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ORIGINAL PAPER

The Role of Theory of Mind, Emotion Knowledge and Empathy in Preschoolers' Disruptive Behavior

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Abstract

Objectives Research examining disruptive behaviors in clinical groups of preschool and school-aged children has consistently revealed significant difficulties in their emotion knowledge and empathy but intact performance in their theory-of-mind (ToM). However, it is largely not known if these difficulties in emotion knowledge and empathy as opposed to ToM are specific to extreme forms of disruption in clinical groups or rather represent broad deficiencies related to disruptive behaviors in general, including the milder levels exhibited by typically developing children. Milder disruptive behaviors (e.g., whining, arguing, rule-breaking and fighting) in peer contexts might relate to normative variations in socio-cognitive and emotional skills like ToM, emotion knowledge and empathy. To illuminate whether the same pattern of relations observed in clinical samples would arise in typical development, this study aims to examine the role of ToM, emotion knowledge and empathy in typically developing preschoolers' disruptive behaviors.

Methods We used individual tasks to measure 116 typically developing Turkish preschoolers' ToM, emotion knowledge (understanding anger and sadness) and empathy for pain, and received mothers' reports about children's levels of disruptive behavior in peer contexts.

Results Path analysis showed that among these skills, it was only empathy which predicted disruptive behaviors significantly ($\beta = -0.25$, $p < 0.05$). Understanding sadness predicted higher empathy ($\beta = 0.18$, $p < 0.05$) and higher empathy predicted lower disruptive behaviors, but the mediation of empathy in the link between understanding sadness and disruptive behavior was not significant ($\beta = -0.05$, $p > 0.05$, 90% CI $= -0.106$, 0.001).

Conclusions Overall, our results indicate that empathizing with others' emotions is more important than understanding their mental states and emotions for lower disruptive behaviors.

Keywords Disruptive behaviors · Empathy · Theory of mind · Emotion knowledge

Disruptive behaviors refer to actions that threaten and disturb harmonious social relationships through displays of anger, aggression, and opposition, such as hitting, yelling, whining, arguing and rule-breaking (Campbell, 1995). These behaviors might range from milder forms as seen in daily turbulent behaviors to severe levels as diagnosed in clinical groups (e.g., oppositional defiant disorder and conduct problems). While moderate disruptive behaviors restricted to preschool ages can function as ways to assert autonomy in peer and family contexts and gradually decline due to advances in language and self-regulation skills (Cote et al. 2007), stability in frequency of these behaviors is linked with future diagnoses of oppositional defiant disorder and conduct disorder (Wakschlag et al. 2010). In their study, Campbell et al. (2006) showed that moderate aggression restricted to preschool years do not appear to disturb social and emotional functioning later in school years and adolescence; however, both high- and low-levels of aggression that show continuity from preschool to later ages were associated with poor social adjustment, such as risk-taking and externalizing problems in the future. This finding shows that not the level of disruption but its continuation over time is linked with negative social adjustment. Therefore, delineating the early socio-cognitive and emotional difficulties (e.g., ToM, emotion knowledge and

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empathy) that may contribute to stability in preschoolers' disruptive behaviors can be of importance for prevention of future negative outcomes.

In school-aged children with conduct problems, studies have consistently identified significant deficits in emotion knowledge and empathy but intact performance in theory-of-mind (Anastassiou-Hadjicharalambous and Warden, 2008; Jones et al. 2010). The same patterns of performance in these skills were also found in a handful of studies that sampled preschool children with oppositional defiant problems (Dinolfo and Malti, 2013; O'Kearney et al. 2017) which is the precursor of conduct problems in school ages (Wakschlag et al. 2010). These findings have given rise to the idea that deficits in emotion processing (emotion knowledge and empathy) rather than deficits in mental state understanding (theory of mind) underlie high levels of aggressive and non-compliant tendencies in clinical samples of children. However, it is largely not known if these deficits in emotion knowledge and empathy as opposed to theory of mind are specific to the high levels of disruptive behaviors seen in clinical samples of preschool and school-aged children, or if they represent broad difficulties characteristic of disruptive behaviors in general, including the mild aggressive, oppositional and non-compliant behaviors of typically developing preschoolers. Given that preschoolers in community samples display ongoing progression in theory of mind, emotion knowledge and empathy (Eisenberg et al. 2006), normative variations in performance of each of these three skills could be associated with their mild aggressive, rule-breaking and oppositional behaviors (Devine and Hughes, 2013).

Although earlier works have emphasized the role of these skills in the lower levels of disruptive behaviors of preschoolers in community samples (Eisenberg et al. 2010), they did not specifically focus on theory of mind, emotion knowledge and empathy within a single study, and hence did not delineate which skill is the most critical. While findings on clinical samples of school-aged children (along with a few findings on preschoolers with oppositional defiant problems, see de la de la Osa et al. 2016; Dinolfo and Malti, 2013; O'Kearney et al. 2017) demonstrate the unique importance of each of these skills for disruptive actions (Frick et al. 2014), these findings do not suffice in giving us a comprehensive understanding of the socio-cognitive and emotional skills associated with early disruptive behaviors in preschoolers. Firstly, the causes (antecedents) of disruption for typical vs. clinical samples may not be the same. From the perspective of developmental psychopathology, a thorough grasp of the nature of social behaviors like disruption, and the factors associated with these behaviors, necessitate using both typically developing and clinical samples. Thus, findings from one inform the other regarding the phenomena under study (Cicchetti, 1990). Secondly, socio-cognitive and emotional skills demonstrate a rapid development during the preschool period and improvement in one facilitates growth in another (Eisenberg et al. 2010). Therefore, social behaviors could be closely tied to the newly emerging and interrelated development of all of these skills during the preschool period. By referring to the theoretical accounts and empirical findings, below we explain in detail how theory of mind, emotion knowledge and empathy could be linked with disruptive behaviors of typically-developing preschoolers.

