

# **Meaningful Conflicts in Nature? Exploring Peer Conflict in a Nature Preschool During Outdoor and Indoor Play**

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Citation: Pic, A., & Han, M. (2021). Meaningful conflicts in nature? Exploring peer conflict in a nature preschool during outdoor and indoor play. *Children, Youth and Environments*, 31(3), 116-136.  
<http://www.jstor.org/action/showPublication?journalCode=chilyoutenvi>

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## **Abstract**

*This study explored peer conflict among preschoolers during indoor and outdoor free play in a nature-based preschool. We collected data through observations and video recordings of 15 preschoolers and analyzed and coded the data using an event sampling method. The findings revealed differences in primary conflict catalysts between indoor and outdoor settings. Play ideas was the main conflict catalyst in the outdoor setting, while distribution of resources was the primary conflict catalyst in the indoor setting. The implications of the study suggest that outdoor nature environments seem to provide children more meaningful conflict situations around play ideas rather than the mere possession of material.*

**Keywords:** peer conflict, outdoor, nature, free play, early childhood education, preschool

## **Introduction**

Conflicts are naturally occurring events (Chen et al., 2001) and an inevitable part of life. Learning conflict management and resolution skills are important to children's cognitive development and later life relationships (Chen et al., 2001; Laursen et al., 1996; Nucci et al., 1996) as conflict situations provide children with opportunities to acquire and practice social skills such as negotiation, resource sharing, cooperation, emotional regulation, and conflict management (Aasen et al., 2009; Wheeler, 2004). However, peer conflict in early childhood often has a negative connotation and is sometimes construed as increasing classroom tension. This negative view of conflict can be a source of distress to early childhood teachers when they focus on conflict avoidance or quickly trying to restore peace (Arcaro-McPhee et al., 2002; Chen, 2003) instead of using the developmental benefits of peer conflict engagement. Because the majority of studies conducted to understand children's peer conflict have focused on indoor classrooms, there is a need to expand the range of study contexts since children's behaviors are largely influenced by their immediate environment (Bronfenbrenner, 1986).

One understudied context in the conflict literature is the outdoor, natural environment. This literature is scant, in part, due to the fact that nature-based programs are not a typical early childhood setting in the U.S. Interestingly, however, the number of nature-based preschools in the United States has more than doubled in the past few years (NAAEE, 2020). Nature preschools have gained more attention because they employ curricula rich in child-led learning and free play, and tend to offer larger natural outdoor play spaces (Finch & Bailie, 2015). Features of the natural environment (e.g., open space, natural lighting, changing landscape) differ from those of indoor classrooms (e.g., controlled climates, four walls, predictable, designated spaces, and fluorescent lighting). The outdoor environment affords opportunities for children to engage in deeply sustained play, explore independently, develop physical skills, and learn without direct adult control (Bohling et al., 2010; Fjørtoft, 2004; Maynard et al., 2013; Stack & Nikiforidou, 2019; Stephenson, 2003; Tovey, 2007). The availability of resources in nature-based programs also differs from standard indoor classrooms. Materials in nature-based outdoor classrooms are primarily natural materials that are renewable and plentiful, which allow for longer and more in-depth engagement (Bohling et al., 2010; Dennis et al., 2014).

Likewise, nature-based preschools provide an ideal and important context in which to study and understand children's naturally occurring behaviors such as conflict engagement and management. Studying children's conflict in a nature-based program could provide deeper insight into understanding conflict in addition to the study of conflicts in the indoor setting. The purpose of this study is to understand how and why conflict emerges among children during child-initiated play in outdoor and indoor free play, and investigate whether there are any differing patterns of conflict between the outdoor and indoor settings at a nature-based preschool.

## Review of the Literature

### Peer Conflict During the Early Years

Previous research that has examined conflict in the early years (ages 2-5) refers to *peer conflict* among children as an event in which one child protests, retaliates, or resists the action or verbalization of another child (Chen et al., 2001; Shantz, 1987). The conflict can be destructive (threats, coercion) or constructive (mutual problem solving) in nature. Both forms contribute to children's social, emotional, moral, and cognitive development (Chen et al., 2001; Laursen et al., 2001; Shantz, 1987; Wheeler, 2004) as well as the formation and maintenance of interpersonal relationships (Laursen et al., 1996). *Peer* conflict is defined as a mutual disagreement or hostility between two or more people who are of equal or similar power (Noakes & Rinaldi, 2006; Sidorowicz & Hair, 2009). Participating in, and navigating through, conflict provides a venue for children to practice and develop negotiation skills, logical thinking, perspective taking, relationship management, and problem solving (Aasen et al., 2009; Laursen et al., 2001; Malloy & McMurray, 1996; Piaget, 1932; Wheeler, 2004). Conflict among preschooler peers tends to occur most often during child-led time (Malloy & McMurray, 1996).

