Interpersonal predictors of emotion understanding in young school-aged children: a prospective study

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Abstract

Emotion understanding has been associated with a range of developmental outcomes in children, such as social adjustment and mental health. Research on child emotional development has uncovered that even though child emotion understanding improves considerably during the early childhood, there are large individual differences in the rate of this development. There are still considerable gaps in our knowledge about determinants of such individual differences, particularly among school-aged children. By prospectively examining a large community-based sample of 6-year-olds (N = 797) with follow-up at age 8, the current study tries to fill these shortcomings by investigating a range of interpersonal variables predicting development of emotion understanding. Five measures of interpersonal variables were obtained at 6 years of age. These were attachment representations, family climate, parental emotional availability, teacher-child relationship and child social skills. Verbal skills and demographic variables (gender and socioeconomic status) were included as covariates. After adjusting for all other variables, child social skills were the only interpersonal predictor influencing the development of emotion understanding in 8-year-olds. The teacher-child relationship at 6 years predicted emotion understanding at 8 years, but only for children at the low or medium range of social skills. Verbal skills were the only covariate predicting emotion understanding at age 8. The results are discussed in light of relevant empirical literature on the development of emotion understanding.

Interpersonal predictors of emotion understanding in young school-aged children: a prospective study

The relative importance of emotions is invaluable. Among other things, emotions serve essential communicative functions. Reading the emotional facial expression of his mother, a child can infer which behavior is appropriate in a given situation and which is not. Similarly, expressing fear in front of a parent usually elicit help and support. The great deal of information afforded by emotions, about both ourselves and others, should not be underestimated (Harris, 2000).

The communicative functions of emotions underscore the importance of the development of an understanding of one's own and other's emotions. Emotion understanding is seen as crucial to children's adaptive functioning, both within the family and within peer and teacher relationships (Zahn-Waxler, 2010). First, an understanding of emotions influences the child's emotional behavior. Children with enhanced emotion understanding are more regulated and express emotions in more appropriate ways than children with poor emotion understanding (Zahn-Waxler, 2010). Second, research has shown that emotion understanding is associated with social competence (Denham et al., 2003; Eisenberg, Fabes, & Murphy, 1996; Eisenberg, Sadovsky, & Spinrad, 2005; Garner, Jones, & Miner, 1994), quality of peer relationships (Denham et al., 2002; Jones, Abbey, & Cumberland, 1998), and adjustment in school (Birch & Ladd, 1997; Izard et al., 2001). For example, children's increasing emotion understanding contribute to their social competence by allowing the child to read and understand the emotional signals of others (Denham, Bassett, & Wyatt, 2007). Emotionally competent children show more prosocial bids towards peers than less emotionally competent children (Garner & Estep, 2001). Third, the literature suggests a relation between limited emotion understanding and psychopathological development, which may place children at risk for psychological disorders (Kendall, 1993; Meerum-Terwogt, 1990; Southam-Gerow & Kendall, 2002). For example, a cross-sectional study comparing groups of maltreated and non-maltreated children, found that maltreating mothers were less likely to discuss causes and consequences of emotions with their children. Moreover, these children exhibited lower levels of emotion understanding (Shipman & Zeman, 1999). In sum, these findings highlight the importance of investigating antecedents to emotion understanding, in order to promote a healthy and prevent an unhealthy emotional development.

With the increased interest in emotions in almost all areas of psychology, there has been a growing body of research on the topic of emotion understanding, particularly on the socialization, expression and outcomes associated with individual differences in emotion understanding (Chaplin, Cole, & Zahn-Waxler, 2005; Eisenberg, Cumberland, & Spinrad, 1998; Morris, Silk, Steinberg, Myers, & Robinson, 2007; Zahn-Waxler, 2010). A large part of this research has been concerned with patterns of typical emotional development. However, during the last two decades research has revealed that there are large and stable individual differences in the development of emotion understanding. A growing view is that individual differences in emotion understanding are the expression of stable psychological characteristics of the child (Harris, 1999, 2000; Pons & Harris, 2005; Pons, Harris, & de Rosnay, 2004; Pons, Lawson, Harris, & De Rosnay, 2003). First, individual differences emerge quite early, around 3 years of age. Second, they are stable throughout childhood. Third, such differences appear across a wide range of components of emotion understanding, both simple and complex. In other words, children who exhibit superior skills in some aspects of emotion understanding generally show enhanced skills in other aspects of emotion understanding as well (Pons et al., 2003). Thus, although emotion understanding in general improves considerably during early childhood (Pons et al., 2004), research has uncovered stable individual differences in the rate of this development (Harris, 1999; Pons & Harris, 2005; Pons et al., 2003; Rosnay & Harris, 2002). Why do some children excel and improve in emotion understanding whereas others show little or no improvement? This is the principal question to be addressed in the present research.

Conceptualization of emotion understanding

Emotion understanding is a wide and multidimensional construct, compromised of several skills. For example, De Rosnay, Harris and Pons (2008) define emotion understanding as the ways in which children identify, predict and explain emotion in themselves and others. All models describing the development of emotion understanding highlights some similar components, from the comprehension and expression of basic emotions to knowledge about ways to regulate emotions (Halberstadt, Denham, & Dunsmore, 2001; Pons et al., 2004; Saarni, 1999). Having investigated the defining skills of emotion understanding through two decades, Pons and Harris have identified nine components or skills of emotion understanding, that are hierarchically organized and develop between the ages of 3 and 11 (Pons & Harris, 2005). These include: 1) the recognition of emotion; 2) understanding of the role of external causes of emotions; 3) understanding of desire-based emotions; and 4) belief-based emotion;

5) understanding of the influence of external causes on present emotional state; 6) understanding of the regulation of an experienced emotion; 7) understanding of the possibility of hiding an emotional state; 8) understanding of mixed emotions; and 9) understanding of moral emotions. These nine factors will form the basis for the definition of emotion understanding in the present study.