Theory of mind (ToM), the ability to understand the internal mental states of others, including their beliefs and intentions (Wellman and Liu, 2004), is one of the socio-cognitive correlates of children's social interactions. In a review of seventy-six studies, a meta-analysis (Imuta et al. 2016) showed that preschool and elementary school children's high ToM performance is positively correlated with their prosocial behaviors (e.g., helping, comforting and sharing). Although the magnitude of the association was rather small, as is typical for meta-analytic findings on ToM (see Slaughter, Imuta, Peterson, & Henry, 2015), the review of the existing studies was able to successfully point to a significant correlation between prosocial behaviors and ToM. In contrast, the evidence for the relations between ToM and disruptive behaviors appears more complicated (Sutton et al. 1999) than the link between ToM and prosocial behavior. Focusing on the aggression of bullies who display profound disruption in peer contexts, Sutton et al. (1999) highlighted the necessity of considering the types of children's aggressive actions (reactive vs. proactive). They argued that reactive aggression stems from misunderstanding others' mental states, while proactive aggression arises from higher mental state understanding skills that enable children to predict the possible ways of hurting others to obtain a desirable outcome. After this conceptualization, a majority of the studies focused on the association between disruptive behaviors and ToM in samples where children's aggressive behaviors and oppositions could be differentiated as proactive vs. reactive. A positive relation was reported between ToM and aggressive behavior of 8–11 year-old ring-leader bullies who used proactive aggression and opposition to achieve dominance in peer groups; however, a negative association was found between ToM and aggression in bully-victims of the same age who impulsively retaliate others' provocations (Gasser and Keller, 2009; Gini, 2006). Likewise, among school-aged children with conduct problems, those who exhibited reactive aggression, opposition and rule-breaking showed poor ToM scores (Frick et al. 2014), while a subgroup of these children (e.g., children with callous-unemotional traits-CU) who displayed proactive aggression and severe rule-breaking showed intact ToM performance (Jones et al. 2010; O'Nions et al. 2014).

It is important to note that these samples of school-aged children (e.g., bullies and children with CU) evidenced severe levels of aggression, opposition and rule-breaking in multiple situations, making it easier to categorize their behaviors as proactive vs. reactive. However, in the daily disruptive behaviors of typically developing preschoolers, both reactive and proactive behaviors are observed in different occasions without one type being clearly dominant over the other (Wakschlag et al. 2010). Especially in earlier periods of development, disruptive behaviors include impulsive as well as goal-oriented aggressive acts of opposition, fighting, defiance and rule-breaking (Hughes et al. 2000), and high inter-correlations are observed between these impulsive and goal-oriented actions in community samples ($r = 0.68$; see Card and Little, 2006 for a meta-analysis). Among the handful of studies that examined ToM in relation to both reactive and proactive behaviors, some reported a negative association between ToM and disruptive behaviors, and pointed towards a deficiency in preschoolers' ToM as the cause of their disruptive actions (Capage and Watson, 2001; Shakoor et al. 2012). Yet, some others found null associations (Hughes et al. 2000; Monks et al. 2005), arguing that ToM is only a cold socio-cognitive skill which can be used either in the service of disruptive or prosocial actions, depending on children's motivations (Björkqvist et al. 2000). Moreover, very few studies examined preschoolers' general rule-breaking and opposition behaviors along with their aggressive actions, and their findings failed to yield a direct, significant association between the frequency of these varied disruptive actions and the ToM skills of preschool children (de la Osa et al. 2016; Dinolfo and Malti, 2013). Given this inconsistency in the literature, the link of children's disruptive behaviors, such as aggression, rule-breaking, noncompliance and opposition, with their ToM skills should be further investigated within their entirety.

Besides ToM, another critical skill for harmonious social behaviors is emotion knowledge. It describes the ability to recognize emotions in facial expressions and social contexts and has an important role in shaping children's social behaviors (Denham et al. 2002). Starting from the preschool period, identifying others' emotions based on their facial expressions and situational cues enables children to regulate their own emotions and helps them refrain from inappropriate emotional displays. Thus, emotion knowledge gives rise to proper activation, regulation and utilization of emotions in social exchanges (Mostow et al. 2002). A meta-analysis reviewing thirty-four studies revealed a significant negative association between emotion knowledge and disruptive behaviors in both clinical and community samples of preschoolers (Trentacosta and Fine, 2010). Acknowledging the importance of emotion knowledge, a majority of the studies (see Arsenio and Lemerise, 2001; Cooley and Triemer, 2002; Denham et al. 2002; Izard et al. 2008) assessed preschoolers' understandings of a variety of emotions (e.g., happiness, fear, sadness, anger) and used aggregate emotion knowledge scores in their analyses. However, with respect to socially harmonious behaviors, theoretical accounts have predominantly emphasized the significance of recognizing negative emotions (Blair, 1995; Schultz et al. 2004). From the perspective of social information processing theory (Arsenio and Lemerise, 2001), young children's accurate recognition of others' negative emotions, such as anger and sadness, is very critical. Misreading others' anger and sadness in social encounters can lead to attributions of hostile intent to them and result in aggression, opposition and rule-breaking. Lending support to these arguments, Blair and Coles (2000) reported poorer emotion recognition performance in response to angry and sad expressions compared to happy ones in adolescents with severe disruptive behaviors (Blair and Coles, 2000). Similar difficulties in recognition of anger and sadness were found by Hughes, Dunn and White (1998) in a community sample of "hard-to-manage" preschoolers who displayed rule violations, opposition and aggressive actions.

Nevertheless, negative emotions can vary within themselves and can differ in their relation to disruptive behaviors. The functionalist perspective of emotions (Barrett, 1998) argues that emotions convey certain meanings from emoting persons to others in the environment and regulate social interactions. Each emotion differs in the implicit meaning it relays in a social context and motivates observers to act in ways that are in line with that emotion's underlying meaning. With their increased understanding of emotions, preschoolers become sensitive to the underlying meanings conveyed through others' displays of facial emotions (Denham et al. 2000). For instance, expressions of sadness communicate loss, defeat and helplessness. People expressing sadness appear as low in self-confidence, helpless and challenged in their interactions with the environment (Smith and Lazarus, 1993). Due to these underlying meanings of sadness, recognition of sad feelings in others triggers avoidance from these helpless individuals (Carver and Harmon-Jones, 2009) and facilitates self-regulation, which can play role in decreasing disruptive tendencies toward them. Research showed that preschool children with increased understandings of sad expressions were better at regulating their impulses and displayed lower externalizing symptoms (Martin et al. 2010; Martin, et al. 2015).

In contrast to sadness, anger communicates assertiveness and a sense of being blocked from reaching a desired goal (Witherington and Crichton, 2007). People with angry expressions are perceived as competent, persistent, and motivated to get what they desire (Shields, 2005, Tiedens, 2001). These assertive qualities are likely to make them seem insisting and also partly irritable in their social

exchanges. Indeed, preschool children's misreadings of others' anger and causes of anger are likely to increase their troublesome behaviors in social interactions (Fine et al. 2004; Garner, Jones, and Miner, 1994; O'Kearney et al. 2017). Inaccurate understandings of others' anger and anger-eliciting situations can undermine children's abilities to successfully regulate themselves and lead to disharmonious behaviors like opposition, aggression and rule-breaking. As such, although inaccurate understandings of both sadness and anger can negatively relate to disruptive tendencies, the differences in the underlying meanings communicated through anger (assertiveness and competence) and sadness (helplessness and vulnerability) may give rise to differential associations with disruptive behaviors, which necessitates their separate examination.