Conflict is different from aggression. Conflict refers to incompatible behaviors or goals, while aggression suggests the intent to harm or injure another individual (Parke & Slaby, 1983; Shantz, 1987). Aggressive behaviors may occur during conflict, but conflict in and of itself is not aggression (Shantz, 1987; Wheeler, 2004). Research suggests most conflict episodes do not involve aggression (Shantz, 1987). However, when conflicts are elevated, aggressive conflicts could happen with a higher frequency during free play compared to guided activities (Cordoni et al., 2016).

Conflicts are generated by an initial action. Previous research has identified five distinct catalysts for conflict between children: physical harm, psychological harm, distribution of resources, play ideas, and social-conventional issues (Chen et al., 2001; Killen & Turiel, 1991). According to prior studies conducted in indoor classrooms and laboratories, the largest percentage of conflicts among toddlers and preschoolers are initiated over possession disputes/distribution of resources (Chen et al., 2001; Shantz, 1987). The second most frequently occurring catalyst was response to another child's actions or lack of actions such as refusal to adopt a suggested fantasy role (Shantz, 1987). Conflicts involving physical and psychological harm were observed more often in free play settings than in structured peer-group settings (Killen & Turiel, 1991). Chen and colleagues (2001) noted significant age-related patterns in the conflict catalyst. For example, between the ages of 2 and 5, conflicts initiated by distribution of resources decreased while conflicts over play ideas increased.

### Contextual Factors

Contextual factors such as setting location and availability of space have been shown to influence the presence of conflict among children. Play is the primary context in which young children engage in social activities where conflicts arise. Further, play provides children opportunities to explore roles, try new skills, test

already acquired skills, and develop socialization techniques that allow them to navigate, negotiate, and resolve peer conflict. Therefore, this study uses free play context to explore conflict in a nature-based preschool.

A naturalistic, observational study of preschoolers that examined possession disputes during indoor free play conducted by Ramsey (1986) found situational factors such as the types, quality, and distribution of materials present in a setting were significantly related to the occurrence of possession-related conflict episodes. Additionally, Ramsey (1986) noted the accessibility of the space also significantly impacted possession disputes. For instance, possession-based conflicts were more likely to occur in areas with closed spaces or single entrances (Ramsey, 1986). On the contrary, a mixed methods study conducted by Stack and Nikiforidou (2019), which examined indoor and outdoor possession-based conflict among 12 preschoolers, found no difference in the rate of such conflicts by setting. A study by Killen and Turiel (1991) found the structuredness of activities was more related to the occurrence of conflicts rather than indoor or outdoor setting factors. Specifically, they reported more distribution of resources conflicts in semi-structured peer group settings than in free play.

### **Nature Preschool as a New Context of Study**

The terms “nature-based preschool” and “nature preschool” are used interchangeably in the literature (Larimore, 2016). Further, these may be referred to as a place-based school, outdoor preschool, nature kindergarten, forest kindergarten, zoo and aquarium school, etc. (NAAEE, 2020). Nature-based outdoor classrooms are designed for use throughout the seasons and in all types of weather. Nature-based programs either provide outdoor and indoor nature experiences for children, or conduct the entire program outdoors. Further, nature-based programs generally share three common elements: 1) nature themes and daily nature exploration are central to programming, 2) programs are equally committed to both high standards and developmentally appropriate practices in early childhood education, and 3) programs employ best practices of environmental education (Finch & Bailie, 2015).

Nature-based outdoor classrooms support unique exploration opportunities (Bohling et al., 2010; Finch & Bailie, 2015), child-initiated and full body learning, and the opportunity to interact directly with nature, which may promote environmental stewardship (Kuo et al., 2019). Nature-based programs’ outdoor play space may include commercialized play equipment; however, the programs primarily feature natural elements such as logs, gardens, slopes, digging pits, shrub hideaways, water sources (i.e., a rain barrel), and “loose parts” such as sticks, rocks, seed pods, and stalks (Finch & Bailie, 2015). The presence of plentiful and renewable natural materials provides open-ended and evolving use; a stick can become a wand, cane, broom, pencil, or spatula.

In a qualitative case study conducted in a nature preschool, Bohling and colleagues (2010) reported only 18% of the 60 documented teacher observations represented adult-directed activities; the remaining were child-initiated. These findings support literature suggesting the natural outdoor environment lends itself to child-initiated

learning by providing a larger degree of freedom and a smaller degree of adult control (Sutterby & Frost, 2006; Maynard et al., 2013). Additionally, in the outdoor environment, when teachers do plan activities, they tend to have a greater emphasis on children's collaboration and social skills (Maynard et al., 2013).

While empirical research on nature-based learning is accumulating (Jordan & Chawla, 2019), scant research exists on peer conflict in nature-based preschool settings. A deeper understanding is warranted given the rise in nature-based programs. Further, although previous empirical research studies examined conflict episodes during free play in relation to emergent social and emotional skills development, most studies focused on the indoor space or were conducted in a laboratory setting; few have included an outdoor nature-based program.

