood inequality may create additional structural barriers to children’s play participation (Tighe & Ganning, 2015).

Thus, this study examined how caregivers in St. Louis perceive individual, interpersonal, environmental, and sociopolitical factors that influence their attitudes toward risky outdoor play in toddlers with developmental delays and disabilities.

Positionality Statement

The authors bring expertise in pediatric occupational therapy, public health, and socio-ecological approaches to play. Recognizing that perspectives on risk are shaped by personal and professional values, they engaged in reflexive dialogue to examine how assumptions about safety, autonomy, and disability may have influenced the study. Peer debriefing, audit trails, and collaborative coding strengthened analytic rigor and trustworthiness.

METHODS

A mixed methods cross-sectional, e-survey design was employed. The survey instrument combined quantitative and qualitative elements to investigate patterns in caregiver perspectives while also capturing the contextual and interpretive depth necessary to understand the multilevel socio-ecological influences on caregiver decision-making.

Ethical approval was obtained from the Thomas Jefferson University Institutional Review Board (IRB reference: iRISID-2024-1658). Before participation, respondents reviewed an electronic information statement outlining the study purpose, expected duration, anonymity provisions, and investigator details. Informed consent was indicated by selecting “Next” to proceed to the survey. Data were de-identified before analysis. ZIP codes were collected solely to confirm geographic eligibility and were subsequently aggregated into broad regions, including North, Central Corridor, South St. Louis City, and South St. Louis County. No personally identifiable geographic information was reported. All procedures complied with institutional requirements for confidentiality and data protection.

Theoretical Lens

This study was guided by the socio-ecological model of risk and safety factors shaping

children’s active play, developed by Jerebine et al. (2022a), which integrates Bronfenbrenner’s Socio-Ecological Model (1994) and Gibson’s Theory of Affordances (Gibson, 2014). These models emphasize that children’s opportunities for risky play emerge from interactions across multiple levels of influence, including individual characteristics, interpersonal relationships, physical environments, institutional policies, and sociocultural expectations.

Jerebine et al.’s (2022a) model provided an analytical framework for examining how caregivers interpret the affordances and constraints in St. Louis neighborhoods. This theoretical approach supported an understanding of how disability-related needs, family beliefs, sociocultural expectations, and environmental inequities interact to shape caregivers’ attitudes toward risky outdoor play for toddlers with developmental delays or disabilities.

Participant recruitment

A convenience sampling strategy was used. The online survey was designed and reported in accordance with the Checklist for Reporting Results of Internet E-Surveys (CHERRIES) (Eysenbach, 2004). The survey announcement and eligibility criteria were disseminated through multiple channels, including pediatric therapy networks, social media platforms commonly accessed by caregivers of children with disabilities, and in-person meetings of the Missouri Department of Elementary and Secondary Education (DESE) early intervention program. Inclusion and exclusion criteria are presented in Table 1.

Table 1: Inclusion and exclusion criteria

Inclusion Criteria	Exclusion Criteria
- Primary caregiver (not a teacher or daycare worker) - Provides ≥20 hours/week of care - Cares for a child aged 13–47 months with a developmental delay or disability - Resides in St. Louis City or County (verified by zip code) - English proficiency sufficient to complete the survey	- Non-primary caregivers - The child does not meet the age or developmental profile - Residing outside the geographic target area - Insufficient English literacy

Survey Instrument

An anonymous, voluntary, open e-survey was distributed via Qualtrics XM (2025) to caregivers of young children with developmental delays or disabilities residing in the St. Louis, Missouri, metropolitan area. Qualtrics settings prevented duplicate entries through browser-based cookie checks, and questions were displayed across nine sequential screens to reduce respondent burden. No review or change steps were provided. The survey included a checklist, Likert-scale, yes/no, and open-ended questions to gather demographic information and explore caregivers' perceptions of the individual, interpersonal, physical environment, and sociopolitical factors influencing their attitudes toward risky outdoor play.

The survey adapted items from two instruments: the Tolerance of Risk in Play Scale–Revised (TRIPS-R) and the Parental Perception of Child Friendliness in Neighborhoods Questionnaire instruments, aligned with Jerébine et al.'s (2022a) socio-ecological framework. The TRIPS-R is a 30-item yes/no measure of caregivers' tolerance for children's risky play (Grady-Dominguez et al., 2020), and the Neighborhood Questionnaire is a 14-item Likert-scale measure of perceived neighborhood safety, accessibility,

and inclusivity (Gong et al., 2024). Adapted and newly developed items were organized into four domains: individual, interpersonal, environmental, and sociopolitical. The final 31-item survey addressed nine risky play categories described in the literature (Hansen Sandseter, 2007; Jelleyman et al., 2019; Kleppe et al., 2017) as well as socio-ecological determinants identified by Jerébine et al. (2022a).

