



Pros and (con)flikt: Using head-mounted cameras to identify teachers' roles in intervening in conflict among preschool children

Maureen J. Myrtil^{a,b,*}, Tzu-Jung Lin^{a,b}, Jing Chen^c, Kelly M. Purtell^{a,d}, Laura Justice^{a,b}, Jessica Logan^b, Allie Hamilton^a

^a The Crane Center for Early Childhood Research and Policy, The Ohio State University

^b Department of Educational Studies, The Ohio State University

^c Graduate School of Education, Shanghai Jiao Tong University

^d Department of Human Sciences, The Ohio State University

ARTICLE INFO

Article history:

Received 9 July 2019

Received in revised form

20 November 2020

Accepted 30 November 2020

Available online 29 December 2020

Keywords:

Peer conflict

Teacher intervention

Insistent behavior

Lag-sequential analysis

Head-mounted cameras

ABSTRACT

This mixed-methods study's main goal was to examine whether teachers' conflict intervention strategies are contingent upon children's insistence level (i.e., unwillingness or inability to understand others' perspectives) and whether this support leads to different outcomes. An additional goal was to understand teachers' perceptions of peer conflicts and the reasons underlying their decision-making in conflict intervention. A total of 155 peer conflicts were identified in a mixed-age preschool classroom in an urban early-learning center during observations involving 15 preschool children (M age = 47.25 months, SD age = 8.39 months) and three teachers. Peer conflicts were captured using head-mounted cameras worn by the children during naturalistic activities. Peer conflicts tended to occur briefly and frequently, and teachers intervened less than one-half of these conflicts. Findings from a lag-sequential analysis showed that teachers were more likely to intervene in a dyadic conflict when both children exhibited moderate to high insistent behavior. Although teachers mostly used cessation over mediation strategies to intervene, mediation strategies tended to have better outcomes than those without teacher intervention, which were better than cessation strategies. The quantitative findings were triangulated with qualitative evidence from an interview and a stimulated recall conducted with the master teacher, demonstrating that teachers' conflict intervention involves a complex decision-making process. The results are drawn from children's first-person perspective and teacher perceptions and provide a nuanced understanding of peer conflict and teachers' role in facilitating preschool children's conflict resolution.

Published by Elsevier Inc.

1. Introduction

Peer conflict is an important form of social interaction that uniquely contributes to children's development. It demonstrates how children negotiate and collectively construct and maintain peer culture and social organization (Corsaro, 1994; Danby & Baker, 2001; Denham et al., 2013; Hay & Ross, 1982; Maynard, 1985). Moreover, conflict within early childhood classrooms is critical in that it may provide young children with an opportunity to develop their perspective-taking skills and social understanding (Eisenberg & Garvey, 1981; Killen, 1995; Malloy & McMurray, 1996; Rende & Killen, 1992; Thornberg, 2006). How children respond to and manage conflict impacts how the conflict partner responds

and the subsequent outcomes (Dunn & Slomkowski, 1992; Killen & Turiel, 1991; Laursen & Hartup, 1989; Ross & Conant, 1992; Vespo & Pederson, 1995). Research demonstrates that children who can develop mutually agreeable solutions are more likely to form and maintain friendships (Hay et al., 2004; Thornberg, 2006). Conversely, young children who are unwilling or unable to recognize others' perspectives and to resolve the situation amicably are considered to show *insistent* behavior and tend to demonstrate difficulties in their social relationships (Chen, 2003; Gower et al., 2014; Sebanc, 2003; Shantz, 1986).

Preschool teachers are key social agents who can support or hinder children's learning of adaptive approaches in resolving peer conflicts. Still, few studies have examined early childhood teachers' intervention strategies during peer conflict (Blunk et al., 2017; Chen, Fein, Killen, & Tam, 2001; Church et al., 2018; Doppler-Bourassa et al., 2008; Roseth et al. 2008; Spivak, 2016; Vestal & Jones, 2004). While the available research provides valuable infor-

* Corresponding author.

E-mail address: myrtil.1@osu.edu (M.J. Myrtil).

mation about the nature and frequency of teachers' intervention strategies, questions regarding the contingency between when teachers choose to intervene, what influences them to intervene, and their effects on children's conflict outcomes remain unknown. The current study used a micro-level video observation approach featuring head-mounted cameras and a lag-sequential analysis to examine the patterns of naturally-occurring conflicts in a preschool classroom to address this literature gap. This paper also addresses the need for more qualitative evidence of early childhood teachers' perceptions of peer conflict and the factors driving their conflict intervention approach. In the present study, the quantitative findings were triangulated with qualitative evidence from a teacher interview and a stimulated recall to understand teachers' perceptions and the factors influencing their conflict intervention strategies. This mixed-methods study's overarching goal was to inform developmentally appropriate teacher conflict intervention strategies that may facilitate better conflict resolution of peer conflicts.

1.1. Dyadic Peer Conflicts in Preschool Classrooms

Dyadic peer conflicts are characterized as events in which two individuals have incompatible needs and/or desires (Hay, 1984). Importantly, these conflicts are defined in this study by at least one child who recognizes this discordance and perceives it as problematic. A dyadic peer conflict event typically begins when one child does or says something, whether intentional or not, to which the second child protests.

The term conflict was used broadly in the present study to encompass any perceived inequity evidenced by the displayed initial protest. We distinguish between *mutual* and *unilateral* conflicts. Mutual conflict is measured by exchanges in which the first child attempts to influence a second child, and the second child opposes this attempt. Unilateral conflict is defined in the present study as an event where the first child attempts to influence a second child who does not reciprocate with opposition.

Studies of peer conflict have demonstrated consistent patterns related to the nature of preschoolers' conflict. For example, peer conflict among children most commonly arises from the possession of an object or toy (Hartup et al., 1988; Malloy & McMurray, 1996). Peer conflicts among young children may also stem from the intrusion of personal body space, course of escalating the terror, course of play conflict, violation of classroom rules and routines, and physical aggression (Danby and Baker, 2001; Spivak, 2016).

Peer conflict may differ based in part on children's characteristics. The extant literature generally suggests that boys tend to display more physically aggressive behaviors and less constructive, prosocial strategies than girls (Murphy & Eisenberg, 2002; Ostrov & Crick, 2007). Children's age is also associated with peer conflict. Specifically, the rate and duration of peer conflict generally decrease with age, which is related to advances in children's attachment security and social information-processing skills (Cordoni et al., 2016; Raikes et al., 2013; Westlund et al., 2008).

1.2. Insistent Behavior and Conflict Outcomes

Research into peer conflict has shown that a child who demonstrates a lack of ability or willingness to compromise, characterized as being *insistent*, is more likely to face a partner standing firm in his or her requests (Ashby & Neilsen-Hewett, 2012; Caplan et al., 1991; Singer et al., 2012). Levels of insistence can range from non-insistence (e.g., reasoning and conciliatory strategies) to high insistence (e.g., physically aggressive behaviors). Children's use of higher insistent strategies tends to escalate conflict and result in more intense and prolonged interactions (Chen et al., 2001; Ross and Conant, 1992). Conflict episodes in which children demonstrate

non-insistent behaviors such as compromising and reasoning, in comparison, tend to de-escalate over time naturally and are generally less intense (Sackin & Thelen, 1984).

There is consistent evidence that preschool children tend to demonstrate insistent behavior during conflict, which often results in Win-Lose outcomes (Eisenberg & Garvey, 1981; Hartup et al., 1988), or conflicts where only one child obtains his or her desired outcome. In contrast, peer conflict that consist of more conciliatory behaviors are more likely to result in Win-Win outcomes in which both partners get their desired objectives (Perry et al., 1992; Ross and Conant, 1992). The level of insistence during peer conflict also affects whether children engage in peaceful or negative interactions after the conflict. Evidence suggests that interactions following conflicts involving conciliatory strategies are more likely to be peaceful than those with more insistent behaviors (Sackin & Thelen, 1984; Spivak, 2016).

1.3. Teachers' Conflict Intervention Strategies

Many researchers have sought to characterize teachers' influence during peer conflict and understand the impact teachers have on preschoolers' conflict outcomes. This research indicates that teachers typically respond to peer conflict using one of two strategy attempts: cessation or mediation (Bayer et al., 1995; Church et al., 2018; Silver & Harkins, 2007). *Cessation*, or high power strategies, refers to strategies that involve external management of conflict. This approach includes teachers giving directions, providing warnings and reminders of classroom rules, separating children, providing simple objections, or solving the conflict without involving either party. These strategies differ from *mediation* or intervening methods in which teachers allow children to explain the underlying reason for the conflict, generate possible solutions, or implement mutually agreed-upon solutions.

