Proceedings of ICEIPI 2026 Symposium: Inclusive Education, Cultural Transformation, and the Ethical Dimensions of Learning
DOI: 10.54254/2753-7048/2026.LD34112

Teacher-Child Interaction and Preschoolers' Reasoning and Emotional Development: A Dual-Pathway Review

Ke Huang

School of Education, Xianda College of Economics and Humanities Shanghai International Studies University, Shanghai, China
ClaraKe1@outlook.com

Abstract. In the early years, children gradually learn to anticipate the effects of their actions and how to manage the emotions they experience in social contexts. There are many instances during teacher–child interactions when the child is asked difficult questions and when they are given emotional support. Research typically examines these two sides independently - one in terms of its links to reasoning, the other in terms of its links to emotional development. In this review, teachers bring them together. Teachers take the Classroom Assessment Scoring System (CLASS) and recent experimental and longitudinal studies to propose a two-pathway model. The cognitive pathway operates predominantly through instructional support: teachers explicitly draw children's attention to causal links, encourage them to explain their reasoning, and help them develop their reasoning. The emotional pathway involves emotional support and talking about emotions. This helps children develop emotion knowledge and provides a secure relationship that helps to offset potential risks associated with the child's disposition. These pathways are intertwined at all times during classroom interactions, but require different teacher actions. Recognising their interplay can inform teachers about striking a balance between challenging kids' thinking and accepting their emotions. Researchers conclude by highlighting some gaps, such as a need for experiments that test the entire dual-pathway model and for studies in non-Western cultures, and by stressing that classroom management may enhance the effects of quality interaction.

Keywords: Teacher-child interaction, consequential reasoning, emotional development, preschool, CLASS framework

1. Introduction

Preschool children often don't understand that taking a toy can make a friend sad, and they need to learn to regulate their own strong emotions like anger and frustration. These skills - causal reasoning and emotion regulation - are both learned through interactions with teachers. A teacher might politely ask a child how a tower of blocks might topple over, or express understanding when a child is sad or frustrated, or subtly turn a conflict between children into an opportunity to work out a solution. But research on these two constructs has been largely conducted in isolation: studies of teacher-child interactions often focus on language and early math, while studies of causal reasoning

© 2026 The Authors. This is an open access article distributed under the terms of the Creative Commons Attribution License 4.0 (https://creativecommons.org/licenses/by/4.0/).

DOI: 10.54254/2753-7048/2026.LD34112

mostly take place in the lab, not the real world of the classroom. This division means researchers don't yet know if the same teacher behaviors that support children to reason about consequences and understand others' feelings - asking questions, providing support and letting them talk for a long time - would have the same impact on both skills.

2. Core constructs

2.1. Teacher-child interaction

Teacher-child interaction is the dynamic, bidirectional process between teachers and young children in early childhood care and education. This term captures more than just the use of talk in the classroom; it refers to a teacher's tone of voice, eye contact, emotional responsiveness, and classroom organisation during learning activities and transitions. Following the Classroom Assessment Scoring System (CLASS) construct developed by Pianta and colleagues, teacher-child interaction can be broken down into three broad categories: Emotional Support (positive climate, teacher sensitivity, regard for student perspectives), Classroom Organization (behavior management, productivity, instructional learning formats) and Instructional Support (concept development, quality of feedback, language modeling) [1]. This three-part structure has been shown to be valid in preschool classrooms in the West and China and is helpful in differentiating aspects of interaction that are important for different learning outcomes [2].

2.2. Children's consequential reasoning

Consequential reasoning is the ability to predict what will happen next based on available information and to provide a causal explanation for that prediction. In this review, researchers focus on children aged four to six years. Drawing on paradigm, two aspects of mechanism-based reasoning are particularly relevant [3]. The first is understanding relevant change: recognizing which alteration to a causal system genuinely changes the outcome. In the classic lamp-lighting task, this means knowing that swapping the wire connections changes which lamp will activate. The second is understanding irrelevant change: recognizing which alteration does not affect the outcome, such as exchanging stickers while the batteries remain in the same lamp. A child who merely selects the correct lamp may be relying on memory or superficial cues; a child who explains why—"the battery is still inside"—demonstrates genuine reasoning. This gap between getting it right and understanding why carries a quiet warning for classroom assessment: correct answers can easily mask a fragile grasp of causality. It is precisely this dual reliance on both choice accuracy and verbal justification that anchors the present review's analysis: the teacher behaviors most likely to strengthen consequential reasoning are those that scaffold not just the child's answer, but the explanation behind it.