To ensure developmental and contextual appropriateness for toddlers with developmental delays or disabilities, 13 TRIPS-R items were adapted. Items were removed describing objectively unsafe or incongruent scenarios for this age group and the St. Louis context (e.g., lighting fires, swimming in the ocean, unsupervised roaming). The remaining items were modified to reflect toddlers' motor abilities and common early childhood environments (e.g., adjusting height-related items and adding messy play). Ten adapted items were converted to a “select all that apply” checklist to capture the range of activities caregivers allowed. Two were converted to 4-point Likert-scale questions to capture gradations in caregiver comfort, and three retained their yes/no format. One open-ended question explored how caregivers' values, beliefs, and experiences influenced their tolerance of risky outdoor play.

Nine items from the Neighborhood Questionnaire were adapted using simplified, context-specific wording. For example, the original, “There is a school nearby that is suitable for my child” (Gong et al., 2024, p. 5), was adapted to “There is a school nearby that would be good for my child when they are old enough.” Three new items were developed to address sidewalk quality, accessibility for children with disabilities, and inclusive park/playground design. Two open-ended questions explored how posted rules,

supervision norms, and perceptions of public space safety influenced caregiver comfort. Additional items captured demographic variables, family composition, caregiving context, and interpersonal influences using multiple-choice, checklist, and yes/no formats. One open-ended question explored how expectations from family or community members affected tolerance for risky outdoor play.

The survey was pilot-tested in November 2024 with three caregivers and three pediatric professionals to ensure face validity, clarity, developmental appropriateness, and usability. True/False items were converted to checklists due to smartphone display issues. Qualitative items were simplified to reduce cognitive load. Reviewers confirmed that the revised instrument was clear and suitable for the target population.

Data Collection

Data were collected between February and May 2025, using the Qualtrics XM (2025) platform. The survey remained open for 12 weeks, with email, text, and social media reminders every 2–3 weeks. Eligibility was verified through screening questions, and ineligible participants were automatically excluded via skip logic. Only responses with ≥90% completion of the required demographic and attitudinal items were retained for analysis.

Data Analysis

A mixed-data analytic approach was used. Reflexive thematic analysis followed Braun and Clarke's (2012) six-phase method to analyze open-ended responses using NVivo 12 software (Lumivero, 2024). The lead author and a research-trained social worker independently coded the data, resolving discrepancies collaboratively with the last author. A hybrid deductive–inductive approach was employed, with initial coding informed by

Jerebine et al.'s (2022a) socio-ecological framework and refined as themes emerged. Quantitative data were analyzed descriptively using Microsoft Excel to calculate frequencies and percentages across the four domains. Ratings of five or higher on the 10-point enjoyment question were classified as indicating enjoyment. Data integration occurred during interpretation by comparing quantitative patterns with qualitative themes to identify convergence, divergence, or complementarity.

Analyses addressed two questions:

1. How do caregivers of toddlers with developmental delays or disabilities perceive individual and interpersonal factors as shaping their attitudes toward risky outdoor play?
2. How do caregivers of toddlers with developmental delays or disabilities perceive environmental and sociopolitical factors as shaping their attitudes toward risky outdoor play?

RESULTS

Of 38 surveys initiated, 21 were excluded for ineligibility and six for <50% completion, yielding a final analytic sample of 11 participants who completed ≥90% of items and submitted the final survey page. Consistent with CHERRIES guidelines, the participation rate was 100% (38 of 38 individuals who accessed the first survey page agreed to participate), and the completion rate was 29% (11 of 38 individuals completed the survey). Table 2 shows the demographics of the participants.