In addition to emotion knowledge (understanding sadness and anger), disruptive behaviors in young children are widely investigated in relation to empathy, too, which is defined as an affective response stemming from comprehension of another's emotional states in ways similar to how the other person is feeling or expected to feel (Eisenberg, 2000). As a combination of affective sharing and empathic concern, empathy occurs through perception-action coupling, whereby perception of others' actions and feelings automatically activates representation of the same actions and feelings in the self, and hence, leads to shared representations between the perceiver and the actor (Decety and Jackson, 2004). Due to these shared representations that match the emotions of the perceiver with that of the actor, empathy is conceptually involved in inhibition of disruptive tendencies such as aggression, rule-breaking and oppositional behaviors (Blair, 1995; Björkqvist et al. 2000). It also forms the basis of development of conscience and rule-compatible conduct starting from preschool ages (Aksan and Kochanska, 2005). Those children who are competent at empathizing with the feelings of others tend to display frequent helping and comforting behaviors, and are seen as adept in their social interactions (Eisenberg et al. 2015). Indeed, many studies revealed a significant negative relation between young children's empathy and disruptive behaviors, including physical and verbal aggression, rule-breaking, opposition and bullying (Lovett and Sheffield, 2007; Miller and Eisenberg, 1988; van Noorden et al. 2015).

Yet, the strong negative association between empathy and disruptive behavior was reported predominantly in school-aged kids (8–11-year-olds) and adolescents (11–18-year-olds) (Lovett and Sheffield, 2007). Studies with preschoolers yielded inconsistent results, with either positive or negative correlations between empathy and disruptive behaviors (see Eisenberg et al. 2010 for a review). One likely reason for these inconsistent findings may be related to preschoolers' lower abilities in distinguishing others' emotional states from their own emotional states in empathy-eliciting experimental situations (Decety and Meyer, 2008). Empathy may relate to lower disruptive behaviors and higher prosocial actions only when children can successfully make self-other differentiations in emotion-eliciting situations and regulate their own emotional arousal in these situations for the benefit of others (Eisenberg and Eggum, 2009). Recently emerging self-other differentiation and emotion regulation skills in preschoolers can blur the role of empathy in the disruptive behaviors of these children. Additionally, another source of inconsistency in the results might be related to the utilization of diverse empathy measures. Most of the studies with preschool children assessed empathy in response to children's observations of a wide range of emotions, including happiness, sadness, distress and pain (Gill and Calkins, 2003; Strayer and Roberts, 2004). But, the degree to which empathy was elicited from all of these diverse emotions might not be equal across studies. In other words, not all emotions could uniformly give rise to an equal degree of empathy response in preschoolers. Although empathy by definition comprises emotional responses given to all affective states, from among them, observation of pain might be distinct in its capacity to trigger affective sharing (Lamm et al. 2011). This is because children are especially sensitive and responsive to others' pain and distress starting from the first year of life, as indicated in the emotion contagion (Eisenberg et al. 2006), and are evolutionally motived to alleviate this pain and distress with comforting behavior (de Waal, 2008). Supporting this evolutionarily favored sensitivity to others' pain, it was found that observation of pain activates similar brain areas (e.g., anterior insula cortices and anterior cingulate) as having a first-hand experience of pain both in adults (Jackson et al. 2005) and young children (Decety et al. 2008), and that children's empathy for others' pain is linked with the areas of the brain involved in social interaction and moral behavior (e.g., the temporo-parietal junction, the paracingulate, orbital medial frontal cortices). As evidence of the critical role of empathy for others' pain in lower disruptive behaviors, school-aged children (Lockwood et al. 2013) and youth (Marsh et al. 2013) with conduct problems, and preschool children with oppositional defiant symptoms (O'Kearney et al. 2017), were found to have difficulty in empathizing with others' pain. Low levels of empathy for others' pain and distress is thought to underlie these children's severe disruptive behaviors (Decety et al. 2009). All of these might indicate that when children can regulate their own distress and differentiate it from the distress of others, empathizing with others' pain can play a substantial negative role in preschoolers' disruptive behaviors.

Although ToM, emotion knowledge and empathy develop in an interrelated fashion at preschool ages (Eisenberg et al. 2006), fine distinctions appear between

these skills at the conceptual level (Decety and Meyer, 2008; Eisenberg et al. 2010). Both ToM and empathy rely on perspective taking; however, ToM is mostly conceptualized with respect to understanding unobservable mental states of others, such as their beliefs and intentions, and as such it requires cognitive perspective taking. In contrast, empathy refers to emotional resonance where other peoples' affective states are comprehended and shared, which requires affective perspective taking (Decety and Jackson, 2004). This conceptual distinction between ToM and empathy is most notably seen in school-aged children with conduct problems, especially in those with CU traits (Frick et al. 2014; Jones et al. 2010), and in preschool children with oppositional defiant disorder (de la Osa et al. 2016; Dinolfo and Malti, 2013). Both of these groups display normative performance in ToM tasks but show reduced levels of empathy. In typically developing populations, these skills are interrelated, though it is still important to see which one is more critical for disruptive actions.

Emotion knowledge, on the other hand, is postulated as the initial step and core component of empathy (Eisenberg, 2000). Behavioral evidence indicates that although emotion knowledge is linked with ToM performance of preschool children (Doan and Wang, 2010; Seidenfeld et al. 2014), its association with empathy is stronger (Eisenberg et al. 2006). Therefore, understanding emotions of others can facilitate empathic responding to others and may indirectly help inhibition of disruptive tendencies through affective sharing (Camodeca et al. 2015; Garner, 2003). Given that sadness communicates helplessness and vulnerability (Smith and Lazarus, 1993), understanding of others' sadness can elicit empathetic and prosocial responses. Indeed, research shows that understanding others' sadness is likely to lead individuals to empathize with their helpless and painful positions (Harrison et al. 2007), and that people tend to use their sad expressions to evoke others' empathy and receive their assistance (Hackenbracht and Tamir, 2010). Also, parents' emotion socialization practices that focus on talking about causes and consequences of others' sadness help preschool children develop an increased understanding of sadness and facilitate their empathy skills (Eisenberg, Cumberland, & Spinrad, 1998, Garner, 2003). The sad expressions of others triggered empathetic responses (e.g., concern) in young children once they understood through elaborate and reflective parent-child talk why and how people feel sad. Relatedly, in his violence inhibition mechanism, Blair (1995) argued that humans are evolutionarily sensitive to others' sadness and respond to it by advancing their empathy and inhibiting their aggression. Difficulty in comprehending others' sadness was found to underlie poor empathy performance of school-aged children with disruptive behavior problems (Blair and Coles, 2000), although their empathy responses to positive emotions (e.g., happiness) were not impaired (de Wied et al. 2005). Unlike sadness, less is known about the link between understanding of anger and empathy in children. Since anger signals assertiveness and creates an impression in the observer that the person is capable of reaching his or her goals (Shields, 2005, Tiedens, 2001), empathetic feelings might not readily emerge in response to recognition of anger. However, it might be also possible, as Denham (2007) suggested, that accurate identification of anger in peer contexts could relate to reconciliatory behaviors that promote mutual understanding and reduce disruptive actions. Research showed that, especially in the presence of sophisticated parent-child emotion talk, preschoolers can develop insight about causes and consequences of anger, which in turn promote their self-regulation skills toward an angry person and decrease their disharmonious acts in peer contexts (Cunningham et al. 2009; Garner et al. 2008). Given these differences, examining children's understandings of anger and sadness could be important to better understand the association between empathy and their disruptive actions.