2.3. Children's emotional development

Emotional growth in preschool-age children includes three things. Growing emotional expression describes a child's increasing ability to demonstrate emotion and feelings like happy, angry, sad, surprised, confused, or all the above. They are learning how to demonstrate emotion to the people around them. Growing emotional regulation describes a child's ability to settle and regroup after feeling frustration or annoyance and to manage how long or strong a feeling is. Growing emotional understanding, or growing emotional knowledge, describes a child's understanding and recognition

DOI: 10.54254/2753-7048/2026.LD34112

of their own emotions and feelings as well as those of others around them. An example of this can be described as a child who comforts a peer who is crying and understands why that peer is crying, or understands the reason that a character in a story is sad. All of these skills are acquired at the same time. How a child's emotional distress is responded to by their teacher—be it dismissive, authoritarian, or sympathizing—challenges and shapes the skills that the child learns for emotion management. Participation in a classroom is a much more positive experience than it is a negative one, and peer acceptance is not measured in the same way that emotional reasoning is, but just like emotional reasoning, it holds just as much significance.

3. The cognitive pathway: how teacher--child interaction shapes consequential reasoning

How do teacher–child interactions push reasoning forward? The evidence points mainly to instructional support. The mechanism is straightforward: when teachers ask children to explain their thinking, they turn implicit causal understanding into something the child can put into words, examine, and eventually do on her own. This is Vygotsky's old insight applied to causal reasoning—what happens between teacher and child migrates inward.

Buchanan and Sobel ested this idea directly [3]. Across three experiments, 88 preschoolers worked on a lamp-lighting task where the causal mechanism was either wire connections or battery placement. Two findings stand out. First, 4-year-olds outperformed 3-year-olds with wire connections ($d = 0.72$), while 3-year-olds succeeded with batteries ($d = 1.63$)—the salience of the causal feature interacts with development. Second, and more telling, children's verbal explanations predicted performance beyond age. Those who could say why a lamp would light were reasoning about mechanisms, not just guessing. The implication is direct: teacher moves like "Tell me why you think that" or "What makes you say that?" are not pedagogical extras—they may be the engine driving cognitive change.

Van der Wilt et al. extended this into classrooms, examining shared book reading in seven Dutch preschools with 176 children [4]. Teachers were randomly assigned to either standard interactive reading or a mindmap-based approach where children mapped causal relations visually. Language improved regardless of condition, but causal reasoning gains varied. Critically, increases in teachers' prompts to extend reasoning correlated strongly with more child inferences ($\rho = 0.75$), and fewer open-ended questions corresponded with fewer child explanations ($\rho = 0.96$). These are correlations, not causal proof, but they suggest that inviting children to continue a line of causal thinking scaffolds reasoning in real settings.

Individual differences matter. Wang et al. found that preschoolers with autism did not distinguish high- from low-probability causes until age five, two years later than typically developing children [5]. Both groups handled non-contact causality well. For teachers, the takeaway is practical: the same prompt lands differently depending on the child's cognitive profile.

Additional work clarifies when scaffolding succeeds. Henne et al. showed that both children and adults preferentially attribute causality to norm-violating events [6]. When a child's behavior breaks routine, attention sharpens—an opening for a teacher to ask "Why did that happen?" or "What comes next if we do this?" Davis and Rehder added that causal reasoning is a mental simulation constrained by attention and working memory [7]. Reducing extraneous load and focusing attention on causally relevant features should make reasoning easier.

In sum, the cognitive pathway works through instructional support—externalizing causal structure, extending reasoning chains, and highlighting causal relevance. Wang et al.'s findings indicate that the strength of this pathway varies from child to child.

DOI: 10.54254/2753-7048/2026.LD34112

4. The emotional pathway: how teacher-child interaction shapes emotional development

The emotional pathway works differently. It leans primarily on emotional support, with a secondary thread: teachers who talk about feelings build emotion knowledge deliberately. Two sub-pathways are evident, and they complement each other.

The first is instructional, but aimed at emotion rather than cognition. When a teacher names a feeling aloud, explains why a story character is sad, or guides a conversation about what upset a peer, she is not just labeling—she is mapping out causes and consequences. The Feeling Thinking Talking intervention confirmed this: gains in children's emotion knowledge tracked increases in teachers' talk about inner states.

The second sub-pathway is relational and quieter. Susa-Erdogan et al. studied 100 Romanian preschoolers, with mothers rating temperament and teachers reporting on closeness and conflict [8]. Children with stronger attention and enjoyment of calm activities had less teacher conflict—their styles simply fit classroom rhythms better. Fearfulness and sadness drew teachers closer; discomfort pushed them further away. The key finding was a moderation: shyness predicted more internalizing problems, but only when teacher–child closeness was low. Once closeness reached a higher level, the link faded. A close relationship with a teacher can shrink the social world to a manageable size for a shy child.