Table 2: Participant Demographics

Participant	Relationship to Child	Caregiver Race/Ethnicity	Caregiver Disability Status	Caregiver Education	Child Medicaid	Family Assistance	Child's Condition	Child Age (months)	Child's Race/Ethnicity	Child Gender
P1	Mother	White, non-Hispanic	None	Master's	No	No	Developmental delay	19–24	White, non-Hispanic	Male
P2	Mother	White, non-Hispanic	None	Doctorate	No	No	Developmental delay	25–30	Multiracial	Female
P3	Mother	Multiracial	None	Some college	No	No	Autism & developmental delay	25–30	Multiracial	Male
P4	Mother	White, non-Hispanic	None	Bachelor's	No	No	Developmental delay	25–30	Multiracial	Female
P5	Foster parent	White, non-Hispanic	None	Bachelor's	Yes	No	Developmental delay	31–36	Black/African American	Male
P6	Grandparent	Multiracial	Blood clots in lungs/legs	Bachelor's	Yes	TANF/food stamps	Autism	31–36	Multiracial	Female
P7	Mother	White, non-Hispanic	Diabetes	Associate	Yes	No	Suspected autism	25–30	White, non-Hispanic	Female
P8	Mother	Black/African American	Autism	Associate	Yes	No	Autism	25–30	Multiracial	Female
P9	Mother	White, non-Hispanic	None	High school diploma	Yes	No	Developmental delay	19–24	White, non-Hispanic	Male
P10	Mother	Black/African American	None	Some college	Yes	No	Developmental delay	25–30	Black/African American	Male
P11	Mother	Black/African American	None	High school diploma	Did not respond	TANF/food stamps	Autism	31–36	Black/African American	Female

Note: The Table presents complete demographic data collected from all 11 participants. P1-P11=Participant Number; TANF=Temporary Assistance for Needy Families (U.S. Department of Health and Human Services, 2023)

As shown in Table 2, participants included nine mothers, one foster parent, and one grandparent. Caregivers identified as White, Black/African American, or multiracial. Several reported having a disability or chronic health condition. Children ranged from 19–36 months of age and represented a mix of caregiver-reported diagnostic categories, including developmental delay, autism, and suspected autism.

Caregivers' perceptions of how individual and interpersonal factors shape their attitudes toward risky outdoor play

Qualitative and quantitative analyses revealed variability in caregivers' comfort with risky outdoor play, as well as the developmental, interpersonal, and contextual factors that informed their decisions. Two themes captured individual and interpersonal influences: valuing risky outdoor play for development and balancing supervision and independence.

Valuing risky outdoor play for development

At the individual level, most respondents perceived risky outdoor play as beneficial to their children's development, highlighting its importance for fostering confidence, independence, physical coordination, and emotional regulation. Participant 9 noted, *"I like to let him do risky things to learn how to be safe,"* reflecting the idea that children learn best through experience.

Participant 4 emphasized the importance of hands-on exploration, stating, *"Playing with rocks and sticks are all very important work for a child."*

Confidence-building was a recurring perception. Participant 6 explained, "She needs that for her developmental skills so she won't be so timid... She will be able to climb the tall ladder to get to the slide." Others emphasized the importance of cognitive and emotional development through unstructured play; as Participant 5 shared, *"I believe that taking risks and exploration (particularly outside) is key in forming their mind."*

Quantitative findings showed that 82% of caregivers held favorable attitudes toward risky play. As shown in Figure 1, most were comfortable with activities such as outdoor play after a minor injury and exploring new environments. However, only 27% were comfortable with children resolving play conflicts independently, and 60% permitted rough-and-tumble play.