The socialization of emotion understanding

Socialization of emotions refers to how children's developmental environment influences their understanding of emotions. A very important part of this environment is the people in it, the socialization agents (Denham et al., 2007). The literature on the socialization of emotions is concerned with both direct and indirect socialization practices as influencing the development of emotion understanding. For example, direct socialization may consist of social partners' reactions to children's emotions. This aspect of socialization is called contingent responding. Another way of direct socialization is coaching, which involves intentionally guiding and teaching the child about the world of emotions (Denham et al., 2007; Eisenberg et al., 1998; Eisenberg et al., 1996). Indirect socialization efforts are considered to include the more subtle emotional processes in the child's environment. The family emotional climate and parent's expressions of emotions during interactions, both with the child and others, are examples of such processes (Zahn-Waxler, 2010). One type of indirect socialization is modelling, which involves the child observing, interpreting and encoding emotional signals in others (Denham et al., 2007; Eisenberg et al., 1998).

Although it is likely that emotion socialization is the result of both direct and indirect processes, the indirect and unintentional practices may dominate. Because all of the people with whom the child interacts exhibit a great variety of emotions, which the child notices and interprets, these indirect processes will be omnipresent in the child's everyday life (Denham et al., 2007). Up until today, most research has focused on the former, namely the direct influences of socialization on emotional development. This underscores the importance of investigating indirect predictors, such as parental conflict and parental emotional displays (Zahn-Waxler, 2010).

Predictors of individual differences in emotion understanding

The claim that both inter- and intrapersonal socializing factors contribute to individual differences in emotion understanding has been an object of investigation for years, and is by

now well established. Regarding the interpersonal factors, the attachment quality between parent and child (Eisenberg et al., 1998; Harris, 1999; Rubin & Mills, 1989); parental reactions to child emotional displays (Denham et al., 2007; Eisenberg et al., 1998; Murphey, 1992); and the nature of family discourse about emotions (Harris, 1999, 2000; Pons et al., 2003), have been proposed as important contributors to the child's emotional development. In addition, an emerging interest in socialization partners beyond the parents, such as teachers and peers, have been seen over the last two decades. Socialization by peers and teachers are beginning to receive greater appreciation as contributors of children's emotion understanding (Ahn, 2005; Hamre & Pianta, 2001; Howes, 2000; Pianta, Hamre, & Stuhlman, 2003; Pianta & Steinberg, 1992; Zahn-Waxler, 2010). As regards the intrapersonal predictors, the abilities and attributes of the child itself can promote or hinder the development of emotion understanding (Denham et al., 2007). Such predictors may include temperament (Garner & Power, 1996; Mirabile, Scaramella, Sohr-Preston, & Robison, 2009), language abilities (Beck, Kumschick, Eid, & Klann-Delius, 2012; Harris, 1999; Mcquaid, Bigelow, McLaughlin, & MacLean, 2008; Pons et al., 2003; Rosnay & Harris, 2002), and age (Eisenberg et al., 1992; Harris, 2000; Pons et al., 2004; Pons et al., 2003).

Emotional development in young school-aged children

The first years of school presents developmental tasks different from those seen in the preschool years. When the child enters school, a new world of expectations outside the family reveals. The transition to school sets forth new demands, such as forming new relationships with classmates and teachers, adjusting to the school environment, and adapting to new and higher expectations from both parents and teachers (Masten & Coatsworth, 1998; Nelson, Rubin, & Fox, 2005). These new tasks demand a more sophisticated emotion understanding. According to Pons and Harris (2005), the stability of individual differences in emotion understanding holds even when the child enters school and faces a new, less stable social environment where they have the opportunity to observe a wider range of emotions, from a greater number of adults and peers.

At the beginning of the school-age years, children face important developmental changes in their understanding of emotion. According to Pons and colleagues (2004), a 7-year-old will typically have reached what they call the mentalistic stage. This stage is characterized by the understanding of the mentalistic nature of emotions, including the connection between emotions and desires and beliefs, and the distinction between expressed

and felt emotions. In particular, this means that a 7-year-old will be able to infer that two individuals can have different emotional responses to an event based on their differing expectations, beliefs or desires (Pons et al., 2003). In practice, he will understand that one individual's response can be of happiness when he finds out that his favorite dish, pancakes, is served for dinner, while another person who does not like pancakes will respond with sadness or dislike.

At this age, children are also able to understand that there is a difference between felt and expressed emotions (Pons et al., 2003). This may lead to a more mature way of regulating emotions, such as the child being able to suppress or minimize disappointment over a gift in order not to hurt the ones who gave it to him. Generally, older children regularly show more mature emotion regulation strategies than younger children (Morris et al., 2007; Pons et al., 2004). Children up to the age of 7 make greater use of behavioral emotion regulation strategies (hiding, seeking external support), while older children, from the age of 8, start to acknowledge the value of psychological strategies (distraction, denial) (Eisenberg & Morris, 2002).