A cautionary note comes from Rüdisüli et al.., who tracked CLASS-assessed interaction quality and children's playfulness in Swiss preschoolers over a year [9]. There was a reported negative correlation between the amount and type of instructional support given and spontaneous individual expression. This does not suggest that cognitive challenges are not valuable. It suggests a trade-off. Too much feedback can take the place of the self-exploration that helps the learner express themselves emotionally.

Wu and Song conduct a clearer and tighter distinction [9]. Four to six year-old children, n=41, experienced instructional or affective scaffolding while reading a pictured book. The children who were in the affective scaffolding group had positive emotional valence, a higher emotional state, and they looked at the characters' faces longer. The emotional state of the children who were in the instructional scaffolding group could not be compared to the emotional state of the children in the affective scaffolding group. Along both of the distinct paths, there are distinct mechanisms.

The emotional pathways of both routes explains two mechanical functions. The first is that positive emotional talk leads to emotional knowledge and responds to the emotional learning from the child. The second is that emotional proximal safety responds to the child's emotional challenges. Together, the studies of Wu and Song and Rüdisüli et al. indicate that instructional support without emotional proximal safety responds to emotional challenges, may constrain the child's emotional challenges.

5. The discussion and suggestion

5.1. A Dual-Pathway model of teacher–child interaction effects

The evidence pulls in two directions. Instructional support—asking children to explain their thinking, extending reasoning chains—is consistently linked to gains in consequential reasoning. Emotional support and emotion-focused talk predict emotion knowledge, regulation, and felt safety. Wu and Song showed this cleanly: children receiving affective scaffolding showed higher emotional engagement than those receiving only instructional scaffolding [10]. The two conditions did different things. The author call this a Cognitive-Affective Dual-Pathway Model.

DOI: 10.54254/2753-7048/2026.LD34112

The pathways are distinct but constantly intersect. A teacher who kneels beside two arguing children and asks, "What do you think he's feeling? What would happen if you asked instead of grabbing?" is scaffolding reasoning and validating emotion in the same breath. But the two pathways draw on different teacher skills. Instructional support without warmth can become brittle—children may learn to give safe answers rather than think aloud. Rüdisüli et al. found that higher instructional support predicted slight declines in children's spontaneity a year later [9]. Conversely, warmth without cognitive challenge can feel safe but stagnant. Children need both, and the right balance likely depends on the child. Wang et al. showed that preschoolers with autism did not distinguish high- and low-probability causes until age five, two years later than typical peers. For that child, cognitive demands may need to be adjusted while emotional support remains high [5]. Li et al. added quantitative weight: meta-analytic evidence showed emotional and instructional supports have different correlates, reinforcing the view that they are distinct mechanisms [11].

5.2. Implications for practice

Three practical moves follow from this model, and none requires overhauling a curriculum.

First, emotional support is not the soft stuff that happens before real learning begins—it is the floor that makes learning possible. Consider a shy child who spends the first month of school silent during circle time. A teacher who sits beside her during free play, not quizzing or prompting, just commenting casually on what she is building with blocks, is doing something important. After a few weeks, the child starts whispering answers. The whisper eventually becomes a voice. That trajectory depends on a relationship, not a lesson plan. Susa-Erdogan et al. gave this empirical backing when they showed that shy children's risk of internalizing problems disappeared once teacher–child closeness crossed a threshold [8].

Second, everyday conflicts are free scaffolding opportunities. Two children squabble over whose turn it is at the water table. The easy move is to separate them and assign turns. The harder move—which takes no more time—is to pause and ask, "What do you think will happen if you grab the cup? What would change if you asked for a turn instead?" The question shifts the child from reacting to reasoning. Over time, children begin to run these simulations themselves before acting. Van der Wilt et al. showed that such prompts correlate with more child inferences in classroom discussion [4].

Third, knowing when to step back matters as much as knowing when to step in. A child struggling to balance a block tower does not always need a teacher to explain weight distribution. She needs someone to notice her frustration and say, "What else could we try?"—then wait. Rüdisüli et al. found that too much instructional direction can squeeze out spontaneity [9]. Wu and Song showed that warmth without heavy cognitive structuring produced stronger emotional engagement [10]. The skill is in reading the moment: step in at hesitation, step back when the child is thinking.