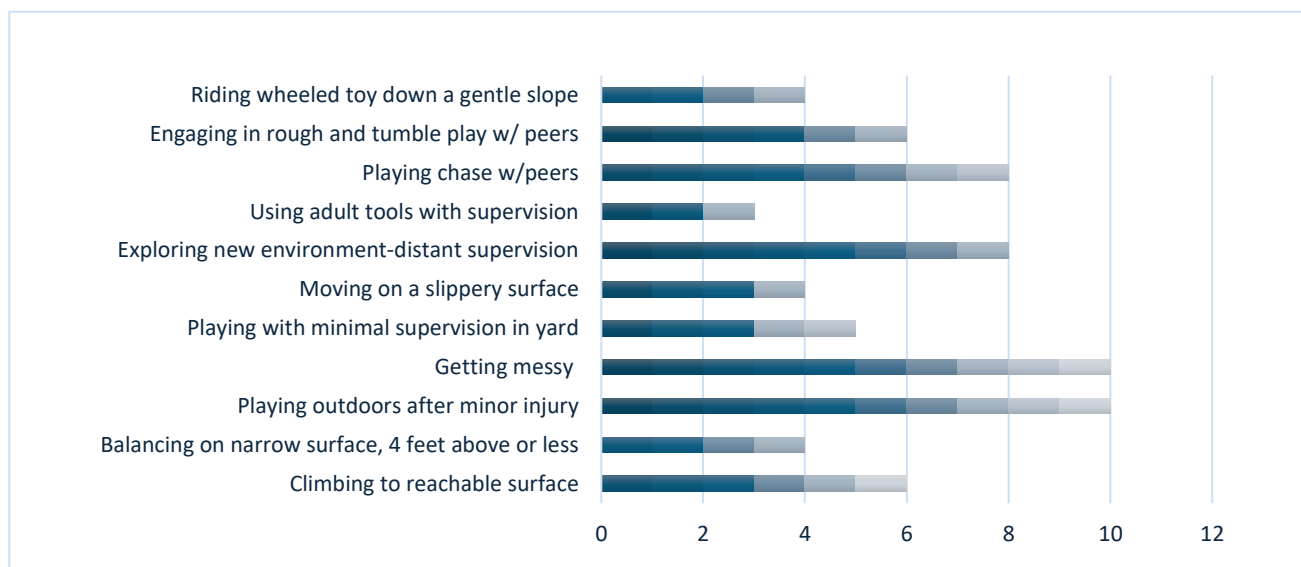


Figure 1: Caregiver responses to risky play scenarios for their children (n=10)

Caregiver ratings of their child's enjoyment of risky play demonstrated considerable variation, spanning the full 1–10 scale. Notably, 70% of caregivers rated their child's enjoyment as 5 or higher. One did not provide a rating.

Figure 2 depicts caregiver ratings of their child's enjoyment of risky play on a 1–10 scale. Each bar represents the number of children in the sample with that tendency. Participant 9 did not answer the question (n=10).

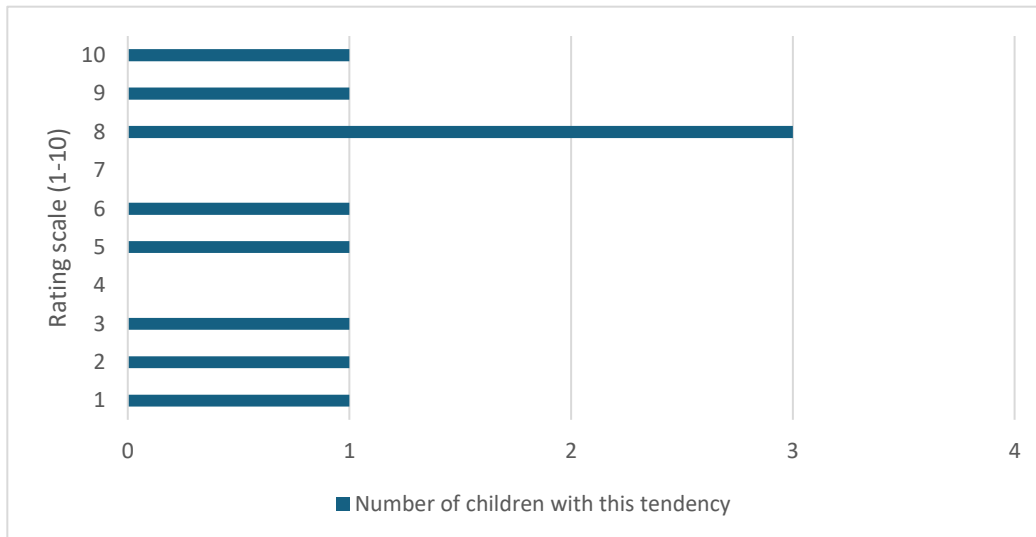


Figure 2: Child's tendency to enjoy risky play on a scale of 1-10 (n=10)

Balancing Supervision and Independence

At the interpersonal level, caregivers described an ongoing tension between protecting their child and fostering independence during risky outdoor play. Across their responses, caregivers emphasized that supervision was continually calibrated to each child's developmental readiness, temperament, and sensory needs. While many valued the developmental benefits of risky outdoor play, their comfort levels varied. Participant 7 explained, *"Risky play is great for children as long as they are being supervised [...] Everyone I know is comfortable with my child taking risks as long as she is being watched."* Others described intentionally encouraging autonomy; as Participant 5 reflected, *"I try not to hover and also practice standing aside."* Still, this balance was challenging. Participant 3 acknowledged, *"I am a*

helicopter parent sometimes... It's a balance."

At the individual level, caregivers emphasized that their tolerance for risk and supervision decisions was shaped by each child's unique characteristics. For example, Participant 4 described how their older child was, *"advanced in motor skills... able to sustain attention independently,"* and more capable of handling risky outdoor play. However, their younger child had significant sensory needs and *"often gets frustrated with playing and climbing"* due to low attention span and oral-seeking behaviors, requiring constant adult redirection.