Taken together, children entering elementary school face important developmental changes in their understanding of emotions, such as the development of moral emotions, understanding of mixed emotions and the knowledge of the difference between felt and expressed emotions. The latter may lead to a more mature regulation of emotions.

Summary and objective

Even though the research field on emotion socialization has moved a long way the past two decades, a skewed balance in the research literature still exists (Denham et al., 2007; Dunsmore, Her, Halberstadt, & Perez-Rivera, 2009; Jones & Garner, 1998; Klimes-Dougan & Zeman, 2007). Most of the work on emotion understanding has focused on an age group ranging from infanthood to preschool children. (Denham et al., 2007). Up until the last decade, few studies have been conducted using samples of school-aged children and adolescents. Furthermore, there is still a scarce amount of studies investigating socialization agents beyond mothers. In particular, there are fewer studies examining the role of fathers, teachers, peers and siblings in emotion socialization. Thinking about the large amount of time children spend with peers and teachers in school and kindergarten, a natural next step in the investigation of socialization of emotions would be to expand our search for predictors of emotion understanding to include a wider range of factors.

The current study tries to fill the gaps of previous research by considering several predicting factors of young school-aged children's emotion understanding, both within and beyond the family. The primary aim of the present study is to investigate interpersonal factors predicting enhanced emotion understanding in school-aged children. To my knowledge, the present study is the first to investigate predictors of enhanced emotion in this age group. I acknowledge that both interpersonal and intrapersonal factors play a significant role in the development of emotion understanding. At the same time, interaction with parents in the early preschool years and the later supplement by teacher and peer socialization are assumed to be the main areas where children learn about emotion understanding. Therefore, I will focus on the interpersonal factors: children's attachment representations, parental emotional availability, family climate, teacher-child relationship and child social skills (see Figure 1). Although child social skills would normally be regarded as an intrapersonal factor, in the present investigation it is regarded as interpersonal. This is justified by the fact that social skills is based on how teachers perceive the child's behavior directed toward peers (Gresham & Elliott, 1990). A similar view can be found elsewhere (Kårstad, Wichstrøm, Reinfjell, Belsky, & Berg-Nielsen, in press).

Interpersonal factors

Children's attachment representation

A large amount of research on the parent-child attachment has established this predictor as having great influence on a number of aspects of child development, including emotion understanding (Harris, 1999; Kochanska, 2001). Emotion understanding is assumed to develop in the context of the parent-child dyad, and it is by now widely recognized that children use their emotional experience with significant others when trying to understand the emotions of new social partners (De Rosnay et al., 2008; Thompson, 2000).

Empirically, cross-sectional studies have shown that a secure attachment is associated with better emotion understanding (Ontai & Thompson, 2002; Rosnay & Harris, 2002). For example, Laible and Thompson (1998) found that secure attachment was related to 2- to 6-year-old's superior understanding and explanation of negative emotions, whereas insecure attachment had the opposite effect.

Longitudinal studies are fewer, but do exist. To my knowledge, two longitudinal studies have investigated attachment as a predictor of child emotion understanding. A six-year

follow-up study be Steele and colleagues (1999) found that attachment assessed by the use of the Strange Situation at 12 months, predicted child understanding of mixed emotions six years later, even when controlling for age and verbal skills. The authors attribute this correlation to the importance of the child's confidence in the mother's availability when learning about emotions (Steele, Steele, Croft, & Fonagy, 1999). In another longitudinal study, Meins and colleagues (1998) found that attachment status around 1 year of age predicted understanding of mental states, assessed by three different theory of mind-tasks when the children were 4 and 5 years. Meins et al. (1998) related these differences to the mothers' tendency to treat their children as individuals with minds, showing sensitivity to their current level of knowledge and using mental state terms when interacting with them.

As can be seen from these examples, the amount of studies on infants, toddlers and preschoolers dominate the research field, as opposed to investigations conducted with school-aged children. However, some research conducted with an older age group show results differing from those obtained in a younger age group (Cassidy, 1994; Cassidy & Berlin, 1994; Ontai & Thompson, 2002). For example, Ontai and Thompson (2002) found an association between attachment relationship and emotion understanding in 5-year olds, but not in 3-year olds. The authors explain these findings by suggesting that attachment representations are most influential when the internal working models with which they are associated, are more mature (Ontai & Thompson, 2002; Thompson, 2000). This indicates that the predictive value of attachment may be greatest when measured in the preschool- and school-aged years, when internal working models are sufficiently matured to influence emotional development (Thompson, 2000). This, in turn, suggests that studies on younger age groups do not necessarily inform us about emotional development in school-aged children. Such studies may therefore be difficult to use as a guideline when making claims about older children.

In sum, research support the general view that attachment representations might play an important role in the development of emotion understanding. To my knowledge, there has not been a single longitudinal study investigating school-aged children's attachment representations as a predictor of emotion understanding. In addition, none but one of the abovementioned studies, control for other variables (Ontai & Thompson, 2002). The present study tries to fill these gaps by investigating the role of attachment representations in a young school age sample, making use of a multivariate model.

Family climate

The family climate is reflected in a number of intra-familial processes, such as communication, the ability to solve problems, and the emotional expressiveness in the family (Kabacoff, Miller, Bishop, Epstein, & Keitner, 1990; Morris et al., 2007). When children live in families in which everyday life is dominated by negative emotions, conflict and unpredictability, they are at risk of becoming emotionally overaroused (Eisenberg et al., 1998; Morris et al., 2007) and insecure (Cummings, Schermerhorn, Davies, Goeke-Morey, & Cummings, 2006). Dysfunctional family relationships can cause and reinforce child maladjustment and psychological symptoms (Bronfenbrenner, 1995; Diamond, Serrano, Dickey, & Sonis, 1996).