In general, researchers have shown that early childhood teachers are more likely to respond to peer conflict using cessation over mediation strategies (Chen et al., 2001; Malloy & McMurray, 1996; Singer & Hännikäinen, 2002). The intervention strategy used by teachers is important in that it may influence the outcome of conflicts. The extant literature demonstrates that teachers' use of mediation strategies is more likely to result in a positive outcome for either one (Win-Lose) or both children (Win-Win) in the conflict event. Given that cessation strategies are more likely to involve the separation of peers or removal of objects, this intervention method most often results in Lose-Lose outcomes. Still, other studies have found an overall negative association or no relation between teacher intervention and conflict outcomes (Roseth et al., 2008; Spivak, 2016; Verbeek & de Waal, 2001). These mixed findings are likely a result of the variation in how this association was measured (e.g., presence or absence vs. the type of strategy used) and how the impact variables were defined (e.g., outcomes vs. nature of post-conflict interaction). For this study, we investigated whether teachers' use of an intervention strategy and the type of intervention strategy used is associated with various post-conflict outcomes. This study allows a more thorough and detailed understanding of teacher intervention's impact to inform recommendations on developmentally-appropriate approaches to intervening in peer conflict.

1.4. Methodological Considerations in Measuring Peer Conflict

To date, research on peer conflict in early childhood has mostly been examined descriptively. Largely understudied, though, is the temporal contingencies between the issues, behavior, and preschoolers' conflict outcomes. A lag-sequential analysis is a technique used to determine whether certain events are more likely to occur in the sequence above the chance level (Bakeman &

Gottman, 1997). A few studies have used this approach to examine young children's conflict (Pepler et al., 1998; Rende & Killen, 1992). However, some of these studies were conducted in a semi-structured setting. Furthermore, none of them have simultaneously considered the roles of teachers' conflict intervention strategies and children's insistent behavior and the conflict outcomes. Understanding the contingencies among these factors in a naturalistic setting may be useful in providing support to help teachers manage peer conflicts in the classroom.

Additionally, given the impact of teacher intervention on conflict outcome, it is also essential to understand teachers' perspectives on when and how they intervene. To date, very few studies have explored early childhood teachers' perceptions of peer conflict and decision-making regarding conflict intervention (Blunk et al., 2017; Clarke et al., 2019; Malloy & McMurray, 1996; Spivak, 2016). We conducted a mixed-methods study (Creswell & Clark, 2018) to address this research gap, using qualitative evidence collected from a teacher interview and a stimulated recall. The goal was to provide further insight into the quantitative results of the temporal sequence between children's insistent behavior, teachers' conflict intervention, and conflict outcomes.

Another methodological limitation of the current literature is the type of observational methods used to capture peer conflict. The use of stationary cameras may limit the quantity and type of conflict episodes naturally occurring within the classroom. Furthermore, even with multiple cameras used, these devices are often placed at a distance to prevent disturbing the classrooms' natural occurrences. In turn, microphone devices are often needed to capture any speech that may otherwise be inaudible, which may inhibit the codings' accuracy. To address this issue, every participant in the present study wore a head-mounted camera during their routine classroom interactions. With this approach, we aimed to obtain a more advantaged vision than most camera setups and to capture conflicts from a first-person perspective.

1.5. The Present Study

This mixed-methods study's primary aim was to obtain a more detailed examination of peer conflict within a preschool classroom. Since the social dynamics within mutual and unilateral conflicts might differ, the two types of conflict were analyzed separately. The current quantitative investigation asked three research questions. First, what are the characteristics of naturally occurring dyadic peer conflicts and teachers' conflict intervention strategies within the preschool classroom? We hypothesized that peer conflicts are more likely to occur due to object disputes and to result in Win-Lose outcomes. Further, children would mostly use highly insistent behaviors, and teachers would most often respond with cessation strategies. Second, are teachers' conflict intervention strategies contingent upon children's insistent behavior? We hypothesized that teachers' intervention strategies would be dependent on children's insistent behaviors during peer conflicts. Finally, are peer conflicts intervened by teachers more likely to result in positive or negative conflict outcomes than peer conflicts without teacher intervention? We hypothesized that mediation strategies would be more likely to lead to positive conflict outcomes and less likely to lead to negative conflict outcomes than cessation strategies or no teacher intervention.

This study's secondary aim was to understand teachers' perspectives of peer conflict and conflict intervention to explain further the quantitative findings. We conducted a teacher interview to probe into teachers' perceptions of peer conflict and conflict intervention and used stimulated recall using video clips collected from classroom observations to gain insight into teachers' decision-making process when intervening.

2. Method

2.1. Participants

Participants were preschool children and their teachers (one master teacher, two lead teachers, all-female) from a mixed-age classroom in a non-profit urban early-learning center located in a large Midwestern city. Classrooms in this center operate on a full day (10 h) and a year-round schedule. The two lead teachers worked under the supervision and direction of the classroom master teacher, who is the instructional lead. The early-learning center blends various funding streams at the local, state, and federal levels to provide services to children from diverse socioeconomic backgrounds. All of the classroom teachers had an associate's degree or higher in a relevant field (e.g., early childhood education) and between 2 and 5 years of teaching experience in preschool.

The study had 17 children consented to participate in the study. Two of them were absent throughout the classroom observation period and not included in this study. One student was absent on the date selected to wear a camera but was present in other children's videos. The study contained 15 children; 10 (67%) were boys, and 5 (33%) were girls. Children ranged in age from 36.2 to 59.4 months ($M = 47.3, SD = 8.4$). Eleven (73%) of the children were African American, non-Hispanic, per parent report, and three children (20%) were identified as White, non-Hispanic, and one child as Other (7%). Most of the mothers of children in the current study (67%) held at least a bachelor's degree.

2.2. Data Collection

Data collection for the quantitative analysis occurred over a four-day period in the fall of the academic year. Video recordings were obtained from the master teacher and children who wore a head-mounted camera. Approximately 1 h of observation was obtained both in the morning and in the afternoon each day.

The master teacher introduced the children to the head-mounted cameras by taking brief turns holding the device during circle time before the week of data collection. During the study, three to four children were randomly chosen to wear the camera each day until each of them had worn the camera on one of four days of observation. If the target child was not present or available at the beginning of the morning recording window (within thirty minutes), another consented student was randomly chosen to wear the camera during that day's observation. The original target child was scheduled to wear the camera on a later day. The master teacher wore the camera each day during both recording windows. While only the master teacher wore the camera, the intervention strategies were coded when demonstrated by any three teachers captured in the videos.

Prior to recording, research assistants adjusted the head-mounted camera angle to capture the visual field directly in front of the child or teacher. All video recordings occurred in the naturalistic classroom setting during mornings when children engaged in circle-time and center-time activities. During afternoons, children had snacks and time for free play. All children in the classroom wore a label with their identification number attached to their clothing's front and back to help identify them later while reviewing the video. Conflicts were identified from the recordings of target children's cameras to capture peer conflicts from children's viewpoints.

The second author coordinated an audio-recorded interview and stimulated recall with the master teacher approximately one year after the classroom observations were conducted. The first two authors primarily developed the questions for the teacher interview. The teacher interview and stimulated recall were approximately one hour in length and occurred during the teacher workday. During the stimulated recall, video recordings

of two different teacher-intervened conflicts were viewed by both the interviewer and the master teacher. Notably, both conflicts occurred within minutes of each other, involved the same dyadic group, and were intervened by the master teacher. After watching the video clips, the interviewer asked the master teacher what she observed and discussed the teacher's approach to intervening in both conflicts. The stimulated recall interview was unstructured to allow the teacher to form her thoughts regarding the reasoning behind her actions freely.

2.3. Coding Peer Conflict and Teachers' Conflict Intervention Strategies

The current study focused on peer conflicts between dyads. Conflict events involving more than two children occurred in less than five instances and were not coded. Each conflict event was categorized as either mutual or unilateral. A conflict event was called to an end when one of the following situations occurred: the children reached an agreement, one or both children left the activity, or the conversation related to the conflict was altered or not resumed. The conflict event was coded by randomly selecting one of the videos if any two target children wore the camera while being involved in the same conflict event.

Each conflict event was coded in the following aspects: (1) general characteristics, including children's role in the conflict (protestor, reactor), conflict attempt, dyad gender, adult/teacher location, and teacher intervention (i.e., presence vs. absence); (2) issue of the conflict, such as object/toy dispute; (3) level of protestor and reactor's insistent behavior (high, moderate, low, non, and not applicable); (4) teachers' conflict intervention strategy (cessation, mediation, and no intervention) and; (5) conflict outcome (Win-Win, Win-Lose with peaceful interaction, Win-Lose with negative interaction, Lose-Lose, and Undetermined). Multiple existing coding schemes in the literature informed the present study (Chen, 2003; Hay, 1984; Laursen & Hartup, 1989; Malloy & McMurray, 1996; Sackin & Thelen, 1984; Shantz, 1986; Spivak, 2016). Except for adult/teacher location, all coding categories were mutually exclusive. If multiple issues were observed during the conflict (e.g., space/territorial dispute and intrusion of personal body space), the issue that was most frequently noted was coded. Table 1 presents the definitions and examples of codes.