Although different studies have addressed children's ToM, emotion knowledge and empathy skills in relation to disruptive behaviors, only those conducted with school-aged (Jones et al. 2010) and preschool children in clinical samples (O'Kearney et al. 2017) have examined them together in one study and identified significant deficits in empathy and emotion knowledge as correlates of disruptive behaviors. Yet, unlike clinically high levels of disruptive problems, normative variations in performance of ToM, emotion knowledge and empathy can all be important for mild levels of daily disruptive behaviors in typically developing preschoolers (Devine and Hughes, 2013). In this study, we investigated the unique relation of ToM, emotion knowledge and empathy with preschoolers' daily disruptive behaviors (e.g., aggression, whining, crying, demanding to be in charge and breaking the rules) in peer contexts. Since previous studies showed inconsistent results (negative or null associations) concerning the relation between ToM and disruptive behaviors, we explored the same link when children's emotion knowledge and empathy skills were controlled. With respect to emotion knowledge, we evaluated understandings of anger and sadness separately and hypothesized that children who have a lower understanding of anger and sadness would display higher levels of disruptive behaviors. Regarding empathy, we focused on empathizing with others' physical pain and expected that preschoolers who empathize with others' pain would be less likely to exhibit disruptive behavior in social interactions. Because empathy requires understanding emotions (Decety and Jackson, 2004), we hypothesized that understanding anger and sadness would be positively associated with empathy and reduce

disruptive behaviors via empathy. However, given the differences underlying perspective-taking skills (cognitive vs. affective), we expected either low or no association between ToM and empathy. Finally, as ToM, emotion knowledge and empathy are all developing rapidly during preschool years (Eisenberg et al. 2006), we predicted positive correlation of these skills with age.

Method

Participants

One hundred and sixteen children (37% girls) between the ages of 45 and 72 months ($M_{age} = 58.78$ months, $SD = 7.23$) participated in the study (see Table 1). All children were attending either a public kindergarten (57%) or a public preschool (43%) located in Istanbul or Izmir, the two most populated urban centers of Turkey. According to mothers' reports, none of them had a known developmental delay, disorder or chronic health problem, and a majority of them came from families of married heterosexual couples (96%).

Mothers reported their own education level and the education level of the fathers (rated on 11-point Likert scale from 0 = non-literate to 10 = graduate degree), and also gave information about their monthly household income (rated on 11-point Likert scale from 0 = less than 425 USD to 10 = more than 12.500 USD). The correlations between maternal education, paternal education and the household income were high ($r's = 0.41$ to 0.54, $p < 0.001$); thus, we computed socioeconomic status (SES) by averaging standardized (z) scores of these variables. SES profiles (Table 1) showed that a majority of the children came from families with a middle- to upper-middle class background.

Procedure

After receiving approval from the University Institutional Review Board, we contacted the directors of the kindergartens and preschools and asked them to relay our information booklets to the parents. In these booklets we informed the parents that our study will investigate the social and emotional competence of children, and we also briefly described our tasks in simple terms. We noted that the children could leave the study at any time they want, if they feel tired, restless or bored. We do not have the exact number of parents who declined participation, but those parents who agreed to participate signed the participation form and sent it back to the kindergartens or preschools. We contacted these parents later to arrange a time for data collection. We measured disruptive behavior with the mother reports and used individual assessments to measure children's ToM, emotion knowledge and empathy skills. All individual assessments were administered in kindergartens or preschools in a silent room where only the child and experimenter were present. The tasks were programmed in E-prime 2.0 and presented to children on ASUS™ T101MT Touchscreen computers. For studies like ours, where individual differences and the relations of these differences with one another are being investigated, Carlson and Moses (2001) recommended an administration of tasks in a fixed order. Following this recommendation, the children in our study first completed the empathy and ToM tasks, followed by the emotion knowledge task, in a fixed order. The data collection process lasted for approximately an hour. The tasks were engaging for children, as they included interactions with toys and various pictures, and thus most children did not display concentration problems or any indication of exhaustion. Nevertheless, the experimenter gave short breaks and talked to the children when they showed signs of fatigue due to the admittedly long duration of testing. After the completion of the tasks, the

Table 1 Descriptive statistics, zero-order correlations and partial correlations controlling for age ($N = 116$)

Variables	M	SD	Min.	Max.	1	2	3	4	5	6	7
1. Age (in months)	58.78	7.23	45	72	–						
2. SES (z score)	−0.06	0.81	−2.70	1.30	−0.03	–	0.04	0.05	0.05	−0.02	−0.02
3. ToM (0–1)	0.32	0.36	0	1	0.23*	0.05	–	−0.08	0.09	−0.04	0.14
4. Understanding anger (0–12)	9.71	2.59	3	12	0.24*	0.04	−0.04	–	0.32**	−0.05	0.15
5. Understanding sadness (0–12)	10.24	2.31	4	12	0.22*	0.04	0.14	0.37**	–	0.16	0.17
6. Empathy (0–100)	74.41	15.86	14.44	99.22	0.09	−0.03	−0.03	−0.03	0.18*	–	−0.24*
7. Disruptive behavior (1–4)	1.64	0.30	1.08	2.58	0.09	−0.01	0.15	0.17	0.18*	−0.22*	–

Zero-order correlations are presented below the diagonal and partial correlations controlling for age are presented above the diagonal

*$p < 0.05$; **$p < 0.01$

children were given colored stickers, as a token of gratitude for their time and effort. No incentives were provided to the parents for their participation.

Measures

Disruptive behavior

We used the Disruption subscale of the Penn Interactive Peer Play Scale (PENN; Fantuzzo et al. 1998) to measure the children's levels of disruptive behaviors during peer play. The Subscale includes 12 items (e.g., "Starts fights and arguments during play", "Is physically aggressive", "Demands to be in charge", "Cries, whines, shows temper", "Disrupts the plays of others") rated by the mothers on a 4-point Likert scale (from 1 = Never to 4 = Always). The Turkish version of the scale (Ozturk, 2011) was shown to be a valid and reliable assessment tool for preschoolers' disruptive behaviors (Korucu et al. 2017), and had a high internal consistency in the present study ($\alpha = 0.78$). Item responses given for the Disruption subscale were averaged to compute the disruptive behavior score.