To add to the existing literature, this study addressed three research questions: 1) How does peer conflict emerge among children during outdoor, child-initiated play in a nature-based preschool? 2) How does peer conflict emerge among children during indoor, child-initiated play in a nature-based preschool? 3) Are there any patterns of conflict between indoor and outdoor settings?

## **Method**

### **Setting**

The participating nature preschool in this study is the only one in the area and is operated by a lab preschool affiliated with a university in the mid-Atlantic region of the United States. The nature preschool enrolls up to 16 children ages 3 to 4 years (age at fall enrollment). The program operates half-days Monday through Friday, 9:15 AM to 1:00 PM. The outdoor environment is used for two-thirds of the school day, and the children are outdoors in all weather types for approximately three hours each day. The outdoor setting includes access to a forested area, meadow, creek, and pond. For this study, the outdoor data was obtained during free play that occurred in the forested area. The design of the nature-based preschool indoor setting reflects a standard indoor preschool classroom.

The outdoor space is a forested area approximately 5,000 square feet. The space provides children access to a bird blind, stage, mud kitchen, wooden planks and pallets, rope swing, and large wooden spool tables (Figures 1a and 1b). There is an abundance of natural materials such as rocks, sticks, dirt, mud, bark, seeds, and plants. In addition to the naturally occurring materials, a few "indoor" items such as miniature fairies, markers, colored pencils, kitchen utensils, and butterfly wing costumes are also available outdoors. Children engage in extended play in the forested area selecting between free play and adult-planned nature-based activities that integrate science, math, literacy, and the arts. Planned activities, such as painting the sky's reflection on a mirror, occur at the art picnic table and the writing table. The remaining space is open for free play. Rules govern the use of the rope swing and workbench tools as well as the number of children allowed at the activity table.

**Figure 1a. Nature preschool outdoor setting**



**Figure 1b. Nature preschool outdoor setting**



The indoor space is 700 square feet and configured into “centers” with three tables that allow for various activities such as writing, playdough, painting, table games, and manipulatives (Figure 2). The space also contains a light table with magnetic colored tiles for building and creating, and two centers marked by area rugs. One area rug is designated for train and block play, while the other is for reading among pillows and sitting together for circle time. There is also a dramatic play area that converts to a science center as needed. Children have access to books, stuffed toys, blocks, puzzles, small manipulatives, dramatic play props, and art supplies. The room is intentionally set up according to the weekly lesson plan. For example, for the lesson *We can see, feel, touch, and hear the FALL changes all around us!* the science center contained plants, magnifying glasses, clipboards and pencils; the back activity table contained painting with watercolors; and the middle activity table contained a leaf sorting activity. Children are free to move about the room selecting from the planned activities. Rules govern the number of children allowed at each center.

**Figure 2. Nature preschool indoor setting**



The class is instructed by a lead teacher and an Early Childhood Education (ECE) (ages 0-8) pre-service teacher completing her practicum. Additional classroom support is provided by ECE undergraduate university field placement students, and a Lab School staff member. The lead teacher has a BS in ECE, a MS in Literacy, Naturalist Certification, and 17 years of teaching experience. According to the lead teacher, the nature preschool uses an emergent curriculum combining children’s interests and needs, what is occurring in the nature environment, Teaching Strategies GOLD assessment indicators (Lambert, 2020), and past experiences.

Teachers encourage cooperative learning and social skills and purposefully select a balance of child- and teacher-directed activities to foster social, physical, cognitive, and language development. The scope and sequence of curriculum themes change year to year and are dependent upon the children enrolled.

### **Participants**

Fifteen children aged 36-60 months (mean age 48.5 months) participated in this study. Eight of the children were female; eight were Caucasian, two were Greek, two were Asian, and three were other (White/Filipino, Pakistani, Serbian). Three of the children attended the nature preschool program the previous year, seven were Dual Language Learners, and none of the participating children had a documented disability. The researchers assigned each focal child a number (001-015) for identification purposes, observed each individual child on a designated day, and video recorded them during their indoor and outdoor free play.

### **Data Collection**

In accordance with Institutional Review Board (IRB) requirements, we obtained parental consent for collection of observation and demographic data prior to data collection. Demographic data (including child age, gender, home language, years enrolled, cognitive and/or physical limitations) were obtained from the school office manager. Weekly lesson plans were provided by the lead teacher. One researcher collected naturalistic observation data through video recording and field notes over the course of five consecutive weeks in November and December. Each focal child was video-recorded for a 30-minute observation period during both their indoor and outdoor free play to obtain a running record of social interactions. We collected an average of 28 minutes, 47 seconds of indoor data and 29 minutes, 38 seconds of outdoor data for each focal child, for a total of 461 minutes, 52 seconds of indoor and 474 minutes, 31 seconds of outdoor video data.