5.3. Future research directions

Four gaps stand out. First, no experiment has tested the dual-pathway model as a whole—randomly assigning teachers to training in instructional scaffolding, relational warmth-building, or both, and measuring effects on reasoning and emotional outcomes concurrently. Until that exists, the model is a plausible synthesis, not a tested claim. Second, micro-level video analyses could reveal whether emotional validation reliably precedes effective cognitive scaffolding within interactions, but such studies have not been done. Third, the evidence base is overwhelmingly Western. Whether the model generalizes to Chinese preschools, where teacher authority and collective harmony are more

DOI: 10.54254/2753-7048/2026.LD34112

emphasized, remains an open question. Fourth, Classroom Organization—the third CLASS domain—may amplify the benefits of instructional and emotional support by giving teachers the bandwidth to do both well, but this has barely been studied.

6. Conclusion

Preschool children learn to reason about consequences and manage emotions in the same classrooms, often in the same moments, yet research has kept these two developments in separate silos. The author have tried to bring them together.

The evidence supports a dual-pathway picture. The cognitive pathway works through instructional scaffolding—teachers making causal structure visible, asking for explanations, and pushing children to take their reasoning one step further. Individual differences matter; Wang et al. found that children with autism showed delayed probabilistic reasoning, a reminder that the same scaffold does not fit every child. The emotional pathway works through relational warmth and guided talk about feelings. Wu and Song showed experimentally that affective scaffolding produces engagement that instructional support alone cannot replicate.

But the two pathways do not run on separate tracks—they collide in ordinary moments. Consider a scene that plays out in preschools everywhere: two children argue over a tricycle. One is crying. A teacher kneels down, puts a hand on the crying child's shoulder, and asks quietly, "Why do you think he's upset? What would happen if you asked for a turn instead of pushing?" In ten seconds, she has done double duty: she has validated an emotion, drawn attention to facial cues, and invited causal reasoning about actions and consequences. The sentence carries both cognitive and emotional weight. Moments like this fill a preschool day. Recognizing that they are doing double duty—and getting more intentional about how other researchers use them—is a step toward supporting children as thinkers and feelers at the same time.

References

[1] Burchinal, M., Howes, C., & Pianta, R. C. (2008). Predicting child outcomes at the end of kindergarten from the quality of pre-kindergarten teacher–child interactions and instruction. Applied Developmental Science, 12(3), 140–153.

[2] Jiang, L., Guo, L., & Lyu, X. (2019). A meta-analysis of teacher–child interaction research from the CLASS perspective: Based on the quality assessment results of 892 teachers in 14 provinces and cities in China. Studies in Early Childhood Education, (4), 32–44.

[3] Buchanan, D. W., & Sobel, D. M. (2011). Mechanism-based causal reasoning in young children. Child Development, 82(6), 2053–2066.

[4] van der Wilt, F., Smits-van der Nat, M., & van der Veen, C. (2022). Shared book reading in early childhood education: Effect of two approaches on children's language competence, story comprehension, and causal reasoning. Journal of Research in Childhood Education, 36(4), 592–610.

[5] Wang, T., Carver, L. J., & Walker, C. M. (2026). Differences in causal reasoning in preschool-aged children with and without autism. Child Development, advance online publication. https: //doi.org/10.1093/chidev/aacaf040

[6] Henne, P., O'Neill, K., Bello, P., Khemlani, S., & De Brigard, F. (2021). Norms affect prospective causal judgments. Cognitive Science, 45(1), e12931.

[7] Davis, Z. J., & Rehder, B. (2020). A process model of causal reasoning. Cognitive Science, 44(5), e12839.

[8] Susa-Erdogan, G., Benga, O., Albu-Răduleț, M., & Macovei, T. (2022). Child temperament and child–teacher relationship quality: Implications for children's emotional functioning during preschool period. Frontiers in Psychology, 13, 992292.

[9] Rüdisüli, C., Duss, I., Lannen, P., & Wustmann Seiler, C. (2024). Relations between teacher–child interaction quality and children's playfulness. Early Child Development and Care, 194(7–8), 883–897.

[10] Wu, S., & Song, T. (2026). Effects of affective vs. instructional teacher scaffolding on preschoolers' emotional engagement and social attention in picturebook reading. Frontiers in Psychology. https:

DOI: 10.54254/2753-7048/2026.LD34112

//doi.org/10.3389/fpsyg.2026.1743106

[11] Li, L., Li, Q., Ruan, S., & Zhang, Y. (2025). Within-domain and cross-domain associations between teacher–child interaction quality and child development: A meta-analysis based on 45 empirical studies. Psychological Development and Education, 41(3), 332–347.