The principal coder was the first author, who identified all of the conflicts. The second author reviewed the coded events, and disagreements were resolved through weekly discussions. To verify the coding reliability, a trained research assistant who was blind to the research objectives was trained and independently coded 20% of the conflicts. The interrater reliability is reported in Table 1.

2.4. Quantitative and Qualitative Data Analysis

Our primary analysis focused on quantitative data. A lag-sequential analysis (LSA; Bakeman & Gottman, 1997) was used to examine the temporal actions involved in peer conflicts in the classroom, specifically coding the insistence of children's behavior, whether and to what extent the teacher intervened, and the observed outcome of each conflict. The level of analysis was each observed conflict. The level of contingency was determined by transitional probability (TP), the probability that event B occurs given the occurrence of event A. The effect size of the sequential association was based on Yule's Q (Yoder & Feurer, 2000; Yoder et al., 2004). Yule's Q ranges from -1 to 1, positive values suggesting that observed sequential frequencies greater than expected frequencies, and negative values indicating observed sequential frequencies less than expected frequencies (Yoder & Symons, 2010). Each conflict contained three sets of sequential codes: dyadic insistent behavior,

followed by a teacher's conflict intervention strategy, followed by conflict outcomes.

To keep the codes of LSA parsimonious and derive more interpretable findings, we classified dyadic insistent behavior into two categories: *moderate to high insistence*, referred to when both the protestor and reactor displayed moderate or high insistent behavior, or *low or mixed insistence* when at least one of the children in the dyad displayed non-insistence or low insistent behavior. It is important to note that no low-low insistent behaviors were observed in the study; thus, this category was not coded. The teachers' conflict intervention included three types: cessation, mediation, and no intervention. If a teacher used multiple intervention strategies during a mutual conflict, the more sophisticated strategy (i.e., a strategy toward mediation) was chosen to represent the teacher intervention strategy used to resolve the dispute. Conflict outcomes were recoded into two categories: *positive conflict outcome*, including Win-Win outcomes and Win-Lose outcomes with peaceful interaction, and *negative conflict outcome*, including Win-Lose outcomes with negative interaction and Lose-Lose outcomes. The three sets of codes were mutually exclusive and exhaustive (Bakeman & Gottman, 1997).

A set of semi-structured teacher interview questions were developed by researchers in the present study using a deductive approach in which questions were developed based on literature and our research aims. Two themes then organized these questions: teacher perception of peer conflicts (Research Question 1) and teacher conflict intervention strategies (Research Questions 2 and 3) (see Appendix A for the interview protocol). Open-ended prompts were also used to elicit more expanded responses. The reason for using this method was that the intent was not to generate new themes for literature but instead to determine if the teacher's perspective could provide a more nuanced understanding of the quantitative data collected. The interviewer then engaged the master teacher in a stimulated recall process (Lyle, 2003). The master teacher watched a four-minute video segment containing two mutual conflicts that she intervened and was asked to explain what happened during the recorded events. The stimulated recall was intended to elicit the teacher's reasoning behind her conflict intervention strategies (Meade & McMeniman, 1992). The authors chose the video segments because it presented two teacher attempts to intervene in peer conflicts, and the attempts revealed intriguing shifts between the use of mediation and cessation strategies. The teacher interview and stimulated recall were analyzed using a case study methodology (Stake, 1995), which allows us to explore the teacher's perceptions of peer conflicts and conflict intervention strategies in a holistic way.

3. Results

This section reports our quantitative findings regarding descriptive characteristics of mutual and unilateral conflicts and the associated teacher intervention strategies, followed by results from the lag-sequential analyses regarding the contingency between insistent behavior, teacher intervention, and conflict outcomes within mutual and unilateral conflicts.

3.1. Descriptive Characteristics of Peer Conflict and Teachers' Intervention Strategies

3.1.1. Mutual Conflicts

A total of 87 mutual conflicts were identified from children's video recordings across the four-day observation (Table 2). On average, a target child (i.e., a child wearing a camera) was involved in 5.8 mutual conflicts ($SD = 5.1$) as a protestor or a reactor across the morning and afternoon sessions. A mutual conflict typically lasted

Table 1
Dyadic Peer Conflict Coding Scheme.

Aspect	Coding category	Definition	Examples	Cohen's kappa (k)
General characteristics of the conflict event	Child's role (protester vs. reactor)	Protestor: The child who is protesting the conflict issue. Reactor: The child who is the target of the opposition.	"Why are you over here? You can't play at this table." "Yes, I can. Mrs. Lee said I could play over here."	0.94
	Conflict attempt	Mutual conflict: One child verbally or physically protests, opposes, resists, or retaliates the action of another child who responds in turn with counter-opposition. Unilateral conflict: One child verbally or physically protests, opposes, resists, or retaliates the action of another child who does not respond with counter-opposition.	Protestor: "These are my Legos." Reactor: "No, they are not." Protestor: "No. You are too little to play with us." Reactor: (continues to interact with the other children at the table with no response to the protestor)	0.91
	Dyad gender	Mixed gender: Conflict episode involving a mixed-gender dyad. Same gender-boy: Conflict episode involving a same-gender (male) dyad. Same gender-girl: Conflict episode involving a same-gender (female) dyad.	–	0.94
	Adult/teacher location	Adult/teacher present within three feet of the target child (master teacher, lead teacher, another adult, no adult).	–	0.94
Issue of the conflict	Teacher intervention	At least one teacher within the classroom (i.e., master teacher or lead teachers) intervenes during the conflict episode.	–	0.91
	Object/toy dispute	Conflict over the possession of an object or toy.	"That's my Lego house."	0.89
	Social-conventional	Conflict over violation of class/school rules.	"Only teachers can touch that. Stop."	
	Space/territorial dispute	Conflict over space or territory.	"This is our table. You have to work over there."	
	Intrusion of personal body space	Conflict over invading personal body space.	"Stop touching my hair."	
	Course of play conflict	Conflict over idea, action, or inaction	"No. I'm the dad, and you're the brother." (while playing with puppets)	
	Physical harm	Harm and control through physical damage.	A child punches/kicks another student	
Relational harm	Communication intended to hurt another person, or a communication perceived as having that intent.	"You are a big baby."		
Level of insistent behavior (coded separately for protestor and reactor)*	High insistence	The child uses physical force to impose physical or psychological harm with or without verbal assertions.	"That's my race car." (kicks peer)	0.91 (target student; i.e., student wearing the head-mounted camera)
	Moderate insistence	The child uses firm and direct verbal or non-verbal behavior to express their own needs and simple verbal commands without physical assertions.	"But I want to play with it too."	0.83 (other student)
	Low insistence	The child uses non-physical, indirect, or passive behavior to resolve a conflict.	"I want the red Lego." (clutches the red Lego and hands the other child a blue Lego)	
	Non-insistence	The child uses reasons, explanations, justifications, or conciliatory behaviors (e.g., apology) to resolve a conflict.	"How about we take turns? I can use it for one minute, and then you can use it."	
	Not applicable	When the child does not respond in turn to another child who verbally or physically protests, oppose, resist, or retaliate their actions/behavior.	"I want to be the cashier." (walks away without responding to or acknowledging the protest of the other child)	
Teachers' conflict intervention strategy	Cessation	Examples include a teacher giving directions, providing warnings and reminders of classroom rules, separating the children, providing simple objections, solving the conflict for the children without involving either party and modeling verbal or behavioral responses without providing a rationale.	"This seems to be tricky for you both. Friends can only play with one bubble wrap at a time. If she takes the bubble wrap from you, you can say 'I don't like it when you take things from me without asking.'"	0.89
	Mediation	Examples include a teacher allowing children to explain the underlying reason for the conflict, generate possible solutions, and implement mutually-agreed-upon solutions.	"What happened over here? Ok, so what do you think we can do to fix this situation?"	

