



Research paper

Teachers' perceptions of the school functioning of Chinese preschool children with callous-unemotional traits and disruptive behaviors

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ARTICLE INFO

Article history:

Received 19 October 2021

Received in revised form

14 November 2022

Accepted 16 December 2022

Available online xxx

Keywords:

Callous-unemotional traits

Disruptive behavior

Teacher-student relationship

Parent-teacher cooperation

Classroom management

ABSTRACT

This qualitative study investigated teachers' views on differences in children with disruptive behavior and high versus low levels of callous-unemotional (CU) traits in response to classroom management strategies, instructional methods, and teacher-child and teacher-caregiver relationship quality. Twenty teachers from three Chinese preschools were interviewed about 40 children with disruptive behavior (aged 4–6 years). Teachers perceived children with CU traits to have more severe disruptive behavior, poorer quality teacher-child and teacher-caregiver relationships and to be less responsive to discipline. The implications of findings for school-based intervention promoting engagement and prosocial behavior for children with CU traits are discussed.

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1. Introduction

Antisocial behavior refers to diverse actions that violate social norms and the rights of other people (Frick, 1998). These different behaviors form one psychological dimension, lying on a continuum from minor (e.g., tantrums, noncompliance) to more serious violations of social and moral norms (e.g., theft, assault) (McMahon et al., 2006). Different terms are used for these behaviors in childhood, including externalizing problems, disruptive behavior, and conduct problems (Hinshaw & Lee, 2003). In the current study, the term 'disruptive behavior' will be applied to children in the school context, while the term antisocial behavior will be used when referring to theory and research on this heterogeneous construct across a broad range of settings.

Children with antisocial behavior are a highly heterogeneous population, consisting of different subgroups who differ markedly in presentation, etiology, and prognosis. One influential model subtypes children with antisocial behavior based on elevated versus normative levels of callous-unemotional (CU) traits, a temperament dimension characterized by deficient empathy, lack of guilt, shallow affect, and indifference to performance (Frick &

Morris, 2004). Children with elevated CU traits show a more severe and chronic trajectory of antisocial behavior, distinct emotional, social-motivational, cognitive, and biological correlates, and reduced responsiveness to intervention compared to children with antisocial behavior and low CU traits (Allen, Hwang, & Huijding, 2020). CU traits have therefore been included as a specifier for conduct disorder under the term 'limited prosocial emotions' (LPE) in the most recent edition of the Diagnostic and Statistical Manual for Mental Disorders (DSM-5; American Psychiatric Association, 2013). The assessment of CU traits is most often conducted using either semi-structured interviews or questionnaires, with different versions for multiple informants (parents, teachers, youth self-report) and for preschool children (Kimonis et al., 2008, 2016). There is emerging evidence for CU traits as a temperamental risk factor for poor interpersonal, behavioral, and academic functioning at school (Bird, Chhoa, Midouhas, & Allen, 2019; Crum et al., 2016; Miron et al., 2020), suggesting that more attention to CU traits in the educational context is needed to better inform school-based prevention and intervention.

1.1. Callous-unemotional (CU) traits in the school setting

Disruptive behavior is a risk factor for difficulties in the early school years and onwards, including academic underachievement (Fantuzzo et al., 2003), teacher-child conflict (Doumen et al., 2008)

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and peer rejection (Olson & Brodfeld, 1991). CU traits are associated with more severe disruptive behavior at school, including deceitful and manipulative behaviors (e.g., lying), and even showing pleasure when witnessing peer conflict or others' distress (Allen, Bird, & Chhoa, 2018). Children with CU traits and antisocial behavior try to achieve social dominance through aggression and are unconcerned about establishing good relationships with others (Pardini & Byrd, 2012). CU traits are also characterized by a lack of concern for performance, reflected in poor grades (Bird, Chhoa, Midouhas, & Allen, 2019; Horan et al., 2016). To date, research on CU traits in the school setting has focused on the elementary or high school periods; surprising given that CU traits are associated with the early emergence of disruptive behavior (Frick et al., 2014). The preschool years are a crucial time for child development, as the foundations for academic achievement, school-based interpersonal relationships and general well-being are established in this period (Anderson et al., 2003). The current research therefore aims to examine the interplay between CU traits and school-related factors in Chinese preschools.

1.1.1. CU traits and teacher rewards, discipline, and instructional methods

Classroom management strategies encompass discipline and reward-based strategies that are commonly used by teachers to foster children's learning and prosocial behavior (Reupert & Woodcock, 2010). CU traits are associated with atypical responsiveness to reward and discipline (Levine et al., 2022), suggesting that it may be more challenging for teachers to successfully implement these classroom management strategies with children high in CU traits. Theoretical models have highlighted a link between CU traits and impaired reward processing, but findings in this area are mixed (Byrd et al., 2014). Traditionally, children with high CU traits have been viewed as possessing a 'reward-dominant' behavioral style, pursuing rewards regardless of the negative consequences of their actions for themselves or others (Fisher & Blair, 1998). However, this may differ across reward categories, with CU traits associated with greater responsiveness to rewards relating to social dominance or monetary gain (Foulkes et al., 2014), and reduced sensitivity towards rewards associated with social affiliation (Waller & Wagner, 2019). Indeed, qualitative research indicated that teachers in the United Kingdom (UK) perceived high school students with high CU traits and disruptive behaviors to have a decreased sensitivity for social rewards (e.g., praise), while tangible rewards (e.g., sweets) were viewed as effective for children with disruptive behavior regardless of their level of CU traits (Allen, Bird, & Chhoa, 2018). Allen et al. suggested that this reduced responsiveness to social rewards may discourage teachers from using rewards to form good quality TCRs and promote school engagement. In support of this claim, a short-term longitudinal study of 218 South Korean school children (52% boys, aged 10–12 years) found that CU traits predicted less use of teacher rewards over time (Hwang, Waller, Hawes, & Allen, 2020). Thus, teachers may need additional support and training to maintain use of reward-based strategies with children with CU traits and disruptive behavior.

Reduced sensitivity to punishment is a well-established correlate of CU traits, even when controlling for disruptive behavior (Hwang, Allen, Kokosi, & Bird, 2021). In current theoretical models (Blair, 2017; Kochanska, 1993; Pardini & Frick, 2013), the term 'punishment' is conceptualized broadly, referring to a wide variety of behaviors including discipline and limit setting (e.g., setting clear rules and expectations), punishment procedures (e.g., criticism, physical punishment), and others' expressions of negative emotion (e.g., fear, distress, disapproval, or anger). Lack of affective discomfort in response to discipline is theorized to impede the

development of conscience through the socialization efforts of parents, teachers, or peers (Blair, 2017; Kochanska, 1993). This lack of guilt, combined with a fearless attitude towards consequences, means that children with CU traits are more likely to misbehave and to repeat this misbehavior following discipline (Byrd et al., 2014). In the parenting literature, longitudinal research has shown that parents are more likely to engage in harsh discipline in response to this reduced sensitivity to negative reinforcement, with this increased use of coercive discipline leading to an increased severity of CU traits and antisocial behavior (Waller et al., 2017). Likewise, research in schools has shown that punishment-based strategies in schools have been associated with poor outcomes including extinction bursts, behavioral escalation, and have failed to demonstrate long-term effectiveness (Costenbader & Markson, 1998).