Family emotional expressivity, both positive and negative, verbal and non-verbal, contributes to the emotional climate of the family (Cummings & Davies, 2002; Morris et al., 2007). Through modelling, children receives information about the nature and meaning of emotions from their parents (Denham et al., 2007). A considerable amount of research have established a link between parental emotional expressivity and child emotional development (Cumberland-Li, Eisenberg, Champion, Gershoff, & Fabes, 2003; Denham et al., 2007; Eisenberg et al., 1998; Eisenberg et al., 1996; Eisenberg et al., 2003). Positive expressivity in the family is associated with enhanced child emotion understanding, while findings for negative parental emotional expressivity is more complex (Eisenberg et al., 2003). Dunn and Brown (1994) found that the general level of negative affect was associated with poorer concurrent emotion understanding. On the contrary, evidence by Denham and Grout (1993) suggest that negative externalizing emotions not directed at the child can foster child emotion understanding. Denham and Grout's explanation is that externalizing behavior directed at the child will cause greater emotional arousal and more disruption to emotional learning than merely observing an emotional conflict between others. Halberstadt and Eaton (2002) share this view, supported by their meta-analysis, which suggests that negative emotional expressivity between parents are related to enhanced emotion understanding in elementary school-aged children.

Further, negative emotional expressivity and conflict between parents has been directly associated with parental socialization efforts. For example, in their meta-analysis, Krishnakumar and Buehler (2000) found that parental conflict was related to harsh discipline and lower levels of support and sensitivity toward the child. A large amount of research has

shown that such socialization methods may in turn affect child emotional development (Cox, Paley, & Harter, 2001; Cummings & Davies, 2002; Cummings et al., 2006; Cummings & Wilson, 1999).

Taken together, considerable amounts of research on family climate have been conducted with the whole age-range of children, from kindergarten to adolescence. However, while the relationship between family climate and outcome variables, such as child adjustment have been thoroughly investigated, research specifically linking family climate to emotion understanding in young school-aged children are missing. Furthermore, instead of operationalizing family climate as one coherent predictor, most of the abovementioned studies have looked at factors, such as emotional expressiveness and parental conflict, hypothesized to play a role in family climate. The present study tries to fill the gaps in prior research by investigating the direct effect of family climate on child emotion understanding, while controlling for other variables.

Parental Emotional Availability

The literature on emotion socialization emphasizes parents' ability to be responsive and sensitive to the child's emotional signals as important contributors to the development of emotion understanding. Having parents who create a climate where all kinds of emotions are accepted are thought to contribute to children's learning about their own and others emotions (Biringen, 2000; Eisenberg et al., 1998). A lot of the work investigating the relationship between parental emotional availability and child emotion understanding build on Eisenberg and colleagues (1998) theory proposing that parents' negative and minimizing reactions to children's display of affect will increase children's emotional arousal and undermine learning about emotions. This, in turn may lead to poor or delayed development of emotion understanding (Eisenberg et al., 1998; Eisenberg et al., 1996; Halberstadt & Eaton, 2002; Morris et al., 2007).

Studies on the effect of parental emotional availability on emotional development have received some support. Cross-sectional studies have uncovered that parental reactions to emotional displays are related to preschoolers' emotional competence (Denham & Grout, 1993; Denham, Mitchell-Copeland, Strandberg, Auerbach, & Blair, 1997). Another study found that mothers who responded positively to their child's emotions had children who exhibited enhanced emotion understanding. Maternal anger during social interactions with the

child was negatively correlated with emotion understanding (Denham, Zoller, & Couchoud, 1994). Denham and Kochanoff (2002) replicated these findings.

Fewer studies have been conducted with elementary school-aged children. One exception is a study by Eisenberg, Fabes and Murphy (1996) who found that mothers' problem-focused reactions to children's emotions was related to higher emotional competence and better emotional coping, whereas minimizing reactions was related to children's lower emotional competence and avoidant coping strategies. Similar results were obtained in a study by McElwain, Halberstadt and Volling (2007) and colleagues, linking high emotional support from at least one of the parents to elementary school-aged children's enhanced emotion understanding.

Taken together, prior research support the claim that parental emotional availability may be significant for the development of emotion understanding. However, previous studies share some limitations. First, most of the studies conducted on parental emotional availability are cross-sectional. Stating cause and effect is therefore impossible. Second, most of the abovementioned studies operate with self-report of parental emotional availability (Eisenberg et al., 1996; McElwain et al., 2007), which may be suspect to social desirability (Morsbach & Prinz, 2006). The current study addresses shortcomings of earlier studies by making use of an observational instrument assessing parental emotional availability. In addition, the current study differs from previous investigations by taking a longitudinal approach.

The teacher-child Relationship

All of the people with whom children interact – parents, teachers, and peers – exhibit a variety of emotional expressions and responses to the child's emotions, and thus serve as socializing agents (Denham et al., 2007). While the mother-child attachment may be vital in infancy, toddlerhood and the preschool years, children's relationship with teachers become increasingly important as the child grows and enters school. Based on what is known about the contribution of parental socialization on emotional development, it can be assumed that teachers serve important functions as socializers of emotion understanding in the school context.