Table 1 (Continued)

Aspect	Coding category	Definition	Examples	Cohen's kappa (k)
Conflict outcome	No Intervention	No intervention strategy is implemented.	–	0.83
	Win-Win	Both partners compromised and achieved alternate goals.	–	
	Win-Lose with peaceful interaction	One partner achieved his/her goal, and the other lost or compromised on his/her original goal through a peaceful interaction (e.g., prosocial behavior, apology).	–	
	Win-Lose with negative interaction	One partner achieved his/her goal, and the other lost or compromised on his/her original goal through a negative interaction (e.g., anger, distress, agitation).	–	
	Lose-Lose	Neither partner achieved the desired objective or solution.	–	
	Undetermined	The outcome is undetermined when there is an unsuccessful conflict attempt because one child did not verbally or physically protest, oppose, resist, or retaliate in turn.	–	

*Note: For each non-teacher intervened event, the behavior of the last turn within the episode was coded. For teacher-involved episodes, the more insistent behavior of the two turns immediately prior to the time when a teacher intervened was coded.

Table 2
Characteristics of Peer Conflicts and Teachers' Intervention Strategies.

	Mutual conflicts (n = 87)		Unilateral conflicts(n = 68)	
	n	%	n	%
Session				
AM	38	43.7	28	41.2
PM	49	56.3	40	58.8
Dyad gender				
Boy dyad	62	71.3	52	76.5
Girl dyad	9	10.3	7	10.3
Mixed-gender dyad	16	18.4	9	13.2
Boys as the protestors	7	43.8	5	55.6
Conflict issues				
Object dispute	36	41.4	22	32.4
Course of play conflict	28	32.2	33	48.5
Space dispute	10	11.5	5	7.4
Violate social-conventional rules	6	6.9	4	5.9
Intrusion of personal body space	1	1.1	1	1.5
Physical harm	1	1.1	1	1.5
Relational harm	5	5.7	2	2.9
Teacher present & intervention strategies				
No teacher present	49	56.3	39	57.4
At least one teacher present	38	43.7	29	42.6
No intervention	19	50.0	21	72.4
Cessation	14	36.8	6	20.7
Mediation	5	13.2	2	6.9
Insistence level of the dyad				
Moderate or high for both children	67	76.9		
Mixed insistence level within dyads				
High-Non	1	1.1	–	–
High-Low	1	1.1	–	–
Mod-Non	8	9.2	–	–
Mod-Low	8	9.2	–	–
Low insistence for both children	2	2.3	–	–
Moderate to high for the protestor while not applicable for the other child	–	–	66	97.1
Not applicable for both children	–	–	2	2.9
Conflict outcomes				
Win-Win	1	1.1	–	–
Win-Lose with peaceful interaction	26	29.9	–	–
Win-Lose with negative interaction	31	35.6	–	–
Lose-Lose	29	33.3	–	–
Undetermined	–	–	68	100

for 28.5 s (SD = 26.7 s, range = 3–115 s). A total of 38 mutual conflicts were observed in the morning sessions and 49 conflicts in the afternoon sessions. Fig. 1 displays the frequency with which each child was either a protestor or reactor during mutual conflicts. The distribution of mutual conflicts among individual children was not uniform, as three boys initiated 47.1% of the mutual conflicts throughout the four-day observation. At the same time, these three

boys were also the reactors of more than one-half (51%) of the mutual conflicts (Fig. 1).

Of the coded mutual conflicts, 71.3% (n = 62) occurred in same-gender boy dyads, 10.3% (n = 9) in same-gender girl dyads, and 18.4% (n = 16) in cross-gender dyads. Among these cross-gender dyads, 43.8% (n = 7) of the protestors were boys, while the rest (n = 9) were girls. Regarding issues of conflict, 41.4% (n = 36) of the mutual

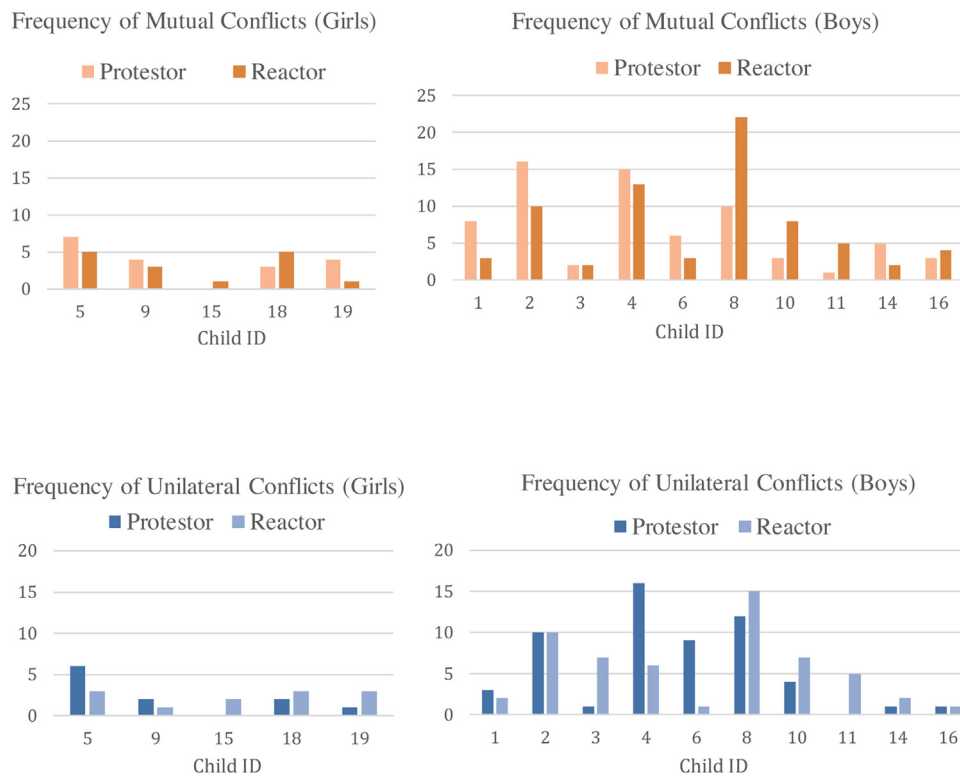


Fig. 1. Frequency of Children's Conflict Involvement.

conflicts were related to object dispute, 32.2% ($n = 28$) related to course of play conflict, 11.5% ($n = 10$) space/territorial dispute, 6.9% ($n = 6$) violation of social-conventional rules, 1.1% ($n = 1$) intrusion of personal body space, 1.1% ($n = 1$) physical harm, and 5.7% ($n = 5$) relational harm. Approximately 43.7% ($n = 38$) of the mutual conflicts occurred while one or more teachers were within three feet of the target children. Out of these conflicts, the teachers intervened 50% ($n = 19$) of the time. Among the 19 conflicts intervened by the teachers, 73.7% ($n = 14$) involved a cessation strategy, and the rest ($n = 5$) involved a mediation strategy.

Among the 87 mutual conflicts, approximately 77.0% ($n = 67$) of the events involved moderate to high insistent behavior from both the protector and the reactor, and the other 23.0% ($n = 20$) of the mutual conflicts involved low or mixed insistent behavior (high-non insistence: $n = 1$; high-low insistence: $n = 1$; moderate-low insistence: $n = 8$; moderate-non insistence: $n = 8$; non-non insistence: $n = 2$). Only 1.1% ($n = 1$) of mutual conflicts resulted in a Win-Win outcome, 65.6% ($n = 57$) resulted in a Win-Lose outcome, and 33.3% ($n = 29$) resulted in a Lose-Lose outcome. Among the Win-Lose outcomes, 45.6% ($n = 26$) involved peaceful interactions and 54.4% ($n = 31$) involved negative interactions.

3.1.2. Unilateral Conflicts

A total of 68 unilateral conflicts were identified from children's video recordings across the four-day observation (Table 2). On average, a target child was involved in 4.53 unilateral conflicts ($SD = 4.41$) as a protector or a reactor across the morning and afternoon sessions. The average length of a unilateral conflict was 11.54 s ($SD = 12.34$ s, range = 1–59 s), which was slightly shorter than a mutual conflict.

A total of 28 unilateral conflicts were observed in the morning sessions and 40 conflicts in the afternoon sessions. The distribution of unilateral conflicts among individual children was not uniform. Three boys were the protectors of 55.9% of the unilateral conflicts throughout the four-day observation. At the same time, two of them

were the most frequently observed reactors of all the unilateral conflicts (36.8%; Fig. 1).

Approximately 76.5% ($n = 52$) of the unilateral conflicts occurred in same-gender (boy) dyads, 10.3% ($n = 7$) in same-gender (girl) dyads, and 13.2% ($n = 9$) in cross-gender dyads. Among these cross-gender dyads, 55.6% ($n = 5$) of the protectors were boys, and the rest ($n = 4$) were girls. Regarding issues of conflict, 48.5% ($n = 33$) of the unilateral conflicts were related to course of play conflict, 32.4% ($n = 22$) related to object dispute, 7.4% ($n = 5$) space/territorial dispute, and the rest ($n = 8$) related to violation of social-conventional rules, intrusion of personal body space, physical harm, or relational harm.