There is much less research on this topic in the school compared to the family setting, however, in two previous qualitative studies, teachers of students aged 10–14 years attending state high schools in the UK perceived children with disruptive behavior and high CU traits to be less responsive to discipline than children with disruptive behavior and low CU traits (Allen, Morris, & Chhoa, 2016; Allen, Bird, & Chhoa, 2018). Some teachers mentioned that this reduced effectiveness led them to avoid limit setting and reduced their confidence in their ability to manage challenging behavior in the classroom. The previously mentioned longitudinal study of South Korean school children also found that CU traits were significantly related to reduced sensitivity to teacher discipline over time (Hwang, Waller, Hawes, & Allen, 2020). However, encouragingly, and unlike findings for parents, teachers did not increase their use of harsh discipline over time with children high in CU traits. Author attributed this to the increased training and legal, ethical, and professional responsibility of teachers to avoid the use of punishment.

Instructional methods are classroom structures and pedagogical activities planned by teachers (Kanuka et al., 2007). Instructional methods are important in school life as they enhance student engagement and promote academic performance (Young et al., 2003). Theory has primarily highlighted low academic motivation, poor quality teacher-child relationships and reduced responsiveness to teacher classroom management strategies as mechanisms explaining the poor school performance of children with CU traits (Hwang, Allen, Kokosi, & Bird, 2021; DeLisi et al., 2011; Horan et al., 2016), however this has recently been extended to include children's responses to instructional methods. Bird, Chhoa, Midouhas, & Allen, 2019 suggested that children with CU traits may not derive the well-documented benefits of peer learning and groupwork due to their reduced empathy and social competence (Frick et al., 2014; Haas et al., 2018). However, the relationships between CU traits and responses to different forms of instructional methods have yet to be formally explored.

1.1.2. CU traits and teacher-child relationship (TCR) quality

In the current study, teacher-child interaction is defined as interactive exchanges between teachers and children in the context of teachers' implementation of rewards, discipline, and instructional methods. In contrast, TCR quality is defined as the emotional connection between teachers and children, comprising three distinct dimensions of closeness, conflict, and dependency (Pianta et al., 1995). Good quality TCRs characterized by greater closeness and lower levels of conflict and dependency are especially important for at-risk children, most likely due to the provision of alternative attachment relationships that protect children from negative developmental outcomes (Hughes & Cavell, 1999). However, children's disruptive behavior can lead to greater conflict between teachers and students (Friedman-Krauss et al., 2014). Research has

found that CU traits are significantly related to poor quality TCRs in elementary school students in the USA (Crum et al., 2016; Horan et al., 2016), Italian middle school students (Baroncelli & Ciucci, 2020) and South Korean primary school students (Hwang, Waller, Hawes, & Allen, 2022), even when accounting for comorbid externalizing problems. It may be challenging for teachers to build a positive relationship with children high in CU traits due to their reduced motivation to establish or maintain close social bonds (Waller & Wagner, 2019). However, high school teachers reported that a good quality TCR with students high in CU traits had benefits for their academic motivation and behavior in the classroom (Allen, Bird, & Chhoa, 2018), highlighting the importance of supporting teachers to build positive relationships with these at-risk children.

1.1.3. CU traits and teacher-parent relationships

Successful teacher-parent relationships have significant and lasting positive effects on children's school adjustment and TCR quality (Hill & Taylor, 2004; Sheridan et al., 2012). Even though the importance of good teacher-parent relationships is well understood by teachers, sometimes these relationships are strained because of the challenges in working with children with disruptive behavior (Mautone et al., 2015). Considering that CU traits are associated with poorer quality TCRs even when accounting for co-occurring externalizing problems (Crum et al., 2016), it is likely that the teachers of these high-risk children will also have more difficult relationships with parents. However, a potential link between teacher-parent relationship quality and CU traits has yet to be investigated.

1.1.4. CU traits in East Asian children

While research supports the universality of CU traits across cultures, there is evidence for East-West differences in trait expression and correlates (Sng, Hawes, Hwang, Allen, & Fung, 2020). Fung et al. (2009) found that Chinese parents rated their children as having higher levels of CU traits than parents of North American children. Fung et al. attributed this finding to the Chinese cultural tradition of suppressing emotional expression, potentially inflating scores on the 'Unemotional' scale of the Inventory of Callous-Unemotional Traits (ICU; Frick, 2004). Recent research comparing the ICU in UK and Chinese school students found systematic differences in the way children from the two nations rated several items [e.g., 'I apologize to people I hurt'], indicating that there may be cultural variation in the expression of CU traits (Allen, Shou, Wang, & Bird, 2021). Furthermore, several studies have failed to find a significant association between CU traits and disruptive behavior in East Asian children (Sng, Hawes, Hwang, Allen, & Fung, 2020). This stands in stark contrast to findings in Western nations, where disruptive behavior is a well-established correlate of CU traits (Frick et al., 2014). To date, most of the existing research on CU traits is limited to Western countries, with relatively few studies conducted in Asia (Allen, Shou, Wang, & Bird, 2021). As culture influences the interplay between child temperament and the social environment from the micro-level (e.g., school and home environments), it is important to examine the influence of CU traits in the Chinese school context.

1.2. The present study

The current study aims to explore differences in Chinese preschool teachers' perspectives on disruptive behavior, teacher-child interaction, and the quality of teacher-child and teacher-parent relationships in children with disruptive behavior who have high or low levels of CU traits. To date, studies investigating relationships between CU traits and school have chiefly taken a quantitative

approach, with previous qualitative research on CU traits in schools solely conducted in Western nations. As research in this area is still at an early stage, a qualitative approach can help to identify potential mechanisms explaining the links between CU traits, disruptive behavior and the nature and quality of teacher-child and teacher-caregiver interaction, and uncover more nuanced, contextualized information that may be important or specific to the Chinese school context. The interactive and inductive nature of the semi-structured interviews enables researchers to accumulate in-depth and rich information within the context it occurs (Alshenqeeti, 2014) and generate theories through exploration (Braun & Clarke, 2013). While having predetermined questions, researchers using this method can elicit clear and complete information from participants and deliver follow-up questions to flexibly probe emerging topics that the researchers did not anticipate (Barriball & While, 1993). Importantly, our findings may help to inform school-based interventions focusing on teacher classroom management strategies, school-based relationships, and instructional methods as a means of promoting children's social-emotional skills, school engagement and prosocial behavior.

The research questions were as follows.

1. How do teachers' perceptions of disruptive behaviors differ for children with high versus low CU traits?
2. How do teachers manage the disruptive behavior of children with CU traits, and what are their views on children's response to classroom discipline, reward, and instructional strategies for children with disruptive behavior and high CU traits compared to those low in CU traits?
3. How do teachers' perceptions of the quality of teacher-child and teacher-parent relationships differ for children with disruptive behavior and high CU traits compared to those low in CU traits? How do teachers perceive the quality of these relationships in terms of their impact on the school functioning and success of children in these two groups?

2. Method

2.1. Participants and procedure

Three public preschools of varying levels of educational and environmental quality were randomly selected to ensure that participants were recruited from a diverse range of schools. Following approval from the ethics review board of the UCL Institute of Education, information and consent forms outlining the study were sent to school principals, all of whom gave their permission to approach teachers at their school. To obtain rich and in-depth information from the interviews, only teachers from Years 2 and 3 were included to ensure that teachers had known their students for a sufficient length of time, as Year 1 students had just started school when data collection commenced. In total, 22 teachers met our selection criteria of being a Year 2 or 3 teacher and being available during the set data collection week to attend an interview. All teachers agreed to participate and provided informed written consent.

The current study was conducted over a three-week period from November to December 2019, with one week spent in each preschool. Each teacher was asked to nominate and report on two children who displayed the most disruptive behavior in their class. Exclusion criteria were the presence of autism, developmental delay, or major medical disorder that has significantly interfered with the child's family and school life. No teacher-nominated children were excluded based on these criteria. These exclusion criteria were designed to control for potential confounds that may explain teacher perceptions of the school functioning of children

with disruptive behavior and low vs high levels of CU traits. Prior to their interviews, teachers received questionnaires assessing teacher and child sociodemographic characteristics and CU traits. Teachers were asked to complete the questionnaires at any time convenient for them during the week of data collection, but to return them by the end of the pre-arranged one-week data collection period set by the school and the research team.