The classroom context poses new challenges to the developing child, such as attending class, waiting for turn, sitting still and attending group activities (Denham, Bassett, & Zinsser, 2012). Children's emotion understanding facilitates the development of such social and

academic competence. Adequate regulation of emotions allows the child to allocate energy and resources to academic and social goals (Schutz, Hong, Cross, & Osbon, 2006).

Most studies on the association between the teacher-child relationship and child development have focused on outcome variables such as school adjustment, peer relationship and academic grade achievement. Even though much research show that emotion understanding relates to both social competence and academic success, few studies have specifically targeted emotion understanding as an outcome variable. To my knowledge, only two studies have examined the teacher-child relationship's relation to emotion understanding. In a cross-sectional study, Garner and Waajid (2008) found that teacher-child closeness was positively correlated with child emotion understanding (Garner & Waajid, 2008). These findings were not replicated in another study by Garner and colleagues using a multivariate approach (Garner, Mahatmya, Moses, & Bolt, 2014).

Although some research control for demographic variables (Garner & Waajid, 2008), fewer studies choose to control for interpersonal variables on child outcomes. However, one exception exists. In a cross-sectional study, Mitchell-Copeland, Denham and DeMulder (1997) controlled for attachment to mother when investigating the predictive power of the teacher-child relationship on emotion understanding. They found that children with an insecure attachment to their mothers, but who enjoyed secure relationships with teachers, performed better on measures of emotional competence than children who had insecure attachment to both mother and teacher. This finding opens up for the possibility that the teacher-child relationship may moderate the relationship between mother-child attachment and emotion understanding in that the teacher relationship can serve as a buffer for an insecure mother-child relationship. This is an issue that will be further addressed in the current study.

As the above review shows, echoing the critic of the research on the other predictors presented above, most of the work in this area has focused on preschool children. Further, cross-sectional studies dominate the research field. Because the teacher-child relationship is a relatively newly acknowledged predictor of emotion understanding, longitudinal studies are dearth. Finally, most of the reported studies make use of small sample sizes. The current study tries to fill the gaps of prior research by making use of a large community based population of young school-aged children.

Child social skills

As noted above, emotion understanding may be closely related to social competence in several ways. First, emotion understanding may be a prerequisite for the child's ability to interact and form relationships with others (Garner & Estep, 2001). Denham and colleagues (2003) demonstrated that children with enhanced emotion understanding at ages 3 and 4, exhibited better concurrent and later social competence. A hallmark of the early school-aged years is the dramatic growth in peer interaction and heavier reliance on peers as socializing agents of emotions and emotion regulation (Banerjee, Watling, & Caputi, 2011; Eisenberg & Morris, 2002; Morris et al., 2007). As noted by Banerjee and colleagues (2011), the emergence of a more advanced understanding of others' mind corresponds to the increased demands on social skills put forth in the early school-age period. This claim may translate to emotion understanding in that the ability to infer the mental states of others could help children form better peer relationships.

At the same time, the causal relation may flow in the opposite direction. In other words, social competence may be crucial for opportunities to practice and further develop emotion understanding. Empirically, this causal direction has been supported. For example, in their longitudinal study, Maguire and Dunn (1997) reported that friendship interactions at 6 years predicted understanding of mixed emotions seven months later. Furthermore, Dunsmore and Karn (2004) found that kindergartners who enjoyed more stable friendships and who were more popular among peers had a greater growth in emotion labeling and emotion script knowledge within 6 months. Dockett and Degotardi (1997) found that popular preschoolers more often were accepted into social interactions, and therefore had more opportunities to learn about others perspectives. These children exhibited more advanced understanding of others minds, included better emotion understanding.

The previously mentioned studies operate with small sample sizes (Dunsmore & Karn, 2004; Maguire & Dunn, 1997). This makes generalizability and replicability an issue. Further, none of the studies mentioned above control for other possible variables, such as attachment to parents or teachers, or child verbal skills. The present study tries to fill these gaps by the use of a multivariate approach, controlling for other interpersonal variables, in a large sample.

Interactions between variables

Several of the interpersonal factors may themselves be interrelated. As mentioned above, the teacher-child relationship may serve as a moderator between mother-child attachment and emotion understanding. In other words, a warm relationship to a teacher may compensate for an insecure attachment to a parent. Mitchell-Copeland and colleagues (1997) argues that whomever the child shares a significant emotional bond with, may serve attachment functions and contribute to the child's emotional development. The concept of parental emotional availability and family climate share important characteristics with attachment (Akister & Stevenson-Hinde, 1991; Biringen, 2000; Biringen & Easterbrooks, 2012; Bornstein, Suwalsky, & Breakstone, 2012; Cox et al., 2001; Diamond et al., 1996). For example, parental emotional availability is important if the child is to form a secure attachment to his or hers mother or father. Similarly, a secure attachment between parent and child may contribute to warm family climate. Further investigating the role of the teacher-child relationship in relation to these two factors may yield interesting findings highlighting the interactional mechanisms between predictors of child emotion understanding. For example, lack of parental emotional availability may be compensated for by a close relationship to a teacher. Similarly, a warm teacher-child relationship may serve as a buffer for a cold family climate.

Further, a relation has been established between child social skills and the teacher-child relationship. Children who enjoy a close and warm relationship to a teacher exhibit better social skills than a child without such a relationship (Garner et al., 2014; Mitchell-Copeland et al., 1997; Pianta & Steinberg, 1992). From this assumption, one can hypothesize that the teacher-child relationship may serve as a buffer for children with poor social skills, giving them opportunities to practice and develop their social skills. This, in turn, may provide opportunities for social interaction with others, which contribute the development of emotion understanding.