The quantitative data reflected this variability. Despite a high number (70%) of caregivers reporting their child enjoyed risky outdoor play (Figure 2), most caregivers (73%) were

only slightly confident in their child's ability to manage risky situations (Figure 3). Likewise, although 80% of caregivers were comfortable with their child exploring a new environment with distant supervision, only half felt comfortable allowing their child to play in the yard with minimal supervision (Figure 1). Similarly, most caregivers were somewhat uncomfortable (55%) or very uncomfortable (18%) with their child resolving conflicts independently (Figure 3). This was despite that 64% felt somewhat or very comfortable with play involving the possibility of minor injury.

captured these influences: navigating external supervision and cultural constraints, and managing variability in community infrastructure and institutional support.

Navigating external supervision and cultural constraints

Caregivers described how restrictive social norms and inconsistent expectations from other adults in shared spaces (e.g., schools, parks) shaped their willingness to support risky outdoor play. Rules imposed by others were sometimes viewed as developmentally misaligned. As Participant 4 shared, “We’ve

been told things like ‘go down the slide, not up’ or ‘be careful’ without specific guiding intentions,” and “...it’s too cold or wet to play.” In contrast, Participant 5 described a nature-based school where “*They’re encouraged to climb trees, build forts, and play in the mud,*” illustrating how supportive institutional environments and professionals can normalize and promote risky outdoor play.

Caregivers also navigated differing supervision expectations across extended families and institutions, particularly for children with disabilities. As

Participant 6 explained “*Some family members say don’t treat her no different than the other kids and let her get out there and just be a kid and have fun... Other people think she should be sitting down so she don’t get hurt, or stop the other kids from having fun because now they have to run slower for her...*”

Similarly, Participant 4 noted, “All of our family members (including extended) support

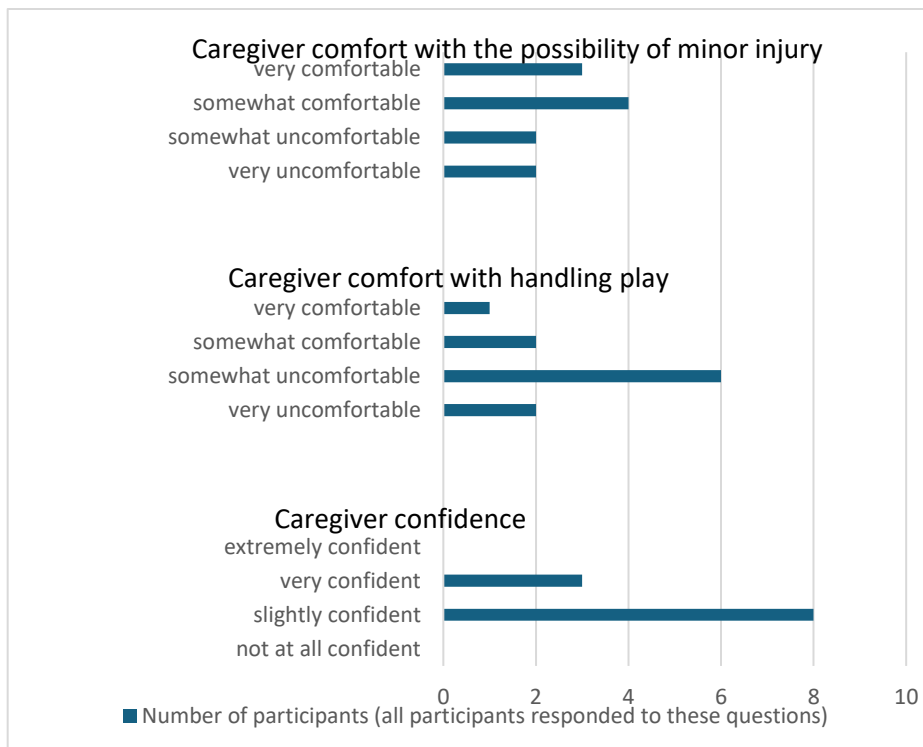


Figure 3: Caregiver comfort and confidence ratings based on a 4-point Likert scale (n=11)

Caregivers’ perceptions of how physical environment and sociopolitical factors shape attitudes toward risky outdoor play
Environmental conditions, public norms, institutional expectations, and neighborhood-level inequities strongly influenced caregiver comfort with risky outdoor play. Two themes

risky outdoor play. Daycare somewhat supports.” These accounts illustrate how caregivers continually encountered mixed messages regarding risky outdoor play.

Most caregivers identified specialists ($n = 8$, 73%) and physicians ($n = 7$, 64%) as their primary sources of child-rearing advice. Fewer reported consulting parenting books or online resources ($n = 6$, 55%), friends and family ($n = 4$, 36%), or community support groups ($n = 3$, 27%). These findings indicate that professional advice may exert a particularly strong influence on caregivers’ perspectives and decision-making regarding risky outdoor play.