Before the research commenced, teachers were contacted through their principals and interview slots were scheduled. Teachers were interviewed before school, after school, or during breaks (depending on the teachers' preference) in a private, quiet room at their school. The researcher spent the whole day at the preschool during the data collection week to give teachers the opportunity to ask any questions related to the research. Interviews were administered in Mandarin by the first author. At the start of the interviews, teachers were asked to report on two nominated children, then the teacher completed separate interviews for each child, one after another. Interviews lasted between 90 and 120 min ($M = 102.70$ min, $SD = 10.47$).

Two teachers completed the questionnaires but not the interviews due to time constraints, resulting in a final participation rate of 91%. Teachers who withdrew did not differ from those who completed the interviews on age, gender, ethnicity, or years of teaching experience (all $ps > .05$). In sum, 20 teachers aged 26–48 years old ($M = 34.05$ years, $SD = 7.49$) reported on 40 children aged 4–6 years old ($M = 5.3$ years, $SD = 0.65$). All teachers identified their ethnicity as Chinese, most were female (90%) and their years of teaching experience ranged from 2 to 30 years ($M = 11.35$, $SD = 8.81$). Out of the 40 children nominated by teachers, 85% were boys ($n = 34$) and all were Chinese. All children lived in a two-parent family, and most were described by teachers as having a 'moderate' family financial condition (85%); 12.5% were reported as wealthy, and a small percentage as socially disadvantaged (2.5%).

2.2. Measures

Background. A brief background questionnaire gathered information about teacher age, gender, ethnicity, and years of teaching experience. At the schools' request, information about child sociodemographic characteristics, including age, gender, ethnicity, family type, and family socioeconomic status was provided by teachers rather than parents, based on their knowledge and contact with children and their families. Parents were informed in detail by opt-out consent forms that this information would be collected from teachers, and no opt-out consent forms were returned.

Semi-structured Interview. The interview schedule included three sections (children's behavior, teacher-child interaction, TCR quality) based on past qualitative interviews targeting CU traits in secondary schools (Allen, Morris, & Chhoa, 2016, Allen, Bird, & Chhoa, 2018). Each section comprised a sequence of open-ended questions asking teachers to provide a typical example of each domain and to describe child (and teacher) behaviors in the classroom that related to each topic, for example, 'Generally speaking, what disruptive behaviors does [target child] show?' 'How often does [target child] show disruptive behavior?'. The interviewer then probed the participant to capture more detailed information.

Prior to the formal interviews, a pilot study was conducted with seven Chinese preschool teachers. Following teacher feedback, the interview was modified for the preschool period and to ensure its cultural relevance and sensitivity. A new section was added on teacher-parent relationship quality as this theme frequently surfaced in the pilot study. A section on instructional methods was also included to evaluate the claim that the poor academic performance of children with CU traits, particularly, boys, may be influenced by their reduced responsiveness to instructional methods (e.g., peer

learning) known to promote engagement in typically developing children (Bird, Chhoa, Midouhas, & Allen, 2019). The interview questions along with corresponding research questions are presented in Table 3 and a copy of full interview schedule is available at: [<https://www.shineresearchlab.com/measures>].

The Clinical Assessment of Prosocial Emotions: Version 1.1 (CAPE1.1; Frick, 2013) was also administered to teachers. CAPE is a clinician rating system developed to specifically assess CU traits in a broad age range (3–21 years old). It assesses four core symptoms in line with the DSM-5 criteria for the Limited Prosocial Emotions (LPE) specifier for conduct disorder: (a) a lack of remorse or guilt, (b) callousness, (c) unconcerned about performance, and (d) shallow emotions (APA, 2013). The CAPE coding form provides an explicit prototype description for each symptom to guide ratings on a three-point scale from 0 (not descriptive or mildly descriptive) to 2 (highly descriptive). If two or more symptoms are rated 2, the target child is considered to meet the diagnostic threshold for the LPE specifier. In CAPE semi-structured interviews, each CU traits item has at least two stem questions which can only be answered with 'Yes' or 'No'. These are followed by a request for examples and follow-up questions which provide more detailed information to aid interviewer ratings. The manual suggests that judgments should be based on information from multiple resources (like rating scales and interviews) and informants (such as child self-reports and parent/teacher reports). However, given that parents were not involved in the research and that preschool-aged children are too young to provide reliable and valid reports via interviews (Goodman & Melinder, 2007), CAPE 1.1 was only administered to teachers, with their reports on ICU used as supplementary information to ensure the validity of the CAPE 1.1 ratings.

The CAPE has been shown to have good criterion validity and construct validity in two studies to date: 35 children (69% male, aged 5–18 years) from disadvantaged families in England (Centifanti et al., 2019) and in a sample of 85 Australian children with disruptive behavior disorders (75% males, aged 3–15 years) (Hawes et al., 2020). Given that there was no available Chinese version of CAPE, the CAPE Informant Interview schedule was translated into Mandarin Chinese for this research. Two bilingual graduate students forward translated and then back translated the CAPE. The back-translated version of the CAPE was then compared with the original version of CAPE. Four Chinese preschool teachers were invited to read the translated version to check its readability. Based on feedback from teachers and research team members, a few ambiguous words were adjusted. For example, '使开心' was changed to '使振作'. Although '使开心' and '使振作' both imply that someone was happy, '使振作' indicates that the individual's mood changed from negative to positive, consistent with the original English term 'cheer up' used in the CAPE. The Chinese version of CAPE was finalized and approved by the developer of CAPE, Paul Frick.

An independent trained researcher who was blind to study aims assisted with reliability checks for CAPE ratings. Twenty percent of the sample interviews ($n = 8$) were randomly selected and coded independently by the trained researcher. The intraclass correlation coefficients for CAPE scores ranged from 0.77 to 0.89, indicating good agreement (Koo & Li, 2016). Any disagreements were discussed and resolved following the independent reliability coding, with the final consensus rating used in the study analyses.

CU Traits. The Inventory of Callous-Unemotional traits (ICU; Frick, 2004) was also used to assess teacher report of CU traits. The ICU asks respondents to rate 24 items for the target child on a 4-point Likert scale ranging from 0 'not at all true' to 3 'definitely true'. The best-fitting model of ICU has a bifactor structure, which includes one overarching CU traits factor and three subfactors: callousness (11 items), uncaring (8 items), and unemotional (5

items) (Ray & Frick, 2018). This factor structure has been supported in diverse samples across age groups, gender, informant, and cultures (Frick & Ray, 2015). The Mandarin translation of the ICU demonstrated good reliability and validity in Chinese preschool children (Deng et al., 2016). Alpha for the total ICU score in the current sample was .89.

2.3. Data analysis

To ensure the accuracy and reliability of the data, all the interviews were audio-recorded and transcribed verbatim. The interviews were analyzed using a conjunct process of deductive and inductive thematic analysis (Braun & Clarke, 2013). Potential codes were developed to address the research questions of the current study and by drawing on the literature on CU traits in the school setting. In addition to deductive codes, inductive codes that described new themes observed in the data were generated through analytic process. Codes were generated within the explicit meaning of the data, and no interpretations were made beyond its semantic content. For example, no attempts were made to identify underlying ideologies or assumptions that were theorized as influencing teacher statements. The first author performed the coding of all transcripts in NVivo 11 (QSR International Pty Ltd, 2018). After discussion and review of codes within the research team, a final list of candidate codes was established.