To increase the children's comfort level with the researcher, the researcher was introduced to the class and spent time with the children in the indoor and outdoor settings prior to data collection. The initial time was spent without equipment, then progressed to the researcher capturing written observation notes and finally using a video camera to both familiarize the children with the equipment and to test its battery life and microphone. Spending time in the indoor and outdoor setting also allowed the researcher to become familiar with class routines, available play opportunities, and space configuration and use. The researcher collected video data by following the focal child at a distance that did not interfere with the child's peer interactions or play.

Prior to conducting focal child observations, the researcher met with the lead teacher and program director to discuss the procedure. All meeting participants agreed that children and teachers would conduct their day as usual and if the researcher observed a conflict that held potential to cause harm and no other adult was present, the researcher would notify the closest teacher. The collected video data were transcribed verbatim by the researcher, however during the transcription process, the lead teacher was consulted to review selected portions of video data to clarify unclear child dialogue.

The researcher gathered written field notes at the beginning of each observation session and during the video recording process to provide setting details and to collect any information deemed important for constructing a complete picture of the conflict occurrences. Field notes are used in qualitative research to “assist in the maintenance of the research instrument” (Marshall & Rossman, 2016, p. 117), and to document pertinent contextual information (Phillippi & Lauderdale, 2018), allowing for creating the full depth of the study context. The researcher collected nonjudgmental descriptions of the context and what was observed. For example, field notes contained information regarding date, time, focal child ID number, weather (temperature, precipitation, wind), number of children and teachers present, and additional environmental information deemed important for forming a complete picture (e.g., parental presence). Member checking notes were maintained on the back of the field notes and in a separate notebook. Member checking occurred between the researchers and the lead teacher to verify data and ensure accurate and correct representation of the children (Marshall & Rossman, 2016).

### **Trustworthiness, Rigor, and Ethics**

This study employed multiple processes to reduce subjectivity and maintain trustworthiness, rigor and ethics. Our submission of the research protocol included a letter of support from the participant site as well as scripts for participant recruitment and child assent. Data was reported anonymously for all participants and pseudonyms were used in the findings. Transcribed discourse has been reported and portrayed as accurately and faithfully as possible. To address potential researcher bias and confirmation bias, direct quotes and concrete examples are provided, and the write-up acknowledges that description is the product of interpretation. Likewise, regular peer debriefing with another researcher throughout the research process addressed potential researcher bias and ensured analyses were grounded in the data. To ensure the researcher captured accurate focal child data, member checking with the lead teacher occurred during and after data collection. For inter-rater reliability of the coding process, a non-involved peer researcher was trained on the identification of a conflict event and the coding process. Coding agreement between researchers to identify conflict events was 100%. Coding agreement in other categories was 93.8%. The two researchers collectively reviewed and discussed any coding disagreements until 100% agreement was reached. Further, the researchers searched for disconfirming evidence in the data and continually reevaluate impressions, responses, and emergent themes.

### **Data Coding**

The event sampling method is used to identify specific behaviors to serve as the unit of analysis (Miller, 2018) and is commonly used to discover an event’s causes and results (Wortham, 1995). The unit of analysis for this study was the conflict event and participants as a whole group rather than focusing on individual child behaviors. The researchers reviewed a total of 30 transcripts, 627 pages, using event sampling (indoor, n=15; outdoor, n=15). The definition of a conflict we constructed was informed by previous research: *a social interaction in which an*

*emotional exchange occurs between two or more individuals that is characterized by events in which one individual protests, resists, retaliates, or opposes the actions of another individual, and the second individual’s action is met with resistance or acceptance* (Chen et al., 2001; Garvey, 1984; Shantz, 1987). We identified incidents that met our definition of a conflict event, and used only transcripts that contained a conflict event in the coding process (indoor n=10; outdoor n=10). After identification of conflict events, we reviewed each conflict event in detail in order to develop a rich picture of the conflict sequence.

The data analyzed for this study focused on the observed conflict events and the types of incidents that sparked conflicts—or “conflict catalysts”—that occurred between children. The catalyst coding process began with a priori categories identified in previous research: physical harm, psychological harm, distribution of resources, play ideas, and social--conventional issues (Chen et al., 2001; Killen & Turiel 1991; Shantz, 1987). We reviewed the indoor conflict event data first, followed by the outdoor data. Each a priori catalyst category was observed at least one time. Additionally, two conflict catalysts were identified that not been listed or described in the a priori category descriptions: tickling and accusation. A review of existing literature found that tickling in adults has been reported to cause discomfort and pain (Harris & Alvarado, 2005); therefore, tickling was added to the description of a physical harm catalyst. Accusation of a false action has been reported to cause psychological harm in adults (Brooks & Greenberg, 2021); therefore, accusation was added to the description of a psychological harm catalyst. Catalysts that appeared in our data and their descriptions are listed in Table 1. After coding for conflict catalyst, we then coded the data for conflict location, duration, and relevant item or action of interest, for instance, the use of a toy or exclusion from an activity.