Managing variability in community infrastructure and institutional support

Environmental conditions also influenced families’ ability to provide safe, developmentally rich play opportunities. Participant 2 described a nearby playground with “*lead paint exposure*,” while Participant 7 shared concern that “*there are no sidewalks in our*

neighborhood.” Participant 3 often wished the rules posted on playgrounds allowed children to take more risks during play. This constraint was especially salient because the participant reported having no yard and relying exclusively on parks or the child’s grandmother’s home. These statements illuminate how less access to private outdoor space often increased reliance on public environments, making play subject to greater scrutiny from others and more affected by institutional rules.

As shown in Figure 4, participants reported access to needed care facilities ($n = 5$, 45%), community programs or supportive neighbors ($n = 6$, 54%), recreational spaces ($n = 9$, 90%), and suitable green areas ($n = 8$, 80%). Fewer reported safe local streets and sidewalks or nearby peers for play ($n = 4$, 40%). These findings indicate uneven access to the physical, social, and service-related resources that may shape caregivers’ confidence in supporting risky outdoor play.

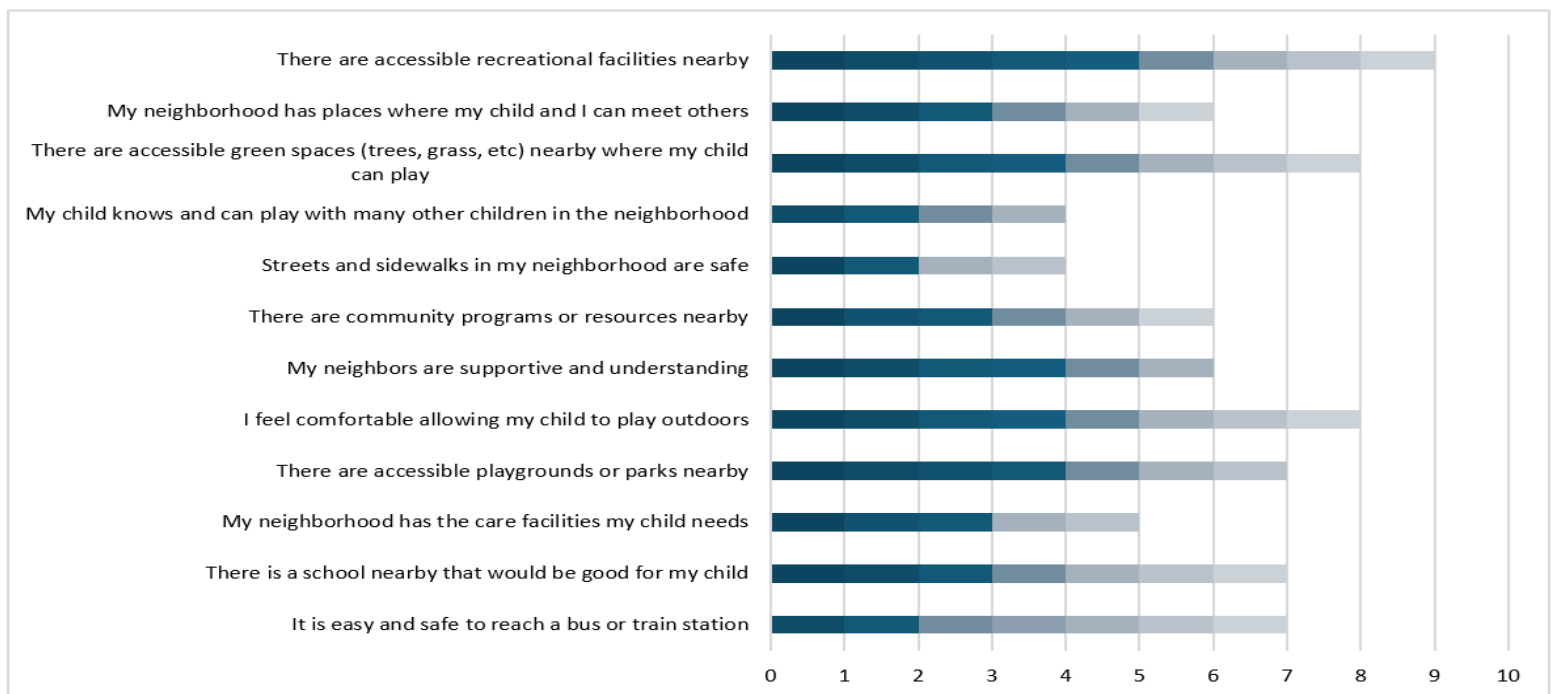


Figure 4: Neighborhood Friendliness

An exploratory scatterplot (Figure 5) illustrates the relationship between neighborhood child-friendliness scores and risky-play attitude scores among caregivers in this sample. This scatterplot shows each caregiver's neighborhood child-friendliness score (x-axis) plotted against their total risky-play attitude score (y-axis). Each point represents one caregiver ($n = 10$) and is labeled with their score on the risky-play attitude.