Interview transcripts were coded before CAPE and ICU scores were analyzed to ensure the coder was unaware of child CU status based on teacher report. According to teachers' reports on the CAPE and the ICU, 7 children (5 boys, 2 girls) aged 4–6 years old (M = 5.00 years, SD = 0.58) met the diagnostic threshold for Limited Prosocial Emotions and were designated by the researcher as belonging to the high CU traits group, with the remainder of the sample forming the low CU traits group. The 7 children in the high CU traits group were nominated by 7 different teachers. Due to the small sample size, where assumptions of normal distribution may be violated, and to check that relationships were statistically robust, non-linear regression using bootstrapping to derive an empirical sample of the distribution was run in SPSS Version 26. High and low CU groups were compared on demographic

characteristics using chi-squared analyses for categorical variables and one-way analysis of variance for continuous variables. There were no significant group differences in child age, gender, ethnicity, family type and family socioeconomic status (all *ps* > .05).

Within each group, codes were connected and clustered to form potential themes. The relationships between codes and themes were carefully examined using visual representations such as mind-maps. Codes describing the same issues were grouped together under a more abstract definition, with some codes identified as main themes while others were classified as subthemes. Themes were then reviewed and refined (e.g., combining similar themes, separating themes into over-arching themes, subthemes or discarding themes in which codes were not meaningful, consistent, or coherent) by the research team. An independent trained researcher who was blind to study aims and teacher questionnaire report of CU traits assisted with reviewing names and definitions of candidate codes and themes to ensure they captured meaningful patterns that told the best story of data. Coders came to a consensus on themes identified in the interview data following discussion, with no additional codes or themes raised.

3. Results

In the below sections, themes describing relevant issues are organized under broader topics, with percentages of each theme and example quotes. The percentages for themes related to children's responses to instructional methods were calculated by the number of children who displayed positive or negative responses to those strategies divided by the number of children who received those strategies in the high and low CU groups separately. Percentages for themes related to teacher-grandparent relationships were calculated by the number of children whose grandparents had good or poor relationships with teachers divided by the number of children whose grandparents were involved in children's education in each group. Percentages for other themes were calculated by the number of children who were labelled with the theme divided by the total number of children in each group. Descriptions and percentages of main themes and subthemes for children high and low in CU traits are presented in Tables 1 and 2.

Table 1
Main Themes and Subthemes for CU traits, Disruptive Behavior and School Environmental Factors in the High CU Traits Group.

Theme	Sub-theme	Descriptions	Percentage of theme endorsements (children N)
Disruptive behaviors	Minor and low levels of disruptive behavior	Low frequency and minor disruptive behavior that did not disrupt classroom functioning, such as gazing into space during class; playing with fingernails.	14% (1)
	High levels of disruptive behavior	High-Frequency and severe disruptive behavior that disrupted classes, such as walking around; disturbing other children, temper tantrums, damaging school property, and being aggressive towards others.	86% (6)
	Lack of empathy	Teased or made fun of others.	86% (6)
	Goal-oriented	Placed a high value on their goals regardless of school rules or the negative consequences of their aggressive behavior for others or themselves.	86% (6)
Discipline	Reminders	Teachers verbally direct children by providing reminders of expectations, for example, reminding children that they are doing something they are not supposed to be doing.	100% (7)
	Warnings	Teachers warn children to stop misbehaving or they would take action.	100% (7)
	Moving seats	Teachers move a child from one place to another. For example, moving the child with disruptive behavior to a place close to the teacher or separating two children who keep chatting during the class.	57% (4)
	Time-out	Teachers temporarily separated a child from an environment where unacceptable behavior occurred. Often the child was asked to stand or sit in a designated space for time-out.	57% (4)
	Criticism Disqualification	The teacher criticized a child, typically with a negative and/or harsh tone.	57% (4) 57% (4)

(continued on next page)

Table 1 (continued)

Theme	Sub-theme	Descriptions	Percentage of theme endorsements (children N)
Negative response to discipline		Teachers disqualify children from the activities they are interested in. For example, the child cannot take part in the next play activity, or the child cannot be chosen to be the teachers' helper.	71% (5)
	Lack of guilt	Children showed an uncaring response, such as not showing negative emotions like guilt, shame, or anger, and continued to misbehave and ignore the teachers' attempts at limit setting; or oppositional responses with negative emotional and behavioral responses such as crying, shouting, being angry and/or defensive, running away, and trying to avoid punishment.	
Fewer rewards Positive response to rewards		Did not show guilt when doing something wrong and teachers perceived it was difficult for these children to say sorry.	71% (5)
		Children were rarely rewarded by teachers when compared to peers.	43% (3)
Value teacher and peers' opinion		Motivated by tangible (e.g., toys), social (e.g., praise), and/or privileges (e.g., being given priority to choose a toy). Motivation was evident by a positive emotional response, increased academic engagement and/or prosocial behavior.	100% (7)
		Children cared about what teachers thought of them, and looked proud when teachers rewarded them, especially when teachers rewarded them in front of their peers.	71% (5)
Negative response to instructional methods	Negative response to CLTD	Children were distracted, passive, or disrupted the class when teachers used CLTD instructional methods, such as lectures or demonstrations.	100% (7)
	Negative response to GLTD	Children were distracted or passive when teachers used GLTD instructional methods, such as lectures or demonstrations at a group level.	75% (3 out of 4)
	Negative response to GLCD	Children showed low engagement, and did not cooperate/communicate well with peers, for example, they were bossy, argumentative or aggressive towards others when teachers used GLCD instructional methods, such as group learning or cooperative learning.	75% (3 out of 4)
Positive response to instructional methods	Positive response to ILCD	Children were highly engaged and motivated when teachers used ILCD instructional methods, such as individual learning activities, because children could choose the content and materials for studying based on their interests.	71% (5)
	Positive response to ILCTI	Children were highly engaged, motivated, and responsive when teachers used ILCTI instructional methods, such as one-on-one tutoring, because teachers could provide close supervision with children and support children on their own needs.	100% (4 out of 4)
Poor quality TCR		Teachers viewed child's behavior as challenging to manage; frequent conflict between teachers and children.	43% (3)
	Peer rejection	Poor TCR led to peer rejection, with peers refusing to work or play with the child who had a poor relationship with the teacher.	14% (1)
Mixed quality TCR		Teachers described their relationships with children as having both negative and positive features – sometimes they got along well with the child, while sometimes they felt angry and experienced conflict.	43% (3)
Good quality TCR		Teachers believed they shared a close and friendly relationship with children. They liked, cared and understood the children and dealt with them patiently and tolerantly when they misbehaved. The children, in turn, liked and respected the teachers.	14% (1)
TCRs did not influence child response to teacher strategies		Teachers believed the quality of the teacher-child relationship did not influence how children responded to rewards, discipline, and instructional methods. The child's individual interests and characteristics determined their behavior in class.	100% (7)
Poor quality teacher-caregiver relationships	Poor quality teacher-parent relationship	Teachers viewed their relationships with parents as lacking in communication and conflictual. Parents rarely engaged in school activities. They had different opinions on child behavior management with to teachers and sometimes quarrelled with teachers.	86% (6)
	Poor quality teacher-grandparent relationship	Teachers viewed their relationships with grandparents as lacking in communication and conflictual. Grandparents rarely engaged in school activities. They usually had different opinions on child behavior management with teachers and sometimes quarrelled with teachers.	83% (5 out of 6)
	Negative influence of poor quality of teacher-caregiver relationships	Teachers believed their poor relationship with caregivers negatively impacted children's behavioral and academic performance and TCR quality.	100% (7)

3.1. Callous-unemotional (CU) traits and disruptive behavior at school

As expected, teachers described children with disruptive behavior in the high CU group as displaying more intense disruptive behavior than children with disruptive behavior in the low CU group in terms of both severity and frequency. Teachers reported that most children in the high CU group showed disruptive or aggressive behavior that interfered with class functioning at least once a day (86%).