Empathy

Empathy was assessed using a computerized Affective Empathy Task (Cowell et al. 2017). The task measures affective sharing and empathic concern with 18 pictures that depict people undergoing physical pain (e.g., having their foot or hand caught in a closing door). Children were asked to indicate on a visual analog scale, ranging from 0 and 100, how much pain the person in the picture was feeling (affective sharing) and how sorry they felt for that person (empathic concern). Children's responses to these two questions were strongly correlated ($r = 0.83$, $p < 0.001$). Given that previous studies conceptualized empathy as a combination of affective sharing and empathic concern (Decety and Jackson, 2004; Eisenberg, 2000), and given the high correlation between them, the mean of the affective sharing and empathic concern scores was taken (see Cowell et al. 2017 for similar calculations) as the overall empathy score.

Theory of mind (ToM)

Children's ToM ability was measured by using two first-order ToM tasks that required an understanding of false belief in different situations. The first one was the Unexpected Location task of Wimmer and Perner (1983), which shows children that the location (basket) of the protagonist's object (ball) was changed by another character in her absence and put into a different location (box). To make sure that children fully comprehended the story and remembered the details, two memory control questions probing the initial (e.g., "where was this ball at the beginning?") and final location (e.g., "where is this ball right now?") of the ball were asked. As the test question, children were asked where the protagonist thought the ball was (e.g., "where does this child think the ball is?"). In line with the scoring of false belief tests originally used by Wimmer and Perner (1983) and also recommended by Welman and Liu (2004), children were given one point if they correctly answered both the memory control questions and the target question. Those who could not pass the control questions got zero, even when they correctly answered the target question. The second ToM task was the Misleading Picture, devised by Astington and Jenkins (1995). In this task, children were shown two petals of a sunflower that looked like the ears of a cat, and then they were asked to guess what they thought the entire picture was by looking at these petals only. Children were then shown that the entire picture, in fact, belonged to a sunflower. As a memory control question, they were asked what they initially thought the entire picture was when they only saw a part of it (e.g., "what did you think this picture showed when you first saw it?"), and as the test question they were asked what their friend who never saw the entire picture would think the picture was. Children received one point if they correctly answered both the memory control and test questions in each ToM task, and they got zero if they failed the memory control question, regardless of their answer to the test question (see Carlson and Moses, 2001 for similar scoring in appearance-reality distinction). The two ToM task scores were significantly correlated ($r = 0.19$, $p = 0.04$), so we computed a composite ToM score by averaging the scores children got from each task, resulting in a maximum point of one for passing both ToM tasks and a minimum point of zero for failing both of them. The tasks were previously used in Turkish samples and found to be reliable and valid measures of ToM in Turkish preschoolers (see Cowell et al. 2017; Yagmurlu, 2014; Yagmurlu et al. 2005).

Understanding anger and sadness

The ability to understand anger and sadness was measured using the Emotion Knowledge Task of Denham (1986), which was translated to Turkish and has emerged as a reliable and valid assessment tool in Turkish samples (see Gunduz, Yagmurlu, & Harma, 2015). Firstly, children were shown two cards with angry and sad faces and were asked to identify the emotion on the faces verbally, by naming, and non-verbally, by pointing. Then, children were asked to identify anger and sadness unequivocally appropriate in four different situations that elicit anger and sadness (e.g., having a toy hidden by a sibling and seeing that a parent is going on a trip alone). Children were shown videos for each

emotion where the emotion-laden situation was enacted by a puppet, while the puppeteer was making standard facial expressions of anger and sadness. For each situation, children were asked to identify the emotion of the puppet in the video verbally, by naming it, and non-verbally, by pointing to cards of emotion faces laid in front of them. Children received two points for their correct responses, one point for their approximate answers (e.g., saying unhappy instead of sad) and zero for their incorrect responses, which resulted in a maximum of twelve points for understanding anger and sadness separately.

Data Analyses

First, the associations between study variables were examined with a Pearson correlation. Then, to investigate the direct and indirect links predicting disruptive behavior, we hypothesized a path model which analyzed the predictive role of ToM, understanding anger, understanding sadness and empathy in disruptive behavior. We analyzed the direct paths from these variables to disruptive behaviors and, given that emotion knowledge is considered the precursor of empathy, we examined the direct path from understanding sadness and understanding anger to empathy, and the indirect path from understanding anger and sadness to disruptive behavior via empathy. As disruptive behaviors tend to decline with age in community samples (Cote et al., 2007), we also investigated the indirect role of age in disruptive behaviors via ToM, understanding anger and understanding sadness. The path analysis was conducted in Mplus 6.12. A maximum likelihood estimator was used for estimations. Fit indices were tested using χ^2 statistics, comparative fit index (CFI), root mean square error of approximation (RMSEA) and standardized root mean residual (SRMR). Models with non-significant χ^2 value, CFI values above 0.90 and RMSEA and SRMR values below 0.08 were considered an acceptable fit to the data (Hu and Bentler, 1999). For an analysis of indirect links, we used bootstrapping with 1000 samples and investigated significance with 90% CI.

Results

Associations Between Study Variables

Zero-order correlations (Table 1) showed that age was positively associated with ToM, understanding anger, and understanding sadness, but was not significantly linked with empathy or disruptive behavior. Disruptive behavior was positively associated with understanding sadness, and negatively associated with empathy. The associations of disruptive behavior with ToM and understanding anger were non-significant. Empathy was positively and significantly correlated with understanding sadness but not with understanding anger or ToM. When age was controlled, the significant negative correlation of disruptive behavior with empathy remained, but the positive association of understanding sadness with disruptive behavior and empathy disappeared, showing that the significance of these correlation was due to the increase in understanding sadness as a function of age. SES was not significantly correlated with any of the study variables. There was no gender difference in disruptive behavior, F (1, 114) = 1.53, ns. Therefore, the analyses were conducted for the whole sample.