Higher x-values indicate more child-friendly neighborhoods; higher y-values indicate greater tolerance for risky outdoor play. In this sample, caregivers with higher neighborhood child-friendliness scores tended to report higher risky-play attitude scores, though the small sample size limits interpretation.

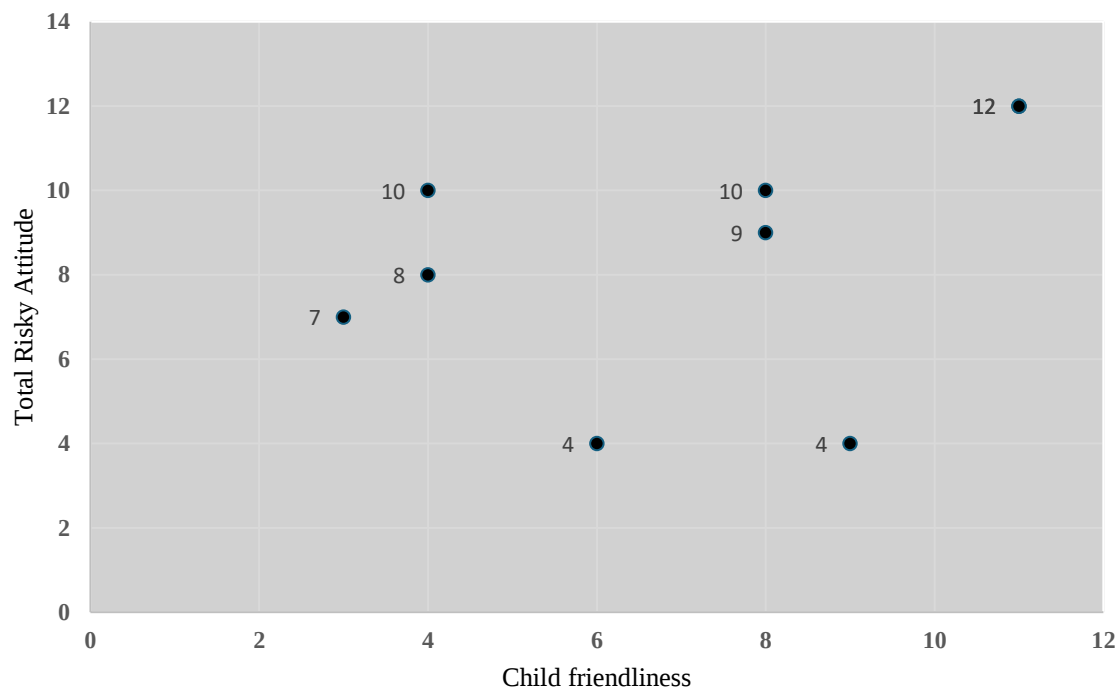


Figure 5: Caregiver risky-play attitude scores by neighborhood child-friendliness scores ($n=10$)

DISCUSSION

This study contributes to emerging US-based research examining caregiver perspectives on risky outdoor play for toddlers with developmental delays or disabilities using a socio-ecological lens. Consistent with research on typically developing children, caregivers described risky outdoor play as supporting autonomy and confidence (Sandseter et al., 2022). However, their support was often conditional and calibrated to each

child's developmental readiness, sensory profile, behavioral patterns, and perceived capacity to manage uncertainty. For toddlers with disabilities or sensory sensitivities, participation in challenging play often depended on access to adaptable and supportive environments, resources that are not uniformly available (Stermann et al., 2016).

Caregivers emphasized risky outdoor play's role in building emotional resilience and

adaptability (Sandseter et al., 2022), consistent with evidence supporting the developmental value of manageable stressors for children with sensory, motor, or self-regulation challenges (Schaaf & Mailloux, 2015). With appropriate supervision, risky outdoor play may support mastery, confidence, and well-being (Gray et al., 2015; Sterman et al., 2016). Interventions that help caregivers identify safe yet challenging play opportunities may strengthen confidence while maintaining safety (Brussoni et al., 2021).