He likes to defy teachers and do things that are not allowed during class, which happens every day. His aggressive behavior is not that bad, but still two or three times a week. For example, he likes to knock other kids down for fun when we play'.

Fewer children with disruptive behavior in the low CU group were perceived by teachers as showing disruptive behavior on a daily basis (52%). For these children, teachers usually described their behavior as being disruptive to the class only, with no or only low-frequency aggressive behavior.

Table 2
Main Themes and Subthemes for CU traits, Disruptive Behavior and School Environmental Factors in the Low CU Traits Group.

Theme	Sub-theme	Descriptions	Percentage of theme endorsement (children N)
Disruptive behavior	Minor and low levels of disruptive behavior	Low frequency and minor disruptive behavior that did not disrupt classroom functioning, such as gazing into space during class; playing with fingernails.	48% (16)
	Moderate and high levels of disruptive behavior	Children frequently displayed moderate levels of disruptive behavior that disrupted classroom functioning, such as chatting, but rarely displayed severe disruptive behavior, such as temper tantrums, damaging school property, or being aggressive towards others.	52% (17)
	Lack of empathy	Teased or made fun of others	27% (9)
Discipline	Goal-oriented	Placed a high value on their goals regardless of the school rules or the negative consequences of their aggressive behavior for others or themselves.	15% (5)
	Non-verbal cues	Teachers use non-verbal cues, gestures or signals to engage children in instruction, give a warning, or discipline a child.	18% (6)
	Reminders	Teachers verbally direct children by providing reminders of expectations, for example, reminding children that they are doing something they are not supposed to be doing.	100% (33)
	Warnings	Teachers warn children to stop misbehaving or they would take action.	100% (33)
	Moving seats	Teachers moved a child from one place to another. For example, moving the child with disruptive behavior to a place close to the teacher or separating two children who keep chatting during the class.	18% (6)
	Timeout	Teachers temporarily separated a child from an environment where unacceptable behavior occurred. Often the child was asked to stand or sit in a designated space for time-out.	55% (18)
	Criticism	The teacher criticized a child, typically with a negative and/or harsh tone.	55% (18)
Positive response to discipline	Disqualification	Teachers disqualify children from the activities they are interested in. For example, the child cannot take part in the next play activity or the child cannot be chosen to be the teachers' helper.	48% (16)
	Children accepted teachers' discipline, showed guilt, apologized, and corrected their misbehavior.		64% (21)
Positive response to rewards		Motivated by tangible (e.g., toys), social (e.g., praise), or/and privilege (e.g., being given priority to choose a toy). Motivation was evident by a positive emotional response, increased academic engagement and prosocial behavior.	100% (33)
Negative response to instructional methods	Negative response to GLCD	Children showed low engagement, and did not cooperate/communicate well with peers, for example, they were bossy, argumentative or aggressive towards others when teachers used GLCD instructional methods, such as group learning or cooperative learning.	31% (8 out of 26)
Positive response to instructional methods	Positive response to CLTD	Children were highly engaged and very positive, for example asking questions when teachers used CLTD instructional methods, such as lectures or demonstrations.	18% (6)
	Positive response to GLTD	Children were highly engaged and very positive, for example asking questions when teachers used GLTD instructional methods, such as lectures or demonstrations at a group level.	83% (15 out of 18)
	Positive response to ILCD	Children were highly engaged and motivated when teachers used ILCD instructional methods, such as in individual learning activities, because children could choose content and materials for studying freely based on their interests.	73% (24)
	Positive response to GLCD	Children cooperated/communicated well with peers and could achieve study goals when teachers used GLCD instructional methods, such as group learning or cooperative learning.	69% (18 out of 26)
	Positive response to ILCTI	Children were highly engaged, motivated, and responsive when teachers used ILCTI instructional methods, such as one-on-one tutoring, because teachers could provide close supervision with children and support children based on their own needs.	100% (7 out of 7)
	Benefit from increased teacher-child ratio	Teachers paid more attention to children with disruptive behavior when the teacher-child ratio was high, which prevented children from misbehaving.	15% (5)
	Good quality TCR	Teachers believed they shared a close and friendly relationship with children. They liked, cared for and understood the child and dealt with them patiently and tolerantly when they misbehaved. The child, in turn, liked and respected the teachers.	
The influence of the TCR on child response to teacher strategies		Teachers believed that the good quality teacher-child relationship made the child more sensitive to rewards, discipline, and instructional methods, and more engaged in the academic activities.	48% (16)
Mixed quality TCR	Teachers described their relationship with the child as having both negative and positive features – sometimes they got along well with the child, while sometimes they felt angry and experienced conflict.		58% (19)
Good quality teacher-caregiver relationship	Good quality teacher-parent relationship	Parents were highly engaged in school-family cooperation. Teachers and parents had a respectful and trusting relationship, and shared goals for the child's well-being and education.	42% (14)
	Good quality teacher-grandparent relationship	Grandparents were highly engaged in school-family cooperation when parents were absent. Teachers and grandparents had respectful and trusting relationships and shared goals for the child's well-being and education.	67% (10 out of 15)
	Positive influence of good quality of teacher-caregiver relationships	Teachers believed a good quality teacher-caregiver relationship had a positive impact on children behavioral and academic performance	36% (12)

Table 3
Research questions and corresponding interview questions.

Research questions	Main interview questions
How do teachers' perceptions of disruptive behaviors differ for children with high versus low CU traits?	a) Generally speaking, what disruptive behaviors does [target child] show? b) How often does [target child] show disruptive behavior (probe for each example given)? c) Could you please give me typical examples? Just imagine what happened in the classroom are all filmed and then please describe in detail what we can see in this video which recorded [target child]' disruptive behavior (probe for each example given)? -What do you think are the reasons for [target child's] disruptive behavior?
How do teachers manage the disruptive behavior of children with CU traits, and what are their views on children's response to classroom discipline, and reward, and instructional strategies for children with disruptive behavior and high versus low levels of CU traits?	a) What types of reward techniques do you use to [target children]? b) How does [target child's name] respond when you reward them? -Why do you think s/he responded this way? c) What types of discipline techniques do you use to [target children]? d) How does [target child] respond when you discipline them? - Why do you think s/he responded this way? e) What types of instructional methods do you use in class f) How does [target child] respond when you use these instructional methods (probe for each example given) - Why do you think s/he responded this way?
How do teachers' perceptions of the quality of teacher-child and teacher-parent relationships differ for children with disruptive behavior and high versus low levels of CU traits?? How do teachers perceive the quality of these relationships in terms of impacting the school functioning and success of children in these two groups?	a) How would you describe your relationship with [target child]? b) How do you think your relationship with [target child]' influence: 1. His/her behavior in class? 2. How well s/he engages with schoolwork? 3. How s/he responds to rewards/discipline/instructional methods? c) How would you describe your relationship with [target child' parents]? d) What kinds of school activities do [target child's parents] engage in? -Frequency (prompt each activity mentioned by teachers) e) How do you think your relationship with [target child]'s parents' influence: 1. Your relationship with [target child] 2. [target child]'s behavioral performance and adjustment in school? 3. [target child] academic performance in the classroom? 4. Parents' involvement in school?

He always chips in when I am talking, and I need to remind him not to interrupt me every day. He is naughty but also smart. I think there is no child showing aggressive behavior in my class. They are fine. I think such behavior is normal and acceptable.