Direct and Indirect Paths Predicting Disruptive Behavior

Results of the path analysis with the standardized parameter estimates are presented in Fig. 1. Overall, the model showed good fit to the data, (χ^2 (5, N = 116) = 3.98, ns, CFI = 1.00, RMSEA = 0.00 (90% CI = 0.00, 0.11), SRMR = 0.03). Analysis of the hypothesized paths revealed that disruptive behavior was significantly and negatively predicted by higher empathy only, and not by ToM, understanding anger or understanding sadness. Empathy explained 8% of the variance in disruptive behavior, while ToM, understanding anger and understanding sadness together explained 7%. In total, 15% of the variance in disruptive behavior was explained by our model. Moreover, not understanding anger

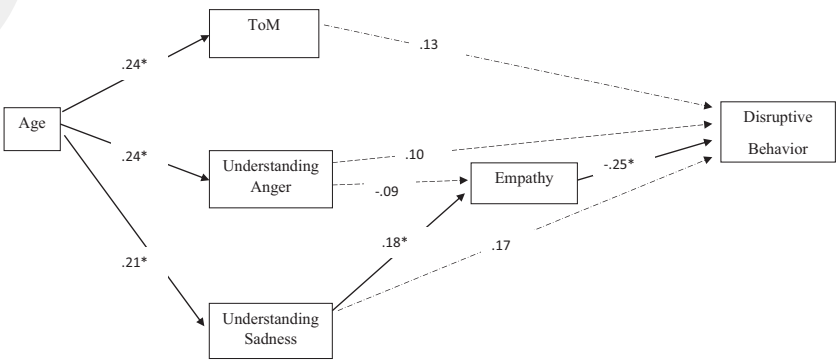

Fig. 1 Standardized estimates predicting disruptive behavior. The dotted lines represent hypothesized but non-significant paths. *$p < 0.05$. *(N = 116)*

but understanding sadness positively and significantly predicted empathy, and 3% of the variation in empathy was explained by understanding anger and sadness. Understanding sadness significantly predicted higher empathy, and empathy significantly predicted lower disruptive behavior. Yet, the negative indirect link from understanding sadness to disruptive behavior through empathy was not significant ($\beta = -0.05$, $p = 0.11$, 90% CI = −0.106, 0.001), nor was the indirect link from understanding anger to disruptive behavior via empathy ($\beta = 0.02$, $p = 0.39$, 90% CI = −0.021, 0.065). When the interaction of understanding sadness with empathy was added to the model, the results revealed a poor model fit (χ^2 (10, $N = 116$) = 448.64, $p = 0.001$, CFI = 0.08, RMSEA = 0.62 (90% CI = 0.58, 0.67), SRMR = 0.19) and yielded a non-significant association of interaction term with disruptive behavior, ($\beta =$ 0.17, $p = 0.80$). Likewise, the model showed a poor fit when the understanding anger by empathy interaction term was added (χ^2 (10, $N = 116$) = 406.21, $p = 0.001$, CFI = 0.09, RMSEA = 0.60 (90% CI = 0.55, 0.65), SRMR = 0.41) and presented a non-significant association of the interaction term with disruptive behaviors $\beta = 0.01$, $p =$ 0.19. Thus, these two interaction terms (understanding sadness by empathy and understanding anger by empathy) were not included to our model. Further, the indirect links from age to disruptive behavior via understanding sadness ($\beta = 0.04$, $p = 0.19$, 90% CI = −0.009, 0.083), understanding anger ($\beta = 0.02$, $p = 0.46$, 90% CI = −0.028, 0.075) and ToM ($\beta = 0.03$, $p = 0.23$, 90% CI = −0.012, 0.074) were also not significant. All three direct paths from age to ToM, understanding anger and understanding sadness were significant and positive.

Discussion

The results showed that among ToM, emotion knowledge and empathy, it was only empathy that significantly and negatively predicted disruptive behaviors in typically developing children. Consistent with our expectations, children who were better able to share others' pain were less likely to exhibit behaviors that disturb their peers. Empathizing with others' pain can enable children to restrain themselves from engaging in any behavior that would lead to others' discomfort (Björkqvist et al. 2000). As shown at both behavioral and neural levels (Jackson et al. 2005; Lamm et al. 2011), perception of others' pain activates similar representations of pain in the self, with the same brain regions involved in the process of observing pain in others and first-hand experience of pain. Therefore, perceptions of pain can facilitate empathy through a similar degree of arousal in the self and can discourage the observant from any actions that may result in harm. This is in line with Blair's (1995) model that humans are biologically programmed to respond to others' pain with an empathy response, which enables them to inhibit their aggressive tendencies in social relations.

In their review, Eisenberg et al. (2010) noted that the inverse association of empathy with disruptive behaviors is seen starting from school-ages rather than earlier in preschool. The reason why empathy stood out as a significant predictor of preschoolers' lower disruptive behaviors in the current study might be due to our measurement of empathy. In contrast to other studies, which calculated a composite empathy score from children's observations of diverse affective states such as sadness, distress, and pain (see Gill and Calkins, 2003), we solely focused on children's empathy for others' pain. Empathy for pain has been the topic of interest mostly for researchers studying children and adolescents with conduct (Cheng et al. 2012; Decety et al. 2009) or oppositional defiant problems (de la Osa et al. 2016; Dinolfo and Malti 2013), but it was examined to a lesser degree in preschool children with lower levels of disruptive behaviors. Given that observing others' pain activates neural connections associated with a first-hand experience of pain (Lamm et al. 2011), pain might evoke a stronger empathy and arousal response compared to other emotions. Supporting this, in the study of Gill and Calkins (2003), typically-developing preschoolers' empathy scores in response to observations of others' pain were found to be higher compared to observations of sadness. Thus, the same way that empathy for pain predicts the aggression scores of children with conduct problems (Cheng et al. 2012), normative variation in empathy for pain, too, can be a critical predictor of disruptive behaviors in young children with low levels of disruptive behaviors.

Furthermore, our measurement of empathy for pain through pictorial images might have eliminated one of the factors that contributed to inconsistent (mixed) associations that Eisenberg et al. (2010) noted between empathy and disruptive behaviors in preschoolers. Earlier studies assessed empathy levels of preschool children in experimental situations where an unfamiliar experimenter was displaying signs of distress, pain and sadness in front of children (Gill and Calkins, 2003; Hastings et al. 2000; Zahn-Waxler et al. 1995). These situations can create intense arousal (e.g., concern for the well-being of the person in distress and well-being of the self) that is hard to regulate for preschoolers whose inhibitory control skills are merely at the beginning of development (Gill and Calkins, 2003). Thus, self-regulation problems in early ages might underlie both high arousal levels during empathy assessments and disruptive behaviors displayed in general, leading to positive or null links between empathy and such under-controlled behaviors as disruption (Eisenberg et al. 2010). In the current study, we used pictures that depicted physical situations

eliciting pain in others. These pictures were probably less arousing for children than experimental enactments of distress and pain, so they may not have created intense and unmanageable concern in young children. Furthermore, the pictorial images might have also made self-other differentiation more explicit and facilitated empathy for others. In other words, with these pictures, children can be at a safer distance from the individual who is suffering from pain, and thus they can reflect on their own understanding of how the other would feel, without mixing it with their own personal distress and discomfort. Thus, normative variations in empathizing with others' pain can in turn emerge as a negative predictor of their aggression. It is also important to note that the children in our sample were relatively older (toward the end of the preschool period) than those in previous studies (2-year-olds in the study of Gill and Calkins, 2003; 4–5-year-olds in Hastings et al. 2000), which means they were better able to grasp the self-other distinction, as indicated by the variability in their ToM scores, and they were better adept at regulating their personal discomfort. These factors may drive the negative link we found between empathy for pain and lower disruptive behavior. Findlay, Girardi, and Coplan (2006) found the same negative association between empathy and aggression in children who are at the same age with those in our sample. Therefore, it may be argued that empathy for pain can predict socially harmonious behaviors when measured at a safe distance, toward the end of preschool, and without creating personal distress or arousal for children (Eisenberg and Eggum, 2009).