Approximately 43% ($n = 29$) of the unilateral conflicts occurred while one or more teachers were present within three feet from the target children. Out of these conflicts, the teachers intervened 27.6% ($n = 8$) of the time. Among the eight unilateral conflicts intervened by the teacher, approximately 75% ($n = 6$) involved a cessation strategy, and the rest involved a mediation strategy.

Among the 68 unilateral conflicts, 97.1% of the time, the protector displayed a moderate or high level of insistent behavior while the other child's insistence level could not be determined due to ignorance of the conflict. The researchers could not determine the outcome of unilateral conflicts because one of the children, whether intentional or not, ignored the conflict or did not attempt to resolve it.

3.2. Contingency and Influence of Teachers' Conflict Intervention Strategies During Peer Conflict

3.2.1. Mutual Conflicts

To address the second research aim, examining whether teachers' conflict intervention strategies are contingent upon children's insistent behavior, we conducted a lag-sequential analysis. Fig. 2 provides a visual depiction of the results of this analysis. The two boxes at the left indicate the instigating action for the conflict and whether it was moderate to high insistent behavior or low-

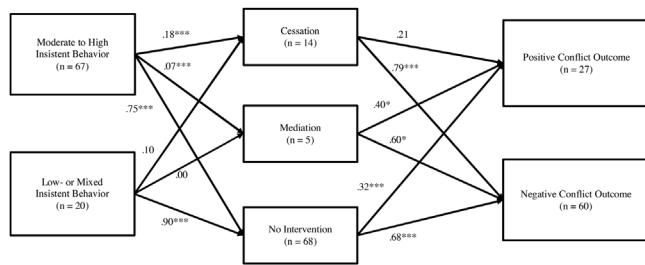


Fig. 2. Lag-Sequential Model of Mutual conflicts.
 Note: Path coefficients are transitional probabilities.
 * $p < .05$. ** $p < .01$. *** $p < .001$.

and mixed insistent behavior (recall these are mutually exclusive categories). Next, the path from children’s insistent behavior and teachers’ intervention strategies are presented. Finally, the figure presents the path from teachers’ intervention strategies to children’s conflict outcomes. The results of the lag-sequential analysis (Fig. 2) showed that when children exhibited moderate to high insistent behavior during a mutual conflict, the probability that teachers did not intervene in the conflict (TP = .75, $p < .001$, Yule’s $Q = .93$) was greater than the probability of teacher intervention. When teachers did intervene a mutual conflict, they were more likely to intervene using cessation strategies (TP = .18, $p < .001$, Yule’s $Q = .91$) than mediation strategies (TP = .07, $p < .001$, Yule’s $Q = .99$). When children exhibited low or mixed insistent behavior, teachers tended not to intervene the conflict (TP = .90, $p < .001$, Yule’s $Q = .94$); when they did intervene, the teachers always used cessation strategies, although the transitional probability was not significant (TP = .10, $p = .34$, Yule’s $Q = .36$).

Regarding whether peer conflicts intervened by the teacher using either cessation or mediation strategies are more likely to result in positive or negative conflict outcomes compared to peer conflicts without teacher intervention, the results of LSA showed a greater likelihood for a peer conflict to result in a negative conflict outcome than a positive conflict outcome regardless of teacher intervention (cessation strategies: TP_{negative outcome} = .79, $p < .001$, Yule’s $Q = .87$; TP_{positive outcome} = .21, $p = .16$, Yule’s $Q = .43$; mediation strategies: TP_{negative outcome} = .60, $p < .05$, Yule’s $Q = .68$; TP_{positive outcome} = .40, $p < .05$, Yule’s $Q = .72$; no intervention: TP_{negative outcome} = .68, $p < .001$, Yule’s $Q = .93$; TP_{positive outcome} = .32, $p < .001$, Yule’s $Q = .89$). Notably, the TP between teachers’ mediation strategies and positive outcomes was slightly higher, but with smaller effect sizes, compared to the TP between no teacher intervention and positive outcomes. The TP between teacher’s cessation strategies and positive outcomes was not significant.

3.2.2. Unilateral Conflicts

All of the unilateral conflicts involved a child not responding to the protestor’s request (coded as ‘not applicable’ in insistent behavior). Consequently, these unilateral conflicts yielded undetermined conflict outcomes. The protestor’s insistent behavior was moderate to high in all but two unilateral conflicts. A lag-sequential analysis was conducted to examine the temporal relationship between students’ insistent behavior and teachers’ intervention strategies during unilateral conflicts. The results showed that teachers tended not to intervene the unilateral conflict (TP = .88, $p < .001$, Yule’s $Q = .99$); when teachers did intervene a unilateral conflict, they seemed to be more likely to intervene using cessation strategies (TP = .09, $p < .001$, Yule’s $Q = .99$) than mediation strategies (TP = .03, $p < .05$, Yule’s $Q = .99$).

3.3. Teacher Interview and Stimulated Recall

The study’s qualitative analysis was designed to enrich our understanding of the quantitative findings described thus far. Illustrative quotations from the master teacher are included throughout the section.

3.3.1. Perception of Peer Conflict (Research Question 1)

The master teacher stated that she tended to rely on explicit social cues in attending to peer conflict. She indicated that “children’s face can change from laughing and interacting to being very angry,” and that children “may become physical and you can see little hands flying, little feet flying, and things flying around.” Interestingly, although these social cues are typically indicative of insistent behaviors, our quantitative findings demonstrated that teachers were more likely not to intervene than intervene during conflicts where the dyads exhibited moderate to high insistence. During the interview, the teacher never explicitly brought up the distinction between unilateral and mutual conflicts other than how she identified escalated conflicts based on salient social cues. Regarding the nature of conflicts, the teacher noted that peer conflicts mostly involve “gaining access to an area or materials,” which directly aligned with our quantitative findings regarding mutual conflicts. However, she also noted that other factors could affect the rates at which children engage in conflicts. For example, lack of essential needs, temperament, language skills, motor skills, or home environments (e.g., parents are filing for divorce).

The teacher did not believe there to be any gender or age difference in the frequency with which children engage in conflict. Instead, she considered the factors outlined above as highly likely to overshadow these internal characteristics. As demonstrated by the quantitative analysis, our findings show that peer conflicts mostly occurred between boys across mutual and unilateral conflicts. As discussed by the teacher, though, future studies may be necessary to tease apart how environmental factors may moderate the degree to which children engage in conflict. With regards to her opinion on the benefits of peer conflict, the teacher believed that peer conflict is important because it teaches children “not only how to fix the situation but how to sit with their emotions [and] that you have to be mad and appropriately show that.”

3.3.2. Conflict Intervention Practices (Research Questions 2 and 3)

The teacher described effective teacher intervention as striving “to make sure that [she] is listening to both children so that both children feel heard . . . [and] so that they know that both sides are valued.” She further shared the importance of “asking them for a solution [because] . . . when they both buy into it, it gives them ownership . . . and outcomes are better for both people.” The teacher also indicated that as teachers provide children the opportunity to resolve conflicts, they should also continue to monitor and intervene immediately if the conflicts escalate. In this way, she believes that children are given opportunities to become independent and autonomous. This intervention approach seems to contradict our quantitative research findings. Similar to the extant literature, the present study’s teachers were more likely to use cessation rather than mediation strategies when they intervened, regardless of insistent characteristics exhibited by the dyads. To the master teacher, a maladaptive way to intervene in conflicts is to order what children do, which is the type of strategy that was typically observed in the present study, as indicated by our quantitative analysis. As she reasoned and our quantitative data supported, this form of teacher intervention often leads to adverse conflict outcomes.

In her classroom, she and the other two teachers always ensure that they are evenly spread around the classroom. In discussing teacher presence during peer conflicts, the master teacher empha-

sized that although the teachers cannot intervene in all peer conflicts, they “all are pretty in-tune” knowing their children and the cues they may exhibit that indicate conflict. She said that some kids “might be sitting there bending and whispering, that is a visual cue that what is happening probably isn’t okay, but that’s not for every child.”

The master teacher believes most peer conflicts are within children’s capabilities to resolve on their own, such as making a plan to play with a toy. However, she found it necessary for teachers to intervene in a conflict “if a child is unsafe to themselves or others.” Another situation that requires the teacher’s intervention is when children have been trying to resolve the conflict but in vein (e.g., moderate-level insistent behavior). Through conflict resolution, she believes that children can learn mutual respect, emotional regulation, and understand the causes and effects of their actions. Children in her class are taught how to make plans with peers for toy sharing, take turns in talking and listening, calm down through deep breathing, and pay attention to the body (e.g., feet checking) to achieve these learning goals. She and her team teachers also ensure that children have enough resources and physical space to work or play together to avoid conflicts.