**Table 1. Catalyst definitions**

Catalyst	Coding	Description
Distribution of resources	DR	fairness issues such as violation of sharing, turn taking, grabbing, taking
Play idea	PI	who will do what, how, when and where, use of play space
Social-conventional issues	SCI	violation of class or school rules about running indoors, how to take turns, or cleaning up time and procedure, number of center participants
Physical harm	PH	hitting, biting, punching, kicking, <b>tickling</b>
Psychological harm	PSH	name-calling, teasing, <b>accusation</b>

Note: Bold type indicates new emerged category descriptions not identified in previous children’s conflict literature.

## Results

### Outdoor Conflicts

Our first research question explored how peer conflict emerges among children during outdoor child-initiated play in a nature-based preschool. There were 22 conflict events noted in the outdoor setting transcripts. The locations of the majority of the outdoor conflicts were evenly distributed between the jumping stump ( $n = 5$ , 22.72%), open play space ( $n = 4$ , 18.18%), stage ( $n = 3$ , 13.64%), and mud kitchen ( $n = 3$ , 13.64%). The remaining conflicts occurred at the fairy garden ( $n = 2$ , 9.09%), obstacle course ( $n = 2$ , 9.09%), snack table ( $n = 1$ , 4.54%) and workbench ( $n = 1$ , 4.54%). Conflict events noted in the outdoor setting were an average of 49.72 seconds and ranged from 18 to 151 seconds. Three types of catalysts were observed in the outdoor setting: play ideas, distribution of resources, and physical harm. Play ideas were the main catalyst observed in the outdoor space and accounted for 54.6% ( $n = 12$ ) of outdoor conflict, while distribution of resources catalyst accounted for 40.9% ( $n = 9$ ) of outdoor conflict.

### ***Play Ideas as the Main Conflict Catalyst in the Outdoor Setting***

The conflict catalyst that emerged most often in the outdoor setting was opposing views around play ideas. There were 12 play idea conflict events in the outdoor setting, of which five were centered around the use of the play space, five entailed the type of play, and two were in regard to who would do what, how, when, and where. The following example of a play ideas conflict occurred at the outdoor stage. The outdoor stage provides the children with the opportunity to engage in collaborative group play. Likewise, the openness and structuredness of the space allow for children to create their own show. The stage is constructed of wood, sits a few inches off the ground, and has colorful sheer curtains across the back. Five classmates decided to put on a show about unicorns. Each child was dancing, singing and shouting while moving around the stage. One child appeared to be the leader directing the movements and stage location for dancing. Marlow went behind the curtain area to dance and sing. When Lucas reached his hand out and attempted to touch Marlow while motioning for her to return to the front of the stage, the following exchange occurred:

*Marlow: "Stop, stop, stop stop!" (Lucas lifts the curtain and goes under the curtain to the backside of the stage) "Stop! You stop it!" (Marlow tries to get Lucas to go back to the other side of the curtain by placing her arm on his jacket)*

*Lucas: "No. You stop it!"*

*Marlow: "No!"*

*Classmate Directing the Show: "Ok guys we got to start the show"*

*Lucas: "No!"*

*Classmate Directing the Show: "We gotta start the show"*

*(Lucas steps backward off the stage, then gently touches Marlow's back and walks to the front of the stage)*

This conflict sequence demonstrates the fluid and temporary nature of play idea conflict that emerges in the outdoor setting over the use of the play space. The conflict unfolded over varying desires between two classmates for the proper place to dance during the unicorn show. Both children were able to express their intentions and understood the intention of the other (Dunn & Slomkowski, 1992). Lucas displayed his desire to follow the “director’s” instructions to have all show participants dance in front of the curtain, while Marlow desired to dance behind the curtain. Lucas attempted to obtain Marlow’s compliance, while Marlow voiced her refusal. This conflict also demonstrates the socially oriented issues of conflict.

It is not uncommon for young children to focus on their intended goal and not take the perspective of their peer (Denham et al., 2003; Chen et al., 2001). Another example of a play ideas conflict occurred at the obstacle course when two children expressed their personal desire to achieve individual goals. An adult university undergraduate student was present and attempted to help the classmates understand the perspective of their peer.