In addition to empathy, emotion knowledge is also considered an important correlate of children's social relations, (Denham, 1998) and, therefore, it attracts attention with respect to displays of disruptive behaviors (Arsenio and Lemerise, 2001; O'Kearney et al. 2017). Previous studies noted especially that understandings of negative emotions like anger and sadness are of significance (Schultz et al. 2004), since children with higher levels of disruptive behavior have problems identifying anger and sadness in others (Hughes et al. 1998). Contrary to these studies and our predictions, in the current sample, disruptive behavior was predicted by neither understanding anger nor understanding sadness. Although zero-order correlations initially revealed a positive association between understanding sadness and disruptive behaviors, this association reduced to non-significance when age was controlled, showing that the initial positive association between understanding sadness and disruptive behaviors was only an artifact of age in zero-order correlation. Additionally, we expected the different meanings (being assertive and competent vs. helpless and victim) conveyed through understanding others' anger and sadness (Carver and Harmon-Jones, 2009) to lead to different associations of these skills with disruptive behavior, but their non-significant links showed that emotion knowledge, on its own, is insufficient in influencing social behavior. This may suggest that emotion knowledge acts as a mere comprehension skill that does not guide whether its presence would increase or decrease disruptive actions. As argued by Carlo, Knight, Eisenberg and Rotenberg (1991), understanding others' emotions can be important for its facilitation of empathy and for its influence on social behaviors like conforming to rules and respecting others' rights via triggering empathy. It is important to note, however, that the non-significant association in our results between emotion knowledge and disruptive behaviors might be due to our sample, which included typically developing children. In their meta-analytic review, Trentacosta and Fine (2010) reported medium-sized correlations ($r = -0.26$) between children's emotion recognition and their externalizing problems in clinical samples, while the effect size was small ($r = -0.13$) for community samples. It was argued that in clinical samples, a majority of children with severe disruption problems were exposed to poor parenting practices characterized by harsh punishment, neglect and indifference to children's emotions (Dayton et al. 2016). These early experiences, which are also linked with severity of disruptive actions, might be responsible for children's lower understandings and learning of emotions (Pollak et al. 2000). In contrast, for typically developing children who seemed to achieve a normal course of emotion learning, understanding of others' emotions might be critical for facilitating empathic responses to these emotions in the context of daily disruptive behaviors.

Supporting this argument, our findings showed that understanding sadness positively predicted higher empathy for others' pain. Children who were better at comprehending sadness in the faces of others and who were better at understanding the conditions under which sad feelings would emerge were significantly more likely to feel empathy for others' pain. This result was in line with other developmental studies, which showed that teaching preschoolers sadness through emotion socialization practices (e.g., talking about causes and consequences of sadness) increased their understandings of sadness and facilitated their empathy skills (Eisenberg, 2000; Garner, 2003). The role of understanding sadness in empathy was also found in adult groups whose empathy performance increased as a function of increases in the accurate comprehension of others' sadness from their facial expressions (Harrison et al. 2007). Blair (1995) argues that understanding sadness evolutionarily prepared humans to be aroused from others' distress and pain, and gave rise to inhibitory behaviors to control disruptive urges, like the violation of others rights. Thus, understanding emotions, particularly sadness, can trigger the co-sharing of emotions starting from an early age.

It must be noted that, although understanding anger and understanding sadness were significantly and positively correlated with each other, their associations with empathy differed, as comprehension of sad but not angry feelings gave rise to higher empathy. This result was in line with that of Blair and Coles (2000), where difficulty in emotion knowledge emerged only for understanding of sadness, but not anger, in school-aged children with empathy deficit. Underlying motivations and associated perceptions in recognitions of anger and sadness (Carver and Harmon-Jones, 2009) might explain the current findings. Anger occurs when a goal is blocked by external forces, instigating the tendency for further approach to remove the blockage. In contrast, sadness emerges from failure in reaching a desired outcome and causes avoidance of further action. Following that, in the eyes of the observer, identifying someone's sadness creates a perception that the individual is a victim and has lower competence in dealing with the problematic situation (Smith and Lazarus, 1993); seeing anger in someone leads to an idea that the person is an active and competent individual who is trying to change the situation to reach his or her goal (Tiedens, 2001). In that sense, understanding others' sadness might trigger the tendency to see them as mere victims of their situations, thus facilitating empathy for their pain. However, understanding anger in others might instead generate a perception of capability to deal with the situation, and, hence, anger might not elicit empathy for pain. These suggestions remain at the level of speculation and must be tested by future studies.

In our study, while disruptive behavior appeared to be alleviated by empathy, it was not related to ToM. Sutton et al. (1999) argued that the link between ToM and aggressive behavior might vary depending on the type of aggression, i.e., proactive vs. reactive. In preschool children, however, these two aggressive behavior forms are hardly differentiated in the daily disruptive behaviors of typical samples (Hughes et al. 2000), and they show a high correlation in childhood ($r = 0.68$; see Card and Little, 2006). Therefore, the non-significant link between ToM and disruptive behavior in our study might reflect this co-existence of proactive and reactive aggression tendencies. ToM is considered as a cold socio-cognitive skill that serves to understand others' mental states (Björkqvist et al. 2000). For community samples of preschoolers whose level of disruptive behavior is low on average (like our sample), ToM might not by itself directly indicate whether the level of children's disruptive behaviors will be higher or lower (Hughes, 2011). Rather, the motivation and moral values for using ToM (i.e., to get along with others or to hurt them) might make the critical difference (Sutton et al. 1999).