He is usually fine. For aggressive behavior, it only happened once in the last half year.

Teachers reported that children in the high CU traits group showed less empathy and were more likely to tease or make fun of others compared to children low in CU traits (86% vs 27%):

If any children wet their pants, we teachers help them to change clothes in the locker room. He would come over every time, laughing and shouting something like 'Hey, look! He pissed his pants again!'

Teachers viewed children with disruptive behavior and high CU traits as more likely to engage in 'selfish' behavior than children low in CU traits (86% vs 15%). These children would disregard school rules and the consequences of their aggressive behavior for others when in pursuit of their goals:

In an art class, he wanted to decorate his work with stickers. However, there were no stickers left so he hit other kids to get the sticker he wanted.

3.2. Callous-unemotional (CU) traits and teacher discipline strategies

Teachers reported using a wide range of discipline strategies, varying from limit setting strategies (e.g., reminders), to punishment (e.g., criticism). In total, seven types of discipline were recognized, including non-verbal cues (e.g., eye contact),

reminders, warnings, asking children to move seats, time-out, criticism, and disqualifying children from activities or positions of responsibility (e.g., not allowed to play games or be the teacher's helper). Non-verbal cues were only implemented in response to the disruptive behavior of children in the low CU group (18%) while children with high CU traits were more likely to be asked to move seats (57% vs. 18%) and slightly more likely to be disqualified from games (57% vs. 48%). The remaining discipline strategies were distributed evenly across both high and low CU groups, with teachers reporting that children high and low in CU traits had received a similar frequency of reminders (100% in both groups), warnings (100% in both groups), and time-outs (57% and 55%, respectively). Likewise, use of punishment in the form of criticism was similar across the two groups (57% and 55%, respectively).

Children with disruptive behavior in the low CU group were more likely to be responsive to discipline (64%), with teachers describing the typical responses of this group as displaying guilt, accepting the disciplinary measure, apologizing, and ceasing any misbehavior:

He looked guilty when I warned him. He will say sorry and promise to never do it again.

In contrast, negative responses to discipline were predominantly reported in children with disruptive behavior and elevated CU traits (71%), who were described by teachers as displaying oppositional and/or uncaring attitudes towards all forms of discipline:

Once, I disqualified him from playing the game because his behavior was dangerous. He swore, which hurt my feelings, and said that he would not listen to me.

It seemed that he does not care. He did not think there would be any serious consequences for him, and he did not feel bad about his behavior.

One theme referring to a lack of guilt commonly applied to the high CU group (71%). Unlike their peers with low CU traits who usually 'felt sorry' and 'knew they were wrong', teachers reported that children with disruptive behavior and CU traits did not feel guilty following a transgression and often refused to apologize:

He rarely felt guilty. It was quite hard to make him say sorry.

3.3. Callous-unemotional (CU) traits and teacher reward strategies

Teachers did not view children with disruptive behavior and high or low CU traits as differing in their responses to rewards regardless of whether the reward was social in nature (e.g., praise, tangible (e.g., stickers) or a privilege (e.g., being given priority to choose a toy). Instead, rewards were viewed as effective in promoting prosocial behavior for most children despite their CU status. Teachers recognized the need to find opportunities to reward children who often misbehaved and reported lowering their requirements for good behavior for these children. Teachers identified being praised in front of the class as the most attractive reward for children with disruptive behavior and CU traits:

He did not care about stickers or stars, but he reacted positively when I praised him in public.

Surprisingly, teachers reported that many children with disruptive behavior and high CU traits (71%) desired to be well-thought of by their teachers and peers, and felt proud when rewarded in front of others:

He looked very excited and proud when I rewarded him. It felt as though he wanted to win the favor of the teachers.

It was important to reward him in front of his peers. He would become very proud and motivated.

3.4. Callous-unemotional (CU) traits and responses to instructional methods

Five types of instructional methods were identified based on teacher report of who led the class and class structure: Classroom Level Teacher-Directed (CLTD), Group Level Teacher-Directed (GLTD), Group Level Child-Directed (GLCD), Individual Level Child-Directed (ILCD), and Individual Level Teacher-Child Interaction (ILTCI). CLTD was the most common method, referring to classroom-level activities such as lectures, demonstrations, and storytelling. Positive responses to instructions during whole class teaching were only observed for children with disruptive behavior and low CU traits. Teachers described children with disruptive behavior and high CU traits as disengaged during whole class teaching:

He was not interested in my class, and never answered my questions or followed my instructions.

Group Level Teacher-Directed (GLTD) instructional methods refer to when children in the same class were allocated to different groups and managed by different teachers. Teachers felt most children with disruptive behavior and high CU traits (75%) appeared to lack focus during these teacher-directed small group sessions, showing poor engagement and motivation:

He was always distracted and seldom listened to me during the group activities.

In contrast, teachers reported children with disruptive behavior and low CU traits (83%) responded positively to instructions during small group activities:

He was very active during small group activities. He always raised his hand to ask or answer my questions.

Teachers stated that they were able to pay more attention to children with disruptive behavior in a smaller group, and this promoted better engagement. However, teachers recognized that the increased teacher-child ratio during small group work primarily benefited children with disruptive behavior and low CU traits, as children high in CU traits required on-going supervision by teachers on a one-on-one basis to ensure good behavior:

Usually, we would need two teachers in our class, one teaching the class and the other would sit next to him and look after him specifically to stop his disruptive behavior.

Individual Level Child-Teacher Interacting (ILCTI) refers to one-on-one teacher support or interaction with children. In the teachers' opinion, children with disruptive behavior and high CU traits performed as well as their low CU peers during this close style of teaching, even those who were unresponsive to other instructional formats:

I think he performed very well under my supervision because I could constantly remind him not to be distracted and support him based on his own needs.

Individual Level Child-Directed (ILCD) instructional methods involved children learning independently through playing games alone, with the freedom to choose their own content and learning materials. Teachers said this teaching method successfully promoted motivation and engagement as it is based on children's interests, with most children with disruptive behavior displaying prosocial behavior and engagement in ILCD activities (71% in high CU group; 73% in low CU group):

He was very focused during individual study. For example, he liked the game called 'Catching Small Fish' and he could play it attentively from the beginning till the end.

Group Level Child-Directed (GLCD) instructional methods refer to peer cooperative study (e.g., group tasks, roleplaying). Teachers reported that children with disruptive behavior and high CU traits were more often described as 'bossy', leading to arguments and fights with their classmates than children in the low CU group (75% vs. 31%):

When he cooperated with his peers, he had to be the boss. He would argue with other kids until they gave in and made him the leader.

3.5. Callous-unemotional (CU) traits and TCR quality

Most teachers stated that there were both positive and negative aspects to their relationships with children identified as disruptive at school, regardless of the child's CU status. However, predominantly conflictual relationships were only reported by teachers for children with disruptive behavior in the high CU group. Teachers found it difficult to establish a good relationship with these children as they frequently misbehaved and disobeyed teachers' instructions:

I am quite close to other children in my class. But for him, you know, because of his poor behavior, it is hard for me to be his friend.

More teachers reported having a close or 'friendly' relationship with children with disruptive behavior and low rather than high CU traits (42% vs. 14%):

We cared about one another and were good friends. He shared his daily life with me, and we were quite close.

In addition, one teacher pointed out that her poor relationship with a child in the high CU group may have led to rejection from his peers:

Other kids were watching when I was criticizing him, and then he was ostracized by the other kids, with no one being willing to work or play with him.