Similarly, a close association exists between the parent-child attachment and child social skills. Children who enjoy a secure relationship to an adult learn to a greater extent how to maneuver in the social world (Eisenberg et al., 2003; Goldwyn, Stanley, Smith, & Green, 2000; Thompson, 2000). Thus, if social skills predict enhanced emotion understanding, a secure relationship to a parent will contribute to this prediction. Because of the possible overlapping nature between the parent-child attachment, parental emotional availability and

family climate, it may be plausible to believe that these predictors may interact with child social skills as well, contributing to enhanced emotion understanding.

First, these scenarios imply a multivariate analysis of the predictors of emotion understanding, which involves statistically adjusting the predictors for each other. Second, prior research calls for attention to interactions between variables and how these work together in predicting emotion understanding. To the best of my knowledge, no data exists confirming the plausible interactions mentioned above. By first adjusting for confounding variables and then testing for interactions in a controlled manner, it is possible to get a better picture of true predictors and moderators of emotion understanding.

Intrapersonal factors

Prior studies highlight the contribution of demographic and intrapersonal factors in the socialization of emotion understanding. Intrapersonal and demographic variables will serve as covariates in the present study. These include child verbal skills, gender, and parental socioeconomic status (SES) (see Figure 1). The literature on emotion socialization show strong associations between verbal skills and emotion understanding (Denham et al., 2007; Harris, 1999; Pons et al., 2003; Southam-Gerow & Kendall, 2002). In the current study, verbal skills are regarded as a covariate and not as a predictor of its own on the basis that it is not an interpersonal variable, and therefore, does not fit into the model used in the present study, splitting intra- and interpersonal variables. Because verbal skills share well-known strong links with emotion understanding, this was not the focus of the current investigation.

When it comes to gender, the results are mixed. Some studies find that girls perform better on tasks related to emotion understanding (Chaplin et al., 2005; Denham, Bassett, & Wyatt, 2010), while others do not find such gender differences (Pons et al., 2004; Pons, Harris, & Doudin, 2002). Finally, some research has been conducted with low-income and minority populations. One finding consistent across studies is that low SES interact with family emotional life and parental socialization practices, having a potential effect on child emotional development (Cutting & Dunn, 1999; Eisenberg et al., 1998; Garner et al., 1994).

In sum, the aim of the present study is to investigate interpersonal predictors of emotion understanding in an early school-aged sample. Based on the research described above, the first hypothesis is that attachment representations, family climate, parental emotional availability, the teacher-child relationship and child social skills at 6 years of age

will predict enhanced emotion understanding two years later, when the child is 8 years old. Second, as prior research has shown possible interrelatedness between interpersonal variables, I will test for such interactions. Specifically, it is hypothesized that 1) children without a satisfactory and/or supportive home environment (including secure attachment to parent, parental emotional availability and an accepting family climate), but who enjoy a secure relationship to a teacher will show better emotion understanding at the age of 8 than children without such a relationship to a teacher. 2) Children with poor social skills, but who enjoy a satisfactory or supportive home environment will perform better on emotion understanding at the age of 8 than children without such a home environment. 3) Children with poor social skills, but who enjoy a good relationship to a teacher will perform better on emotion understanding than children without such a relationship to a teacher. As can be seen from these hypotheses, we have tested for all possible pairs of interactions between the interpersonal variables.

The current study tries to address shortcomings of earlier studies by making use of a multivariate approach, controlling for other variables, in a large and representative sample of young school-aged children. If we are able to identify the driving forces of the development of emotion understanding, it will be possible to address these selectively in order to prevent child maladjustment and poor mental health.

Method

Participants and procedure

The present study is part of the larger prospective longitudinal "Trondheim Early Secure Study (TESS) (Berg-Nilsen & Wichstrøm, 2012; Wichstrøm, Belsky, & Berg-Nilsen, 2013; Wichstrøm et al., 2012).

Two birth cohorts of 4-year-olds, born in 2003 and 2004, in the city of Trondheim, Norway, were invited to participate in the study together with their parents. The letter of invitation included the Strengths and Difficulties Questionnaire (SDQ) 4-16 version (Goodman, Ford, Simmons, Gatward, & Meltzer, 2000), which is known to correlate well with emotion understanding (Southam-Gerow & Kendall, 2002). The parents completed the SDQ and brought it to the community health check-up appointment routinely scheduled for all Norwegian 4-year-olds. Almost all who was eligible for the study appeared at the well-child clinic, which means that the sample was, in practice, community-based. In order to increase

the variability in emotion understanding and the predictors, it was oversampled for children with social, emotional and behavioral problems. This was done by dividing the SDQ total difficulty scores into four strata. Defined proportions of each stratum were subsequently selected to participate. The probability for being selected increased with increasing SDQ scores for each of the four stratum. In order to generate unbiased general population estimates, we conducted analyses with weights inversely proportional to the drawing probability. In other words, results for children scoring high on SDQ were weighted down, whereas results for children receiving a low total score on SDQ were weighted up. A sandwich estimator was used to produce corrected standard errors.

At the well-child clinic, a nurse gave the parents information about the study, and obtained a written consent. 82.5 % of the eligible families consented to participate at the initial testing. 5.2 % were missed due to error on the part of the clinic staff. Recruitment and follow-up procedures are presented in Figure 2.