*Lucy: "I'm a teacher okay" (holds up her hand for Jacob to hold)*  
*Adult: "You're the teacher."*  
*Jacob: "No" (pulls hand away)*  
*Lucy: "I'm a teacher."*  
*Adult: "Oh, she wants to help you cross, that's what she's saying."*  
*Lucy: "Cause I'm a just a teacher" (reaches up to hold Jacob's hand)*  
*Jacob: "Well noo" (begins to walk, moves his hand away again)*  
*Lucy: "I'm a, I just said I'm a teacher. I'm gonna help you."*  
*(Lucy reaches up, holds Jacob's coat sleeve)*  
*Jacob: "No I wa wa wa wanna walk I don't want you help me."*  
*Lucy: "Yes. I need to."*  
*Jacob: "I don't want you to" (tries to move his arms away)*  
*Lucy: "Yes I do" (Lucy holds both of Jacob's hands)*  
*Adult: "Listen to Jacob, he doesn't want you to, okay."*  
*Lucy: "Kay."*

This conflict emerged due to peers possessing separate play type desires and goals. Lucy wanted to assume the role of a teacher while Jacob desired to independently walk on the balance beam. Both children persisted verbally and physically to achieve their goal by using expressive language and actions to communicate their individual desire. Lucy’s attempts to hold Jacob’s hand and his withdrawal of his hand demonstrate the use of physical actions to express their opposing desire. The exchange between the children provides both children with the opportunity to understand the perspective of their peer and recognize their needs.

### **Indoor Conflicts**

Our second research question explored how peer conflict emerges among children during indoor child-initiated play in a nature-based preschool. There were 33 conflict events noted in the indoor setting transcripts. The majority of indoor

conflict events ( $n = 18$ , 54.54%) occurred at the light table, followed by the middle activity table ( $n = 6$ , 18.18%). The remaining indoor conflict events occurred at the train carpet ( $n = 4$ , 12.12%), play kitchen ( $n = 2$ , 6.06%), snack table ( $n = 1$ , 3.03%), science center ( $n = 1$ , 3.03%) and the bookshelf ( $n = 1$ , 3.03%). The average indoor conflict duration was 38 seconds, with a range of 4 to 117 seconds. Four types of catalysts were observed in the indoor setting: distribution of resources, play ideas, social-conventional issues, and psychological harm. In the indoor setting, distribution of resources ( $n = 25$ , 75.8%) was the most frequently observed catalyst, which is consistent with previous research (Chen et al., 2001; Killen & Turiel 1991; Shantz, 1987). Play ideas was the next-frequent catalyst type ( $n = 4$ , 12.1%) in the indoor setting, which is also consistent with previous research (Chen et al., 2001).

### ***Distribution of Resources as the Main Conflict Catalyst in the Indoor Setting***

Distribution of resources was the primary conflict catalyst in the indoor setting. Thirteen of the 25 distribution of resources conflicts occurred at the light table over magnetic tiles. The next most prevalent item involved in conflicts was trains ( $n = 4$ ). Below is an example of why conflict emerged at the light table.

*(Kara takes a large stack of the square light tiles with which both children were building and places them in front of her. Greg looks into the bin to select additional tiles and notices the stack is gone. He turns towards Kara and sees the stack in front of her. Greg reaches for the stack of square light tiles shouting Kara's name.)*

*Greg: "Kara!"*

*Kara: "Ahh, I... sorry (she notices Greg taking the light tile stack and grabs it with both hands) "No!" (Greg tugs them back from her grasp. Kara leans over the light tile stack and pulls on the light tile stack.)*

*Greg: "Mine!" (Both children tugging on the stack of light tiles)*

The scarcity of light tiles generated distribution of resources conflict as the children tried to control the available tiles in order to build their structures. Individual goals resulted in disputes around access to and use of the shared light tiles. Conflicts catalyzed by distribution of resources in the indoor setting generally occurred during activities that contained less physical movement such as standing at the light table or sitting at a table playing with plastic dinosaurs, and those that had limited quantities of materials.