For children with disruptive behavior and elevated CU traits, interestingly, teachers did not view TCR quality as influencing their academic engagement or responses to rewards and discipline. Instead, teachers believed that the intrinsic attractiveness of rewards and instructional methods, coupled with the child's sensitivity to discipline, were more important in influencing their responsiveness to discipline and reward-based classroom management strategies and their academic engagement:

I think [he] only behaved well when he was very interested in the content or the organization of this activity. I would not say he performed well because he liked me.

He just wanted stickers or praise. He did not care who rewarded him at all. He was not sensitive to my disciplinary actions, and I cannot see how our relationship made any difference.

In contrast, several teachers noted that children with disruptive behavior and low CU traits tended to be more responsive to teacher classroom management strategies and instructional methods, showing greater engagement in classroom activities when they had a close relationship (48%):

He adored me and respected me, so he was much happier when I rewarded him compared to when the other teacher did so in my class.

There was a time we got along very well during an individual learning activity. I communicated with him and encouraged him to share his work with me. He was very happy and became very active and focused.

3.6. Callous-unemotional (CU) traits and teacher-parent relationship quality

Most teachers viewed the parents of children with disruptive behavior and high CU traits as disengaged, rarely participating in school activities or communicating with teachers (86%).

We wanted parents to participate in school activities, but his parents never came, even for the important activities. We seldom communicated with his parents.

Teachers perceived this lack of support from parents as having a negative impact on children's behavior and schoolwork:

I did not think our poor cooperation helped the child's performance at school because his parents never listened to me or took my suggestions.

One teacher pointed out that the conflictual teacher-parent relationship seemed to influence the TCR:

I saw a younger version of the father in this boy. Their characters were quite similar, which of course had a negative influence on our relationship.

In contrast, good quality teacher-parent relationships were only reported for the low CU group. Teachers reported that they agreed on how to educate their children and shared a friendly, respectful, and trusting relationship:

We shared professional knowledge and strategies with parents. Under our guidance, parents found that their children improved so they trusted and respected us more.

Most teachers who reported cooperative relationships with the parents of children with disruptive behavior believed that this strengthened the TCR, and promoted the child's behavioral and academic performance:

If parents respect you, then their children will respect you as well.

Communicating with parents allowed me to understand the child's needs, strengths, and weaknesses. In turn, his parents knew how to support him appropriately at home and this kid behaves much better at school now.

Teachers reported that grandparents were involved in the education of several children in both groups. Consistent with our findings for parents, teachers reported conflict and a lack of cooperation with most grandparents of children with disruptive behavior and CU traits (83%):

She spoiled the kid and refused to accept my suggestions that would help the girl become more independent. Her grandma did not like me.

In contrast, teachers reported a positive relationship with most grandparents of children with disruptive behavior and low CU traits (67%). Grandparents who shared a positive relationship with teachers usually played an important role in enhancing the family-school relationship when parents lacked the time to work with teachers, with benefits for children's behavior and academic performance:

After I talked to his grandmother about his problems, it was obvious that he performed better in both behavioral and academic areas.

4. Discussion

4.1. CU traits and disruptive behavior at school

Consistent with previous studies (Frick et al., 2014), our findings indicated that teachers perceived more severe, frequent disruptive behavior and aggression for children with disruptive behavior and high CU traits compared to those with disruptive behavior and low CU traits. Teachers reported that children with disruptive behaviors

and high CU traits appeared to value the gains from aggressive behavior while displaying a lack of guilt following such transgressions, derived pleasure from the misfortunes of their peers, and lacked interest in schoolwork relative to children with disruptive behavior and low CU traits. This is consistent with the conceptualization of interpersonal callousness, lack of guilt, and indifference to performance as core features of CU traits (Frick et al., 2014). Thus, although there appear to be differences in CU trait expression and correlates between Western and Asian contexts (Allen, Hwang, & Huijding, 2020), teacher qualitative interviews provided evidence for similarities in the core features and correlates of CU traits in Chinese preschool children to those reported by teachers in Western nations (Allen, Bird, & Chhoa, 2018; Waschbusch et al., 2015).

4.2. CU traits and teacher discipline strategies

Consistent with the theory that CU traits are related to punishment sensitivity (Hwang, Allen, Kokosi, & Bird, 2021) and fearlessness to threat (Waller & Wagner, 2019), teachers reported that children with disruptive behavior and CU traits were less likely to show guilt for a transgression and appeared to lack concern about school-based consequences for themselves such as discipline or poor relationships with others, often refusing to apologize to the teacher or other children. However, in contrast to research on parenting suggesting that parents may respond to children's deceitful-callous behaviors through increased harsh discipline (e.g., Waller et al., 2017), our qualitative findings indicated that teachers did not increase the severity of their discipline to manage the disruptive behavior of children with CU traits. A recent study in South Korean elementary schools also found no cross-sectional or longitudinal associations between CU traits and teacher harsh discipline (Hwang, Waller, Hawes, & Allen, 2020). As pointed out by Author, teachers receive support and training in discipline and reward-based classroom management strategies, and have a strong legal, ethical, and professional responsibility to avoid punishment.

While teachers in the current study did not report the use of physical punishment, they frequently reported use of criticism, although this did not differ in frequency for children with high or low levels of CU traits. Teachers in Western nations also report the use of punishment in response to disruptive behavior (e.g., Allen, Morris, & Chhoa, 2016), with findings from cross-cultural studies suggesting that Chinese teachers use punitive strategies less often than American and Australian teachers (e.g., Bear et al., 2016; Lewis et al., 2005). However, our results suggest that teachers need support to recognize which discipline strategies are helpful versus unhelpful for reducing disruptive behavior displayed by children regardless of their level of CU traits, and to successfully implement reward-based strategies that feature a preventive focus over discipline, which is reactive by its very nature and therefore a less optimal approach.

4.3. CU traits and teacher reward strategies

Our qualitative findings indicated that teachers described children with disruptive behavior and elevated CU traits as being equally responsive to rewards in a real-world context as children with disruptive behavior and low CU traits. Teachers reported that children with disruptive behavior and CU traits were motivated by praise, particularly when praise was given in front of others, consistent with past research suggesting that the presence of peers may facilitate reward-seeking behavior in children with CU traits (Centifanti & Modecki, 2013). In contrast with our findings, high school teachers in the UK viewed children with disruptive behavior and CU traits as less responsive to social rewards such as praise

(Allen, Bird, & Chhoa, 2018), and even reported unintended side effects such as gloating, boastfulness or abuse of a privilege given as a reward (Allen, Morris, & Chhoa, 2016). These conflicting findings may be due to the different age groups as adult positive attention may be a more powerful motivator in early childhood than adolescence (Hawes & Allen, 2016). Child temperament is also likely to show greater malleability early in development, potentially explaining the positive responses to rewards of children with CU traits in our sample.

Our findings also showed that although teachers perceived all children with disruptive behavior to enjoy rewards, they believed that they seldom had chances to reward children with disruptive behavior and CU traits due to their frequent misbehavior. Our findings suggest that teachers need training and support for the effective implementation of classroom management strategies for children with disruptive behavior and CU traits (Allen, Morris, & Chhoa, 2016), and interventions emphasizing teacher rewards and de-emphasizing discipline (e.g., 'Let's Get Smart'; Frederickson et al., 2013), may be successful in reducing CU traits and associated behavior problems in young children.