The initial testing took place when the children were 4-years-old (T1), and retesting took place two (T2) and four (T3) years later, when the children were 6 and 8 years old, respectively. The current analyses are based on the two latter measurement points. At T2, when the children had just started in first grade, the number of child-parent dyads were 797 (M = 6.7 years, SD = .16). At T3 the number were 689 (M = 8.8 years, SD = .24). In order to investigate whether factors included in the present study predicted drop-out, logistic regression was applied. Results showed that the only factor predicting drop-out was child social skills, however this effect was not significant (B = -.021, p = .054). Sample characteristics at the first retest (T2) are presented in Table 1. 50.6 % of the participating children were girls. The majority of caregivers were female (81.1 %), and of Norwegian ancestry (93.0 % for both mothers and fathers).

All testing and observation took place at the Department of Psychology, at the Norwegian University of Science and Technology (NTNU). Parents mailed a questionnaire about the child's social skills and the teacher-child relationship to the teacher they considered knew the child best. The number of teachers who replied the questionnaires were 765 and 788 for each of the measures, respectively. Children were tested without the presence of their parents. All procedures were performed by skilled personnel, who had at least a bachelor's degree in a relevant field, in addition to extensive experience working with children and their

families. The study was approved by the Regional Committee of Medical and Health Research Ethics.

Measures

Emotion understanding. The dependent variable, children's emotion understanding, was measured at T2 and T3, using a Norwegian translation of the Test of Emotion Comprehension (TEC). TEC permits the measurement of nine components of emotion understanding, which emerges between the ages of 3 and 11 (Albanese et al., 2006; Pons & Harris, 2005; Pons et al., 2004; Pons et al., 2003). These are 1) Recognition, 2) External cause, 3) Desire, 4) Belief, 5) Reminder, 6) Regulation, 7) Hiding, 8) Mixed, and 9) Morality (Pons et al., 2004). These can be hierarchically divided into three subgroups (external mentalistic and reflective) representing individual developmental stages (Pons et al., 2004).

TEC consists of an A4 book, each sheet presenting a cartoon depicting one of the nine components of emotion comprehension (Albanese et al., 2006). The bottom of the page shows four possible emotional outcomes, two negative and two positive/neutral. The procedure is divided into two steps. First, while showing the child a given cartoon, the experimenter reads the story accompanying it. The wording of the story is neutral and the faces of the cartoon characters are blank, as not to lead the child in his or her answer. Second, after hearing the story, the experimenter asks the child to point at the emotional state he or she believes might be representing the main character's feelings. Hence, the response is non-verbal, closed and spontaneous. The procedure includes some control questions to make sure the child has understood the procedure (Pons & Harris, 2005), and lasts for about 15-20 minutes.

The child is given 1 point for each item answered correctly and 0 points if the answer is incorrect. Component 1(Recognition) and 2 (External cause) include five test items. At least four must be answered correctly to obtain a score. Component 3 (Desire) includes four test items, and all four must be answered correctly to obtain a score. Component 9 (Morality) contains two test items in which both must be answered correctly. The remaining items all consist of one item, which must be answered correctly in order to obtain a score (Kårstad, Kvello, Wichstrøm, & Berg-Nilsen, 2013). The components increase in difficulty and gives a component score (range 0-9). A general level of emotion understanding can be determined by adding the points given each component (Pons & Harris, 2005).

The Theta test was used to assess reliability of emotion understanding. The Theta for TEC at T2 was .82, and .94 at T3.

Interpersonal predictors

Attachment representations. In order to assess children's attachment representations, the Manchester Child Attachment Story Task (MCAST) was used. This instrument is based on attachment theory (Green, Stanley, Smith, & Goldwyn, 2000).

The MCAST is framed as five doll-play vignettes. These are designed to induce anxiety and stress in order to mobilize specific attachment thoughts and behavior during and after each session. The child is asked to choose one doll to represent him/her and one doll to represent a chosen caregiver as a way of introducing the play material. First, there is an introducing vignette, designed to function as a non-attachment eliciting comparison (eating breakfast). Then, four attachment-related distress vignettes, designed to elicit proximity-seeking behavior, are presented. These are 1) the child awakes in the night, having a nightmare, 2) the child hurts his/her knee, 3) the child has a tummy ache, and 4) the child is lost at a big mall. After this, the child, marked by distress, is given the opportunity to play out the story using the dolls. In the last phase, the interviewer takes control once more with structured probes and questions, in order to clarify the meaning behind the play and to trigger mental attributions to the dolls (Green et al., 2000).

The play sequence as a whole was coded from a videotape. Both the content and the structure of the child's play were coded. A primary and secondary classification of A (avoidant), B (secure), C (ambivalent) or D (disorganized) were given for each vignette. The primary categorization was coded as 1 (present) or 0 (absent), and the secondary categorization was coded as 0.5 (present) or 0 (absent). An overall classification was obtained by creating a classification scale, averaging primary and secondary scores across vignettes. Accordingly, a child receiving a primary categorization of B on three vignettes and a secondary classification of B on one vignette would be given a score of (1+1+1+0,5)/4) = .875. Thus, the highest attainable score for each classification were 1.0.

The MCAST has shown good reliability and validity (Barone et al., 2009; Goldwyn et al., 2000; Green et al., 2000). In the present study, raters blind to all information about the child recoded a random 10 % of the videos. Inter-rater reliability was as follows: A-scale: ICC

= .67, B-scale: ICC = .77, C-scale: ICC = .63, and ICC = .70 for the D-scale (Wichstrøm et al., 2013).