3.3.3. Stimulated Recall (Research Question 2 and 3)

During the stimulated recall, the teacher recalled how she intervened in mutual conflicts between two boys, which occurred within five minutes apart from each other during free-choice center time. The first conflict happened as the boys were playing transformer Autobots™ at a table. The master teacher intervened in the first conflict using a cessation strategy by asking the boys to choose another activity. According to the teacher, this decision was made because “you could tell that the conversation was getting loud and that [he] was physically pulling himself away as [his peer] was reaching for [the Autobots™].”

Both boys chose to go to the Lego table but soon initiated another conflict over social-conventional rules (not making toy guns at school; see Appendix B for a transcript of the second conflict event). As demonstrated, the protestor, ‘Billy,’ called the master teacher for help after both boys demonstrated moderate insistent behaviors. The teacher initially responded using a mediation strategy by asking the boys what they should do to resolve the conflict. She later suggested that they each go to a different table (cessation strategy) after the reactor, ‘John,’ continued to demonstrate moderate insistence. For example, even after Billy suggested that they both take deep breaths, John continued to voice his frustration when asked for possible solutions by the teacher.

According to the teacher, both boys had been in the same classrooms within the center for at least four years and were highly verbal and active compared to other children in the classroom. The teacher shared that one of the boys could easily get emotional and often showed strong emotional reactions to obtain adults’ attention. The teacher recalled that the source of the first conflict was new Autobots™. These Autobots™ were the most popular toys in the classroom but could be broken easily and were expensive. Therefore, the teachers had set up some rules about how to play with this toy. The teacher asked the boys to stop playing with the Autobots™ because she saw the boys violating the rule (e.g., smashing the toys). Still, the master teacher pointed out that she “tried to give them space and autonomy to make table choices on their own,” but their yelling, or insistent behavior, indicated that the conflict had continued.

In retrospect, the teacher said that she could have avoided the second conflict by assigning the boys to tables where a teacher could facilitate the activity. She did not expect that both boys would choose to go to another independent table. When she was called by Billy to intervene in the second conflict, her first intervention was a mediation strategy that involved her request to hear what both

boys would say about possible solutions. She shared, “you heard me in the second conflict, trying to hear both of them. [Billy] said breathing, and so we tried that. Apparently, that did not truly solve the problem, and [John’s] solution was making a plan that did not really apply to the issue at hand. So I tried to let them solve it, and it was not happening.” As shown in Appendix B, the teacher separated both students, which led to a Lose-Lose outcome. This conflict event highlights the complex factors that are likely to influence teachers’ decision-making in intervening in conflicts and the subsequent outcome.

4. Discussion

Theories and research (Brownfield & Wilkinson, 2018; van de Pol et al., 2010) have emphasized the contingency of teacher support based on children’s current level of performance. However, the contingent relation between whether, how, and when teachers intervene in peer conflicts in a socially dynamic preschool classroom has not been empirically examined. This study’s findings go beyond extant research that has focused mainly on the descriptive nature of peer conflicts and teacher intervention strategies to present pioneering evidence of naturally occurring dyadic peer conflicts through the use of head-mounted cameras. Furthermore, the study allowed us to explore the relationship between children’s insistent behavior, teachers’ intervention strategies, and conflict outcomes based on the temporal sequence of these events and the master teacher’s perceptions of peer conflicts and conflict intervention. The significant findings of this mixed-methods study are discussed in turn.

4.1. Characteristics of Peer Conflicts and Teachers’ Intervention Strategies

A major finding of this study is that, consistent with the extant literature and with the master teacher’s perception, these conflicts were most often due to object dispute or course of play conflict. Moreover, mutual conflicts most often lead to negative outcomes. Furthermore, this study demonstrated that most of the mutual peer conflicts involved a moderate to high level of insistent behavior from the conflict dyads.

Aligned with previous studies (Bayer et al., 1995; Chen, 2003; Silver & Harkins, 2007), teachers used more cessation than mediation strategies to intervene in conflicts. Our study also demonstrated that peer conflicts tended to be brief but also occur frequently. On average, nearly six mutual and five unilateral conflicts were observed from a target child across the morning and afternoon sessions. A significant variation in conflict issues and outcomes was also observed among the children. These findings suggest that preschool children frequently encounter peer conflicts at school and that these experiences can vary significantly across child and context.

One unique finding of the study is related to the nature of teachers’ conflict intervention. Specifically, our results indicate that the teachers were only around conflict dyads in less than half of the time. Even with a lower child-teacher ratio, most of the conflicts were characterized as not having any teacher present. This finding could be due to the high rate of peer conflicts in the classroom. The quantitative result suggested that when teachers were present, they only intervened half of the time for mutual conflicts and approximately thirty percent of the time for unilateral conflicts. Thus, the teacher presence and intervention rates were lower than expected, given the teacher-child ratio in this classroom. Based on the teacher interview, one possible explanation might be teachers’ intent to provide children more opportunities to resolve conflicts independently. Alternatively, many peer conflicts might not have

salient social cues (e.g., loud voice) or are long enough to attract the teachers' attention. Our findings support this rationale, given that most of the unilateral conflicts were transient ($M = 11.54$ s) and not intervened by the teachers. It is important to tease apart the factors that may predict when and how these teachers choose to intervene. The need to address this limitation was a key aim of this study, and we discuss these findings in turn.

4.2. Contingency between Teachers' Intervention Strategies and Children's Insistent Behaviors

One of our major findings is that teachers' conflict intervention strategies were contingent upon students' insistent behavior. Specifically, teachers were more likely to intervene in a mutual conflict when the children demonstrated moderate to high levels of insistent behavior than when they displayed low- or mixed insistent behavior. One possible explanation for the teachers' adaptivity may be that teachers perceive a greater risk that these conflicts may lead to severe outcomes than conflicts that involve lower-level insistence (Hurd and Gettinger, 2011; Nelson & Evans-Stout, 2019).

Interestingly, as shown in the lag-sequential model (Fig. 2), although teachers were more likely to intervene in conflicts involving moderate-to-high insistent behaviors than low or mixed insistent behaviors, they tended to intervene in conflicts using a cessation strategy over a mediation strategy. As shared by the master teacher of this study, one potential reason might be that teachers perceive conflicts involving moderate to high insistent behaviors as having greater likelihoods of yielding irreversible and harmful outcomes. This perception might have led the teachers to end the conflicts immediately using cessation strategies. Furthermore, children who demonstrate moderate to high insistent behaviors might have difficulties resolving conflicts independently, which may have prevented teachers from intervening using mediation strategies. The current study highlights the complex reasons underlying teacher's decision-making in the use of conflict intervention strategies.

4.3. Teacher Intervention, Conflict Outcomes, and Head-Mounted Cameras

The lag-sequential analysis showed that teachers' mediation strategies were more likely to lead to positive conflict outcomes than the absence of teacher intervention, which had a higher likelihood than the use of cessation strategies. The finding suggests that whether teachers should intervene in young children's conflicts is not a simple dichotomous question. The decision must be contingent upon children's insistent behavior and teachers' intervention strategies. The use of cessation strategies tended to lead to poor conflict outcomes, even poorer than no intervention, because such strategies were rarely contingent on children's needs and were mainly used by teachers to forcefully 'ceasefire' curing the symptoms without resolving the causes. Given the frequency with which teachers employ cessation strategies, though, future studies should examine various forms of these strategies to identify whether they have different antecedents and consequences. This research could also prove beneficial in identifying whether there are cessation strategies that are more conducive to more positive conflict outcomes than others.

The peer conflicts of this study were captured from continuous, unobtrusive, and child-centered head-mounted cameras. Compared to the conventional time-sampling approach (e.g., Coplan, 2000) in which researchers observe one child at a time in a limited time interval (e.g., 10 s) and switch target from one child to another, this child-centered approach provides a more integral insight into each child's social world. The head-mounted videos naturally positioned researchers in children's perspectives rather

than the viewpoint of a third person who is a complete outsider of the classroom dynamics. This "extended first-person perspective" (Pink, 2015) can orient the researchers' observations more toward children's authentic experiences as they move through the classroom.