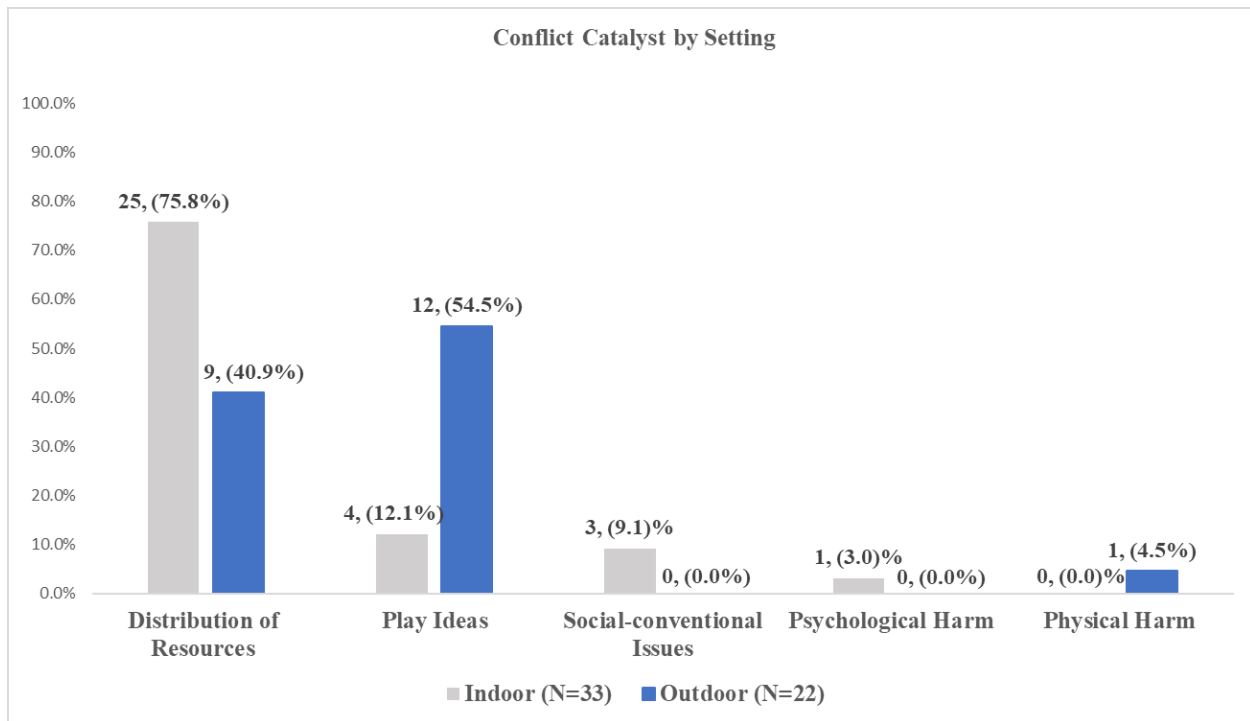
### **Patterns of Conflict Between Indoor and Outdoor Settings**

The third research question sought to understand if any patterns of conflict emerged between the indoor and outdoor settings. We did observe differences in the frequency and locations of conflicts between indoor and outdoor settings. Among the 55 conflict incidents, 22 (60%) were identified in the outdoor setting compared to 33 conflict events (40%) reported in the indoor setting. The location of the conflicts in the outdoor setting was evenly distributed across different areas such as the jumping stump, open play space, stage, mud kitchen, fairy garden, obstacle course, snack table and workbench, while the indoor conflicts largely

occurred at the same places such as the light table (n = 18) and the middle activity table (n = 6).

We observed three types of conflict catalysts in the outdoor setting: play ideas (n = 12), distribution of resources (n = 9), and physical harm (n = 1). We observed four types of catalysts in the indoor setting: distribution of resources (n = 25), play ideas (n = 4), social-conventional issues (n = 3), and psychological harm (n = 1). Thus, play ideas was the main category of conflict catalyst observed in the outdoor setting while distribution of resources was the primary catalyst in the indoor setting. There were differences noted across the two settings in the form of the play ideas conflicts; specifically, in the outdoor space five of the conflicts involved the use of play space, five centered on the type of play, and two were about who would do what, how, when and where. In contrast, only the latter appeared as a type of play ideas catalyst in the indoor setting.

**Figure 3. Frequency of catalyst by setting**



**Discussion**

Although conflict may be viewed by adults as a non-desirable behavior, peer conflict is inevitable during early childhood and is recognized as an important part of the developmental process. Peer conflict has been investigated in previous studies, but rarely in nature-based programs that incorporate an outdoor classroom. Our findings suggest conflict catalyst and frequency vary by setting; thus, these findings add to the literature by filling the gap in understanding peer conflict in a nature-based preschool and a natural outdoor setting.

The main finding of the study raises a key question about whether the difference in primary conflict catalysts between settings is a direct result of the outdoor environment itself. The difference in conflict catalyst by setting may be due to a variety of factors that differ between settings, such as the quantity of resources, available space, lighting, noise level, and activity center participant restrictions. For example, play ideas may be a more prevalent conflict catalyst in the outdoor space due to the wide-open spaces, opportunities for deep sustained play, and abundant supply of loose parts in the form of natural materials (Bohling et al., 2010; Fjørtoft, 2004), as well as the naturally occurring materials that present differently with weather and seasonal changes (Bohling et al., 2010) unlike the prefabricated items and manufactured manipulatives found indoors. Further, the outdoor setting naturally provides new play opportunities allowing for natural objects (e.g., sticks, stones, bark) to be more easily reinvented and play spaces to be reconfigured. This suggests that children may engage in more meaningful conflict situations such as asserting different play ideas rather than merely arguing over the possession of materials.

Our conflict catalyst analysis revealed that distribution of resources (i.e., fairness issues such as violation of sharing, turn taking, grabbing, taking) was the primary catalyst for conflict in the indoor setting, which is consistent with decades of previous studies that established possession-based conflict as the most prevalent among preschoolers in indoor classrooms (Chen et al., 2001; Shantz, 1987). Moreover, this result was not surprising given the observed indoor distribution of resources conflicts were disputes over object possession and ownership generated by a limited supply of an item (e.g., magnetic tiles, tree stump pillow, train engine, icing bag, dinosaur). Further, previous research has asserted that conflicts over distribution of resources are more likely to occur in areas with a single entrance and closed spaces (Ramsey, 1986), and these types of areas are more prevalent in the indoor setting in this study.