Findings also illuminate how neighborhood inequities in St. Louis, Missouri (Tighe & Ganning, 2015) shaped caregiver decision-making. Built-environment features, including sidewalk quality, and hazards, including posted lead-paint warnings, influenced. These results align with evidence that built environment and playground quality either support or impede children's outdoor play (Lambert et al., 2019). Social factors, including neighborhood cohesion, cultural expectations, and public scrutiny, further shaped caregiver comfort. Reports of feeling judged for allowing climbing or sensory-seeking behaviors reflect broader literature on stigma and surveillance in outdoor settings, particularly for families of children with disabilities (MacQuarrie et al., 2022; Ng & Siu, 2025). Sociopolitical influences also shaped caregiver decision-making. Caregivers described mixed messages from other adults and restrictive institutional rules, reflecting evidence that supervision norms and neighborhood characteristics influence caregivers' risk assessment practices (Jerebine et al., 2022b; Bringolf-Isler et al., 2010). Limited access to private outdoor space increased reliance on public settings, where scrutiny and environmental barriers were more pronounced. Although many families lived near green areas, inadequate sidewalks, reduced

'doorstep' play, and limited peer interaction opportunities are known to disproportionately affect families of children with disabilities (Yogman et al., 2018; Gong et al., 2024) and can exacerbate outdoor play inequities (Lambert et al., 2019). These findings reinforce calls for disability-informed and universally designed outdoor environments that facilitate challenge, safety, and participation (Sterman et al., 2016).

Overall, caregiver support for risky outdoor play emerged as a dynamic process shaped by child characteristics, environmental conditions, neighborhood context, and sociopolitical influences. While caregivers recognized developmental benefits, willingness to permit risky outdoor play was moderated by perceived safety concerns, social judgment, and variable access to inclusive outdoor spaces. These findings illustrate that balancing protection and independence is a dynamic, individualized process, shaped by contextual factors, developmental considerations, and caregivers' evolving judgments about safety and autonomy rather than by fixed rules.

Future research should examine more diverse samples, explore how caregiver education intersects with disability-inclusive design, and evaluate systems-level strategies that link family, community, and policy efforts to expand equitable access to developmentally rich outdoor play.

Study Limitations

The small, non-random sample ($n = 11$) limits generalizability and precludes statistical inference. Self-reported data may be subject to recall bias or social desirability bias, and observational studies are needed to further examine caregiver-child interactions during risky outdoor play. Geographic comparisons were limited because zip codes were

aggregated to protect confidentiality, and child diagnoses were caregiver-reported, not clinically verified. Nonetheless, the study's focused aim and rich qualitative responses are consistent with the principle of information power (Malterud et al., 2016).

Data collection occurred during a period of political instability in the US, when caregivers of children with disabilities faced heightened stress related to job insecurity, reduced childcare access, and perceived threats to educational protections (McGinty et al., 2025). These contextual factors should be considered when interpreting study findings.

CONCLUSION

This study demonstrates that caregivers' decisions about risky outdoor play for toddlers with developmental delays or disabilities are shaped by interacting child, family, environmental, and sociocultural factors. Although caregivers recognized its developmental value, opportunities for participation were contingent on the child's abilities, caregivers' perceptions of risk, the accessibility and safety of local environments, and wider social expectations regarding supervision and protection. Neighborhood and public spaces therefore functioned not as neutral settings, but as enabling or constraining conditions that materially shaped children's access to challenging and developmentally meaningful play.

For occupational therapists and early childhood professionals, the findings indicate that promoting risky outdoor play requires more than changing caregiver attitudes. Practice must also address the environmental and structural conditions that restrict participation. This includes supporting caregivers to make informed and context-sensitive risk decisions, advocating for inclusive and accessible play environments, and working with

communities and policymakers to reduce inequities in neighborhood safety, infrastructure, and institutional support. Such action is central to advancing children's rights to play, participation, and development.

Further research should include larger and more diverse samples and examine how disability, socioeconomic conditions, culture, and place intersect to shape opportunities for risky outdoor play. Longitudinal and intervention studies are also needed to determine which strategies most effectively expand safe, equitable, and developmentally appropriate participation across home, community, and institutional settings.

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of this study are available from the corresponding author upon reasonable request. All shared data will be fully anonymized to protect participant confidentiality. In accordance with the approved IRB protocol, no personally identifiable information will be disclosed. Anonymized data may be shared only with qualified requestors and for scholarly purposes. Such requests may be subject to institutional oversight or data use agreements.

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