4.4. CU traits and instructional methods

Our qualitative findings suggested that teachers perceived children with disruptive behavior and high CU traits to behave differently across different types of instructional methods. In line with the suggestion that children with CU traits, particularly boys, may not derive the benefits of peer learning due to their low empathy and social competence (Bird, Chhoa, Midouhas, & Allen, 2019), teachers in our study reported that children with disruptive behavior and CU traits displayed poor engagement in cooperative peer learning activities. Teachers also reported that these children appeared to find paying attention and engaging in tasks difficult, often misbehaving during both whole class and small group instruction, consistent with theory identifying low motivation and reduced responsiveness to teacher discipline as potential mechanisms explaining the link between CU traits and low grades (Bird, Chhoa, Midouhas, & Allen, 2019; DeLisi et al., 2011). However, based on teachers' reports, children with disruptive behavior and CU traits did show similar levels of engagement to their typically developing peers during interest-oriented individual learning activities or closely supervised one-on-one activities with teachers. Findings suggest that providing CU children with individualized materials and activities based on children's interests may be a promising approach to promote their academic engagement and motivation. Furthermore, teachers will need additional support to provide close supervision to children with disruptive behavior and CU traits to facilitate their learning. In the UK, there has been a trend towards providing more training to teaching assistants (TAs), who typically spend more time interacting with children than classroom teachers (Blatchford et al., 2007). Having well-trained staff working with children with CU traits may help to achieve better school outcomes and a positive classroom learning environment.

4.5. CU traits and TCR quality

Consistent with previous research (Crum et al., 2016; Horan et al., 2016), teachers in our study reported poorer relationships with children with disruptive behavior and high CU traits due to their frequent misbehavior, in line with past research showing that disruptive behavior is related to more teacher-child conflict (Friedman-Krauss et al., 2014). Another potential explanation for poor TCR quality is that teachers reported difficulty finding opportunities to reward children with disruptive behavior and high

CU traits. Fewer positive interactions are likely to have a detrimental influence on teacher-child closeness. Furthermore, past research indicated that parent involvement in school predicts more closeness and less conflict in TCRs (Dearing et al., 2008; Wyrick & Rudasill, 2009). Therefore, it is possible that teachers in this study reported having poor TCRs with children with disruptive behavior and high CU traits, due to their poor relationships with those children's caregivers. Teachers pointed out that poor quality TCRs also negatively impacted the peer relationships of children with disruptive behavior and high CU traits, in line with past research indicating that poor quality TCRs are predictive of peer rejection (Hughes et al., 2001). This highlights the need to support teachers in developing good quality TCR with this high-risk group of children, particularly given evidence that children with CU traits are at greater risk for both instigating and being a victim of bullying (Fontaine et al., 2018).

Teachers viewed good quality TCRs as helpful for promoting the academic engagement of children with disruptive behavior and low CU traits. However, they perceived TCR quality as having little to no influence on the responses of children with disruptive behavior and high CU traits to their rewards, discipline, or instructional methods. This stands in strong contrast to past research on UK high school students, where some children with disruptive behavior and CU traits were viewed as responding positively to classroom management strategies when a close TCR was present (Allen, Bird, & Chhoa, 2018). This difference may be because teachers in the current study were typically not successful in forming a close relationship with children with disruptive behavior and high CU traits. It is important to note that even though teachers reported conflict with children with disruptive behavior and high CU traits, most still described their relationships as having some positive aspects. Given that longitudinal research also shows that good quality TCRs predict decreasing CU traits (Baroncelli & Ciucci, 2020) and low teacher affiliation predicts increased CU traits (Hwang, Waller, Hawes, & Allen, 2022), interventions promoting TCR quality appear needed for this high-risk group of children with disruptive behavior.

4.6. CU traits and teacher-caregiver relationships

Our qualitative findings indicated that teachers reported poor relationships and no/limited communication with the caregivers of children with disruptive behavior and high CU traits, even though teachers believed in the benefits of positive teacher-caregiver relationships for children's academic, behavioral outcomes and TCR quality. Interviews revealed that grandparents were often closely involved in their grandchild's schooling. Chinese traditional culture emphasizes collective family interests and multigenerational co-residence; thus grandparents are expected to lighten the parental burden by assisting in raising and educating grandchildren (Zeng & Xie, 2014). Furthermore, in China there is the phenomenon of children who are 'left-behind' when their parents move to work in the city, with grandparents taking on the role of primary caregiver (Burnette et al., 2013). Thus, it is important that research in East Asian nations includes grandparents when considering school-family communication and relationships as they often play a vital role in children's schooling and daily life. Our findings suggest that school-based interventions should incorporate strategies targeting communication between teachers and caregivers to enhance school-related outcomes for children with CU traits.

4.7. Limitations

The current study has several limitations which should be acknowledged. First, even though there is some evidence indicating

that CU traits can occur without the presence of disruptive behavior (Viding & McCrory, 2012), teachers in the current research only reported on children who showed the most disruptive behavior in their class to reduce teacher assessment burden and focus on children at the greatest risk of poor school outcomes. However, this means that our sample is less representative of all children with elevated CU traits. Teachers reported giving fewer rewards to children with CU traits, mainly due to their frequent misbehavior; our findings regarding the frequency of teacher rewards therefore should be interpreted with caution when transferring to children with CU traits in absence of severe disruptive behavior. However, these themes were less prevalent for children with disruptive behavior and low CU traits, and previous quantitative research has found that CU traits are significantly related to poor quality TCRs (Crum et al., 2016), reduced sensitivity to social rewards (Waller and Wagner, 2019) and punishment insensitivity (Hwang, Allen, Kokosi, & Bird, 2021; Hwang, Waller, Hawes, & Allen, 2020), even when accounting for disruptive behavior.

A second limitation is that the sample is homogeneous in ethnicity, as all participants were Chinese. Therefore, our findings may not be transferable to preschool children in other nations. However, we approached schools at differing levels of educational and environmental quality to ensure diversity and representation of different social classes. Our research also had good 'information power', as teachers reported on the two children who showed the most disruptive behavior in their classes, and we over-sampled teachers in case of participant dropout. All schools who were approached agreed to take part and the teacher noncompletion rate was low. Another limitation is that our study relied solely on teacher interview report, which is open to subjective bias, particularly as CU traits are associated with disruptive behavior and increased teacher-child conflict (Crum et al., 2016). Future research should include parent report to see if the child behavior and interpersonal interactions are similar across the home and school settings. Obtaining the perspectives of parents of children with CU traits would also help to identify the reasons underlying poor teacher-parent relationships and lack of communication. Finally, the study was cross-sectional, which limited its ability to investigate the directionality of the relationships between teachers' perceptions of the responses of children with disruptive behavior and high and low CU traits to classroom management strategies, instructional methods and teacher-child and teacher-caregiver relationships. A multi-method approach including classroom observational methods could provide an objective and ecologically valid assessment of the relationship between CU traits and teacher-child interaction in real-time. However, our findings indicate new directions for future research, highlighting teacher-caregiver relationship quality and instructional methods as additional factors that warrant consideration in theoretical models of the development and persistence of CU traits in children.

4.8. Conclusion

This research extends prior, predominantly Western research on CU traits in the school setting to the Chinese preschool context. Findings indicated that CU traits have a similar expression and correlates in the Chinese preschool setting to schools in Western nations, including disruptive behavior, insensitivity to punishment and poor school performance. However, unlike past research in UK high school settings (Allen, Morris, & Chhoa, 2016; Allen, Bird, & Chhoa, 2018), children with CU traits responded positively to teacher reward strategies. Therefore, our results highlight the importance of early identification and intervention for children with CU traits and suggest that a strong emphasis on reward strategies may be an optimal route to promoting prosocial behavior and

school engagement in these high-risk children. Our findings also indicate that interventions need to extend beyond classroom management strategies to target teacher-caregiver communication and enable schools to provide interest-based learning activities and high quality one-on-one instructional support to this unique subgroup of children who are hard to manage in the classroom.

Data availability

Data will be made available on request.

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