Disruptive behaviors, like opposing others, breaking rules and starting fights, are at odds with moral actions, as they disturb harmonious relations in social groups (Arsenio and Lemerise, 2001). Therefore, our finding that empathy is more critical than ToM and emotion knowledge for preschoolers' disruptive behaviors might have implications for the development of moral actions. As explained in morality accounts (e.g., Blair, 1995; Haidt, 2001), empathizing with others is the driving force of moral behaviors. It facilitates the development of conscience, and as such, prevents harmful actions towards others. On the other hand, understanding others' mental states (e.g., what they believe or think) or emotions (e.g., anger or sadness) are neutral (Hughes, 2011), cold socio-cognitive skills. Their coldness arises from the fact that these skills are relatively distant from conscience (Haidt, 2001); they can be used for harm or kindness, depending on one's motivation (Sutton et al. 1999). This point is exemplified in the case of children with conduct problems and CU traits whose severe aggressive behaviors, in addition to lying and stealing, are accompanied by their intact ToM but low levels of empathy (Frick et al. 2014). Thus, unless feelings, especially others' pain, is mirrored, advanced understanding of others' mental states or emotions might not translate to moral behaviors, even in samples like ours where the level of disruptive behavior is low and not problematic for parents of young children. In the context of this discussion, it might be worth mentioning that ToM and emotion knowledge improved with age, but neither empathy nor disruptive behaviors were associated with age. This basic correlational finding may add to our argument that empathy is different from "cold skills"—ToM and emotion knowledge—and has a distinct role in disruptive behavior.

Limitations

At this point, we must acknowledge four issues. First, this study had a cross-sectional design and causal inferences cannot be drawn from our results. Yet, the conceptual arguments (e.g., Björkqvist et al. 2000) and empirical findings (e.g., Trentacosta and Fine, 2010) in the literature suggest ToM, emotion knowledge and empathy as possible causes of disruptive behavior, rather than vice versa. While the research on school-aged children with conduct problems and CU traits gave the impetus for our study to investigate these socio-cognitive and emotional skills as underlying causes of disruptive behaviors, we did not focus on conduct problems, proactive/reactive aggression or CU traits but on the mild disruptive behaviors of typically developing preschool children. Second, the large unexplained variance in disruptive behavior in our data suggests that other variables not examined here could also exist. For example, a child's temperamental characteristics (e.g., fearlessness, negative emotionality) are known to be significantly associated with externalizing behaviors (e.g., Frick et al. 2014). Relatedly, executive functions and behavioral and emotional

regulation skills appear critical in controlling such tendencies (Batum and Yagmurlu, 2007; Rothbart et al. 2004). Although these relations are known, the roles of temperament and regulation skills were beyond the scope of our research; therefore, they were not investigated here. Third, the relations reported here were based on mothers' evaluations of children's disruptive behaviors, which might arguably reflect biased information. Children's disruptive behaviors in peer contexts could have also been assessed by teachers, who may have a greater chance of observing disruptive actions during peer interactions than mothers. However, previous research using multi-informant procedures (e.g., teachers, mothers, and researchers as independent observers) found significant and high correlations between scores of disruptive actions reported by parents and teachers (Arseneault et al. 2003; Casas et al. 2006; Keiley et al. 2003). These studies argued that under-controlled behaviors seen in disruption could be consistent across different situations. Hence, we assume that although parents and mothers can differ in their chances to observe these behaviors in peer contexts (e.g., teachers may observe them more frequently in school than mothers who witness such behaviors only on the playground or at home-gatherings with peers), children's consistent disruption across various peer settings and groups would lead to similar reports of disruption by mothers and teachers (Achenbach et al. 1987 for a meta-analysis). Supporting this assumption, Trentacosta and Fine (2010) revealed in their meta-analysis that the magnitude of associations between emotion knowledge and externalizing behaviors is similar in mother reports and teacher reports of externalizing behaviors. Likewise, the null relation we reported here between ToM and disruption was seen in other studies that assessed aggressive behaviors with teacher reports (Gasser and Keller, 2009) or with ratings of independent coders (Hughes et al. 2000). This evidence shows that diverse informants are evaluating children's overt behaviors alike and that these evaluations mostly yield similar results in relation to their associations with different social skills, such as emotion knowledge and ToM. Still, future studies should test whether the results we found here with respect to the importance of empathy rather than ToM and emotion knowledge for lower disruptive behaviors would also be held using multiple informants and measurements. Lastly, the level of disruptive behaviors in the current sample was relatively low. Yet, it was comparable to the disruptive behaviors and aggression levels of Turkish preschoolers in other studies (see Batum and Yagmurlu, 2007; Korucu et al. 2017). Turkish culture's emphasis on harmonious group relations and interdependence, as well as parents' socialization practices that teach children to conform to social rules and authority figures (Sen et al. 2014) might explain Turkish children's relatively low disruptive behaviors. On the other hand, it is also important to mention the socio-economic factors that can relate to variation in levels of disruptive behaviors in the same cultural atmosphere. Higher levels of disruption are usually more common among children from lower SES families (Dodge et al. 1995). While our sample came from middle SES families, like other studies that have examined disruptive behaviors in Turkish children (Batum and Yagmurlu, 2007; Korucu et al. 2017), investigations of disruptive behaviors in Turkish children from lower education and income groups yielded elevated levels of disruption problems (Ogelman and Topaloğlu, 2014). This shows that variations related to socio-economic factors can override the impact of overall cultural (e.g., interdependent) atmosphere on disruptive behaviors.

Despite these limitations, our results highlighted that relatively mild and low levels of disruptive behaviors, like arguing, rule-breaking, opposing and fighting, among peers are associated with normative variations in only empathy but not ToM and emotion knowledge. While earlier studies examining severe levels of disruptive behaviors in preschool and school-aged children pointed to both emotion knowledge and empathy as critical for lower disruption, our findings revealed empathy as the only contributor to lower conflicting behaviors in normative peer contexts. This difference in findings due to sample characteristics might inform our knowledge about the concept of disruption in general and highlight distinct difficulties in socio-emotional competence depending on levels of rule-breaking, opposition, whining and aggression. High and serious disruptive behaviors displayed in clinical samples probably emerged as a result of lower abilities in recognizing and sharing others' emotions, while normative low-level troublesome actions (e.g., whining, opposition, demanding to be in charge and aggression behaviors of the current sample) in peer contexts appear to be due to lower empathizing with others' emotions, particularly their pain rather than emotion knowledge problems. Normative variation in emotion knowledge skills of typically developing children might be significant only for their function in eliciting empathy. On the other hand, ToM does not seem to be involved in both groups' disruptive actions.

Author contributions M. E. A. created the research question, analyzed the data and wrote the manuscript. H. H. S. and B. B. were involved in the translation of the surveys into Turkish; the collection and entry of data; and the revisions of the manuscript. B. S. supervised the study; created the research question; translated surveys into Turkish; coordinated the data collection process; gave feedback during statistical analysis and writing; and edited the manuscript.

Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no conflict of interest.

Ethical approval All procedures performed in this study were in accordance with the ethical standards of the institutional review board (IRB) of Koç University (Decision no: 2013.131.IRB3.83) and with the 1964 Helsinki Declaration and its later amendments.

Informed consent The written consent of parents and assent of children were received for their participation in the current study.

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