Additionally, our findings are different from the previous study by Stack and Nikiforidou (2019) that found nearly equal possession-based disputes in the indoor and outdoor settings. The outdoor environment in their study was a large garden area that adjoined the front and back sides of the main building while our outdoor setting was surrounded by nature and located away from the building. In our study, twenty-five indoor conflicts were due to the distribution of resources compared to only nine in the outdoor setting. Notably almost half of the distribution of resources catalysts in the outdoors were generated by non-nature-based items (e.g., rake, plastic turtle, paint). Children seem to have fewer conflicts over nature-based materials. It might be possible that they view the nature-based materials as part of nature instead of one's possession and therefore, they may be more willing to share with each other. The wide-open spaces might also have contributed to fewer distribution of resources conflicts.

Chen and colleagues (2001) noted age-related patterns of conflict catalysts that suggested distribution of resources conflicts decrease between ages 2 and 5, while play ideas conflicts increase. In our study, this pattern emerged between the two settings, which suggests the natural, outdoor environment may challenge children

to be developmentally ahead. With the same age children, play ideas emerged as the primary catalyst in the outdoor setting but not in the indoor setting. In the outdoor setting, play ideas conflicts were initiated by opposing views on roles in play, types of play in which to engage, and the intended use of items during play. Engagement in symbolic play occurred frequently in the outdoor space as large groups of children engaged collectively in activities such as turning the mud kitchen into a candy shop, and building a school pool with a diving board. Frequent symbolic play created opportunities to discuss participant roles such as who will be which superhero, who will be in charge of cooking, and who will gather the food. These discussions became conflicts when suggestions were met with an opposing view. Often, the observed play discourse was longer and used more advanced vocabulary during play ideas conflicts than during distribution of resources conflicts. Further, the outdoor environment afforded children opportunities to rearrange their surroundings to fit the play frame, generating conflict around item usage such as the use of a plank for creating a ramp to climb onto a wooden spool table as opposed to it being used as a seesaw.

Social-conventional issues were observed only in the indoor setting. These conflicts were due to limitations placed on the number of children allowed at each indoor center. In contrast, because the outdoor setting had fewer centers with restrictions on the number of participants, children had more freedom to gather in larger groups. Previous research (e.g., Bohling et al., 2010) suggests children play collectively in larger groups in the outdoor environment. Play in larger groups was not possible in the indoor setting due to space limitations and participant restrictions. These restrictions set up potential for social-conventional issues conflicts when children desired to enter an activity but the activity center was full.

Our study contributes to the understanding of child development by examining peer conflicts in outdoor nature settings in contrast to the typical conflict study done only in an indoor setting. Engagement in peer conflict is important for child development as it provides children with opportunity to practice conflict management skills and foster moral, social, emotional and cognitive development (Chen et al., 2001; Shantz, 1987; Wheeler, 2004). This study provides insight into the benefits of outdoor nature play and supports increasing children's outdoor free play time as a way to provide opportunity for children to engage in more meaningful conflict. An implication of the study is that the outdoor nature environment seems to provide children more meaningful conflict events around play ideas rather than around the mere possession of materials, which was the catalyst commonly identified in previous literature. Thus, the nature-based outdoor environment is likely to provide more opportunities to practice perspective taking, communication, negotiation, and self-regulation skills. Our findings can be added to the existing literature in support of the additional value of and need for outdoor nature-based experiences (Kuo et al., 2019).

### **Limitations and Future Research**

First, small sample size limits the generalizability of the study findings. Findings may be different in other nature-based preschools due to variety of factors such as class size, adult-child ratios, and teacher certification and experience. Using

multiple nature-based preschools may give better representation. Second, our study only included typically developing children and did not include children with documented disabilities. Malloy and McMurray (1996) noted children with disabilities tend to use conflict strategies not used by typically developing children. Lastly, the presence of the researcher during the data collection may have influenced participants' behavior. Although we did not experience this directly, some children might have been conscious about the presence of the researcher.

Future research can seek to understand the differences in conflict catalyst between the indoor and outdoor settings by more deeply investigating the relationship between the type of catalyst and the type of play (symbolic, constructive, functional) in a nature-based preschool. Additionally, future research could investigate the effects of conflict duration as our data revealed that outdoor conflicts seemed to last longer than indoor conflicts. The longer conflict duration may be related to the higher quality of play afforded by the outdoor environment and/or the ability for children to engage in independent play which may allow them to engage in longer conflict negotiation situations. Future study should also examine conflict in nature-based programs in relation to individual characteristics such as race, gender, language, and disability.

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