4.4. Study Limitations

Despite the contributions of the present study, there are several study limitations. First, we conducted the study in a single early-learning center, limiting the generalizability of these findings. Based on the state's quality standard for child care, the center is among the most highly rated programs. It exceeds the state standards in staff qualifications and professional development and in the learning opportunities provided to children. Programs with high ratings such as the center in which classroom observations were conducted typically have lead teachers with at least an associate degree in early childhood education and require that staff members complete at least 20 clock hours of professional development each biennium. Notably, early childhood education degree and credential requirements differ substantially across states, and many early childhood teachers report only having a high school diploma. Thus, future investigations are necessary to validate our conclusions on samples of teachers that are more representative of the early childhood workforce. Overall, this study's context might have been more optimal for conflict resolution than other preschool settings due to high-quality teacher training and program management. Nonetheless, our descriptive findings replicated previous peer conflict studies demonstrating that only a small portion of conflicts yielded positive outcomes even within this high-quality preschool environment. Our research, thus, underscores the importance of the need to incorporate peer conflict intervention strategies in teacher training to enhance the quality of preschool education.

A second limitation is the teacher-child ratio observed in the preschool classroom. In addition to the master teacher, there were two lead teachers present at any given time. With more teachers in the classroom, there might have been more variations in teachers' intervention strategies' frequency and nature than typically observed in preschool settings. The higher teacher-child ratio may likely have increased the number of children with whom teachers may interact, potentially making it easier for teachers to monitor and manage the classroom activity. This study might have demonstrated vast differences in teacher intervention strategies if conducted in classrooms with lower teacher-child ratios. Future studies may benefit from examining classrooms with various structural qualities to test this assumption directly. A final limitation is the possible Hawthorne effect of video recording on teacher interventions during conflicts. The use of cameras may have influenced the frequency with which teachers intervened and the strategies used.

5. Conclusion

The present study is the first to date of which we are aware of to examine the contingent relation between children's insistent behavior, teachers' conflict intervention strategies, and the conflict outcomes in the natural context of a preschool classroom using head-mounted cameras. This innovative pilot study provides a more nuanced understanding of these contingent relations than discovered in previous studies. Although peer conflicts reported in this study were observed from one classroom, with the use of head-mounted cameras, we were able to collect a rich set of video data that contained every child's perspective of any possible conflict event during an extended period. This data set contained

continuous, non-intrusive observations and allowed us to conduct in-depth analyses of each conflict event. The qualitative research also provides a more nuanced understanding of peer conflicts from the teacher perspective and the complexities of teachers' decision-making underlying intervened conflicts. Future studies should aim to replicate results in a larger sample to provide researchers and practitioners further insight into when and how teachers choose to intervene and the subsequent impact on conflicts. These findings may facilitate future professional training development to help teachers utilize developmentally-appropriate strategies to support children's conflict resolution.

Acknowledgements

The research reported here was supported by the Institute of Education Sciences, through Grant R305N160024 awarded to The Ohio State University. Dr. Laura Justice served as the principal investigator of this project. The opinions expressed are those of the authors and do not represent views of the Institute or National Center for Education Research.

Appendix A. Teacher Interview Protocol

Theme 1: Teacher Perceptions of Peer Conflicts

- 1) How do you tell when your children have a conflict?
- 2) How often do you think your children have conflicts in your classroom?
- 3) What causes these peer conflicts to occur?
- 4) Who is more likely to initiate peer conflicts than others?
- 5) Have you observed any gender or age differences in the ways children approach peer conflicts?
- 6) In your opinion, do peer conflicts do more harm or benefit to children's learning and development?

Theme 2: Teacher Conflict Intervention Practices

- 1) What teaching strategies do you believe are effective or ineffective in resolving peer conflicts?
- 2) Do you think that teacher interventions are beneficial during peer conflicts? If so, under what circumstances?
- 3) Do you believe that children can resolve peer conflicts on their own? Are there certain situations where children are more likely to resolve conflicts by themselves?
- 4) How do you decide when to intervene in a peer conflict? What role do you play when you intervene?
- 5) Do you teach children conflict resolution strategies? If so, what are they? How do you know if they work?

Appendix B. Conflict Transcript

John: "I am going to make a really big gun. . ."

Billy: "No guns allowed at school."

John: "No. It is not. . . I can make a gun."

Billy: "No. Katie, he is making a gun." (to the teacher)

John: "No, I am not."

Teacher: "So it seems like the two of you working together might be very tricky. It took me about thirty seconds to walk away and to come back, and it seems like you are arguing again. When this is too tricky, we have to stop, and we have to think about how to fix it. How are we going to fix arguing and not being able to work together?"

Billy: "We can take deep breaths."

Teacher: "You can take deep breaths. Ok. Let us try that."

John: "but. . ."

Teacher: "He is saying let us take deep breaths. I am taking them. I do not see your belly moving, and I do not hear your breathing. How else do you think we can fix this arguing?"

John: "He took my. . ."

Teacher: "How is moving apart going to fix the problem?"

John: ". . . because he did not make a plan with me."

Teacher: "I am not understanding what you are saying."

John: "He can make a plan with me and. . ."

Teacher: "What are you needing to make plans for? There is a whole basket of Legos. Do you need to make a plan when you have tons of materials?"

John: "No."

Teacher: "No. Ok. So now what I am going to say is that I am making table choices for both of you. You are going to move apart for some minutes, and we are going to try some different ideas."

References

- Ashby, N., & Neilsen-Hewett, C. (2012). Approaches to conflict and conflict resolution in toddler relationships. *Journal of Early Childhood Research, 10*(2), 145–161.
- Bakeman, R., & Gottman, J. M. (1997). *Observing interaction: An introduction to sequential analysis* (2nd ed.). New York, NY: Cambridge University Press. <https://doi.org/10.1017/CBO9780511527685>
- Bayer, C. L., Whaley, K. L., & May, S. E. (1995). Strategic assistance in toddler disputes: II. Sequences and patterns of teachers' message strategies. *Early Education and Development, 6*(4), 405–432.
- Blunk, E. M., Russell, E. M., & Armga, C. J. (2017). The role of teachers in peer conflict: Implications for teacher reflections. *Teacher Development, 21*(5), 597–608. <https://doi.org/10.1080/13664530.2016.1273847>
- Brownfield, K., & Wilkinson, I. A. G. (2018). Examining the impact of scaffolding on literacy learning: A critical examination of research and guidelines to advance inquiry. *International Journal of Educational Research, 90*, 177–190. <https://doi.org/10.1016/j.ijer.2018.01.004>
- Caplan, M., Vespo, J., Pedersen, J., & Hay, D. F. (1991). Conflict and its resolution in small groups of one- and two-year-olds. *Child Development, 62*(6), 1513. <https://doi.org/10.2307/1130823>
- Chen, D. W. (2003). Preventing violence by promoting the development of competent conflict resolution skills: Exploring roles and responsibilities. *Early Childhood Education Journal, 30*(4), 203–208. <https://doi.org/10.1023/A:1023379306124>
- Chen, D. W., Fein, G. G., Killen, M., & Tam, H. P. (2001). Peer conflicts of preschool children: Issues, resolution, incidence, and age-related patterns. *Early Education and Development, 12*(4), 523–544. https://doi.org/10.1207/s15566935eed1204_3
- Church, A., Mashford-Scott, A., & Cohrsen, C. (2018). Supporting children to resolve disputes. *Journal of Early Childhood Research, 16*(1), 92–103. <https://doi.org/10.1177/1476718X17705414>
- Clarke, L., McLaughlin, T. W., & Aspden, K. (2019). Promoting learning during toddlers' peer conflicts: Teachers' perspectives. *Early Years: An International Journal of Research and Development, 39*(4), 426–440.
- Cordoni, G., Demuru, E., Ceccarelli, E., & Palagi, E. (2016). Play, aggressive conflict and reconciliation in pre-school children: what matters? *Behaviour, 153*(9–11), 1075–1102.
- Corsaro, W. A. (1994). Discussion, debate, and friendship processes: Peer discourse in U.S. and Italian nursery schools. *Sociology of Education, 67*(1), 1–26.
- Creswell, J. W., & Clark, V. L. P. (2018). *Designing and conducting mixed methods research*. Sage Publications.
- Danby, S., & Baker, C. D. (2001). Escalating terror: Communicative strategies in a preschool classroom dispute. *Early Education and Development, 12*(3), 343–358. https://doi.org/10.1207/s15566935eed1203_4
- Denham, S. A., Kalb, S., Way, E., Warren-Khot, H., Rhoades, B. L., & Bassett, H. H. (2013). Social and emotional information processing in preschoolers: Indicator of early school success? *Early Child Development & Care, 183*(5), 667–688. <https://doi.org/10.1080/03004430.2012.682728>
- Doppler-Bourassa, E., Harkins, D. A., & Mehta, C. M. (2008). Emerging empowerment: Conflict resolution intervention and preschool teachers' reports of conflict behavior. *Early Education & Development, 19*(6), 885–906.
- Dunn, J., & Slomkowski, C. (1992). Conflict and the development of social understanding. In C. U. Shantz, & W. W. Hartup (Eds.), *Conflict in child and adolescent development* (pp. 70–92). Cambridge: Cambridge University Press.
- Eisenberg, A. R., & Garvey, C. (1981). Children's use of verbal strategies in resolving conflicts. *Discourse Processes, 4*(2), 149–170.
- Gower, A., Lingras, K., Mathieson, L., Kawabata, Y., & Crick, N. (2014). The role of preschool relational and physical aggression in the transition to kindergarten: Links with social-psychological adjustment. *Early Education & Development, 25*(5), 619–640.
- Hartup, W. W., Laursen, B., Stewart, M. I., & Eastenson, A. (1988). Conflict and the friendship relations of young children. *Child Development, 59*(6), 1590–1600. <https://doi.org/10.2307/1130673>

- Hay, D. F. (1984). Social conflict in early childhood. In G. Whitehurst (Ed.), *Annals of child development* (1) (pp. 1–44).
- Hay, D. F., & Ross, H. S. (1982). The social nature of early conflict. *Child Development*, 53(1), 105–113.
- Hay, D. F., Payne, A., & Chadwick, A. (2004). Peer relations in childhood. *Journal of Child Psychology and Psychiatry*, 45(1), 84–108. <https://doi.org/10.1046/j.0021-9630.2003.00308.x>
- Hurd, H. D., & Gettinger, M. (2011). Mothers' and teachers' perceptions of relational and physical aggression in pre-school children. *Early Child Development and Care*, 181(10), 1343–1359.
- Killen, M. (1995). Preface to the special issue: Conflict resolution in early social development. *Early Education and Development*, 6(4), 297–302.
- Killen, M., & Turiel, E. (1991). Conflict resolution in preschool social interactions. *Early Education and Development*, 2(3), 240–256. <https://doi.org/10.1207/s15566935eed0203.6>
- Laursen, B., & Hartup, W. W. (1989). The dynamics of preschool children's conflicts. *Merrill-Palmer Quarterly*, 35(3), 281–297.
- Lyle, J. (2003). Stimulated recall: A report on its use in naturalistic research. *British Educational Research Journal*, 29(6), 861–878. <https://doi.org/10.1080/0141192032000137349>
- Malloy, H. L., & McMurray, P. (1996). Conflict strategies and resolutions: Peer conflict in an integrated early childhood classroom. *Early Childhood Research Quarterly*, 11, 185–206. [https://doi.org/10.1016/S0885-2006\(96\)90005-8](https://doi.org/10.1016/S0885-2006(96)90005-8)
- Maynard, D. W. (1985). On the functions of social conflict among children. *American Sociological Review*, 50(2), 207–223.
- Meade, P., & McMeniman, M. (1992). Stimulated recall — An effective methodology for examining successful teaching in science. *The Australian Education Researcher*, 19, 1–18. <https://doi.org/10.1007/BF03219515>
- Murphy, B. C., & Eisenberg, N. (2002). An integrative examination of peer conflict: Children's reported goals, emotions, and behaviors. *Social Development*, 11(4), 534–557. <https://doi.org/10.1111/1467-9507.00214>
- Ostrov, J. M., & Crick, N. R. (2007). Forms and functions of aggression during early childhood: A short-term longitudinal study. *School Psychology Review*, 36(1), 22–43.
- Pepler, D. J., Craig, W. M., & Roberts, W. L. (1998). Observations of aggressive and nonaggressive children on the school playground. *Merrill-Palmer Quarterly*, 44(1), 55–76.
- Perry, D. G., Perry, L. C., & Kennedy, E. (1992). Conflict and the development of antisocial behavior. In C. U. Shantz, & W. W. Hartup (Eds.), *Cambridge studies in social and emotional development. Conflict in child and adolescent development* (pp. 301–329). New York, NY, US: Cambridge University Press.
- Pink, S. (2015). Going forward through the world: Thinking theoretically about first person perspective digital ethnography. *Integrative Psychological and Behavioral Science*, 49(2), 239–252. <https://doi.org/10.1007/s12124-014-9292-0>
- Raikes, H. A., Virmani, E., Thompson, R., & Hatton, H. (2013). Declines in peer conflict from preschool through first grade: Influences from early attachment and social information processing. *Attachment & Human Development*, 15(1), 65–82. <https://doi.org/10.1080/14616734.2012.728381>
- Rende, R. D., & Killen, M. (1992). Social interactional antecedents of conflict in young children. *Early Childhood Research Quarterly*, 7(4), 551–563. [https://doi.org/10.1016/0885-2006\(92\)90086-E](https://doi.org/10.1016/0885-2006(92)90086-E)
- Roseth, C. J., Pellegrini, A. D., Dupuis, D. N., Bohn, C. M., Hickey, M. C., Hilk, C. L., & Peshkam, A. (2008). Teacher intervention and U.S. preschoolers' natural conflict resolution after aggressive competition. *Behaviour*, 145(11), 1601–1626. <https://doi.org.proxy.lib.ohio-state.edu/10.1163/156853908786131333>
- Ross, H. S., & Conant, C. L. (1992). The social structure of early conflict: Interaction, relationships, and alliances. In C. U. Shantz, & W. W. Hartup (Eds.), *Conflict in child and adolescent development* (pp. 153–185). New York, NY: Cambridge University Press.
- Sackin, S., & Thelen, E. (1984). An ethological study of peaceful associative outcomes to conflict in preschool children. *Child Development*, 55(3), 1098–1102. <https://doi.org/10.2307/1130162>
- Seban, A. M. (2003). The friendship features of preschool children: Links with prosocial behavior and aggression. *Social Development*, 12(2), 249–268. <https://doi.org/10.1111/1467-9507.00232>
- Shantz, C. U. (1986). Conflicts between children. *Child Development*, 58(2), 283. <https://doi.org/10.2307/1130507>
- Silver, C., & Harkins, D. (2007). Labeling, affect, and teachers' hypothetical approaches to conflict resolution: An exploratory study. *Early Education & Development*, 18(4), 625–645. <https://doi.org/10.1080/10409280701681854>
- Singer, E., & Hännikäinen, M. (2002). The teacher's role in territorial conflicts of 2- to 3-year-old children. *Journal of Research in Childhood Education*, 17(1), 5–18. <https://doi.org/10.1080/02568540209594994>
- Singer, E., Van Hoogdalem, A. G., De Haan, D., & Bekkema, N. (2012). Day care experiences and the development of conflict strategies in young children. *Early Child Development and Care*, 182(12), 1661–1672. <https://doi.org/10.1080/03004430.2011.640753>
- Spivak, A. L. (2016). Dynamics of young children's socially adaptive resolutions of peer conflict. *Social Development*, 25(1), 212–231. <https://doi.org/10.1111/sode.12135>
- Stake, R. E. (1995). *The art of case study research*. Thousand Oaks, CA: Sage.
- Thornberg, R. (2006). The situated nature of preschool children's conflict strategies. *Educational Psychology*, 26(1), 109–126. <https://doi.org/10.1080/01443410500341064>
- van de Pol, J., Volman, M., & Beishuizen, J. (2010). Scaffolding in teacher–student interaction: A decade of research. *Educational Psychology Review*, 22(3), 271–296. <https://doi.org/10.1007/s10648-010-9127-6>
- Verbeek, P., & de Waal, F. B. M. (2001). Peacemaking among preschool children. *Peace & Conflict*, 7(1), 5–28.
- Vespo, J. E., & Pedersen, J. (1995). Young children's conflicts with peers and siblings: Gender effects. *Child Study Journal*, 25(3), 189.
- Vestal, A., & Jones, N. A. (2004). Peace building and conflict resolution in preschool children. *Journal of Research in Childhood Education*, 19(2), 131.
- Westlund, K., Horowitz, L., Jansson, L., & Ljungberg, T. (2008). Age effects and gender differences on post-conflict reconciliation in preschool children. *Behaviour*, 145(11), 1525–1556. <https://doi.org/10.1163/156853908786131351>
- Yoder, P. J., & Feurer, I. D. (2000). Quantifying the magnitude of sequential association between events or behaviors. In T. Thompson, D. Felce, & F. J. Symons (Eds.), *Behavioral observation: Technology and applications in developmental disabilities* (pp. 317–333). Baltimore, MD: Paul H Brookes Publishing.
- Yoder, P., & Symons, F. (2010). Observational measurement of behavior. *Journal of Early Intervention*, 32(5), 384–386. <https://doi.org/10.1177/1053815110388375>
- Yoder, P. J., Short-Meyerson, K., & Tapp, J. (2004). Measurement of behaviors with special emphasis on sequential analysis of behavior. In E. Emerson, C. Hatton, T. Thompson, & T. Parmenter (Eds.), *International handbook of research methods in intellectual disability* (pp. 179–202). New York: Wiley.