Family climate. The Family Assessment Device (FAD) (Epstein, Baldwin, & Bishop, 1983) was used to assess the family climate. The FAD measures family climate on seven subscales. These are Problem Solving, Communication, Roles, Affective Responsiveness, Affective Involvement, and Behavior Control. The seventh scale, the General Functioning scale, measures the overall health of family functioning. In the present study we used only the General Functioning scale (α = .82). Parents of each family were asked to give a response on a scale from 1 (strongly agree) to 4 (strongly disagree). A higher score indicates worse functioning (Akister & Stevenson-Hinde, 1991; Miller, Ryan, Keitner, Bishop, & Epstein, 2000).

Emotional Availability. Parental emotional availability was assessed using an adapted version of the Emotional Availability Scales, 3rd Ed. (EA) (Biringen, 2000). In this test, the parent and child were asked to use a set of wooden blocks in order to build a house and a chair, depicted in example pictures. The tasks were designed to be a bit too difficult for the child, and the parent was asked to instruct and assist the child as he or she normally does. Parent and child interactions were videotaped at T2, and coded by certified raters.

The EA scales rate four parental dimensions (sensitivity, structuring, non-intrusiveness and non-hostility) and two child dimensions (responsiveness to and involvement with the parent) of emotional availability (Biringen, Robinson, & Emde, 2000). In the current study, we used the four parental dimensions. These four subscales yielded an internal consistent score of α = .74. The inter-rater reliability between multiple blinded coders was ICC = .71 on a random 10 % sample of the videotapes for the total parent scale.

Teacher-child relationship. In order to assess the quality of the teacher-child relationship, we used a slightly modified 25-item Norwegian version (Solheim, Berg-Nielsen, & Wichstrøm, 2012; Wichstrøm et al., 2012) of the Student-Teacher Relationship Scale (STRS) (Pianta & Steinberg, 1992). The past two decades, this has been one of the most widely used scales in studies on the teacher-child relationship (Gregoriadis & Tsigilis, 2008; Hamre & Pianta, 2001; Howes & Ritchie, 1999; Koomen, Verschueren, van Schooten, Jak, & Pianta, 2012; Pianta & Steinberg, 1992).

The STRS assesses the teacher's relationship with each individual child on a scale from 1 (definitely does not apply) to 5 (definitely applies) (Gregoriadis & Tsigilis, 2008). The STRS rates the teacher-child relationship on three dimensions: Closeness, Dependency and Conflict (Pianta & Steinberg, 1992). The closeness subscale is perceived as a positive dimension of the teacher-child relationship, while both the dependency and the conflict subscales are viewed as negative aspects of the relationship (Koomen et al., 2012). A high total score indicates a positive relationship, high on closeness and low on dependency and conflict.

Support has been obtained for the validity and reliability of the adapted 25-item version of the STRS (Birch & Ladd, 1997; Gregoriadis & Tsigilis, 2008; Hamre & Pianta, 2001; Koomen et al., 2012; Solheim et al., 2012). In the current study we found an in internal consistency score of $\alpha = .83$ (Kårstad et al., in press).

Child Social Skills. Teacher-reported social skills were assessed by the use of the Social Skills Rating system – teacher report (SSRS-T) at T2. The SSRS-T is a 30-item multirater assessment system, measuring perceived frequency of behaviors influencing children's development of social competence as reported by teachers (Fagan & Fantuzzo, 1999).

The SSRS-T measures social competence on three subscales: Cooperation, Assertion, and Self-control. Each subscale contains 10 items and each item is rated on a 3 point Likert scale from 0 (never) to 2 (often). The total score ranges from 0 to 60 (Van der Oord et al., 2005). The SSRS has shown good reliability in the present study ($\alpha = .89$) (Wichstrøm et al., 2013).

Intrapersonal and demographic covariates

Verbal skills. We used the Vocabulary subtest from the Wechsler Abbreviated Scales of Intelligence (WASI) (Wechsler, 1999) in order to measure child verbal skills at T2. The WASI is a standardized brief version of the Wechsler Adult Intelligence Scale (WAIS). The Vocabulary subtest is one of two subtests that in sum indexes verbal intelligence. In order to administer the Vocabulary subtest, an experimenter provides the child with a word and the child is asked to give a definition of this word (Clarke, Snowling, Truelove, & Hulme, 2010; Nation, Cocksey, Taylor, & Bishop, 2010).

Gender and socioeconomic status. In addition to child gender, parental socioeconomic status (SES) was included as a covariate. Parental occupational status was used as a proxy for SES. This was coded according to the International Classifications of Occupations (ILO, 1990). The following categories were used: unskilled workers, farmers/fishermen, skilled workers, lower professional, higher professionals, and leaders. Professionals and leaders were grouped together as having "high" SES, and farmers/fishermen and unskilled and skilled workers were grouped as having "low" SES. If the parents lived together, the parent with the highest SES was chosen as an estimate.

Results

Descriptive analyses are presented first, followed by prediction analyses of emotion understanding from six to eight years.

Descriptive Analyses

Two sets of descriptive analyses were conducted, one involving the descriptive statistics for each variable and one involving the correlation. Descriptive analyses are presented in Table 2. On group level, there was a significant increase in emotion understanding from 6 to 8-years-old, $t(638) = 25.27$, $p < .001$. According to Cohen's guidelines (2013), the resulting d-value (1.00) is regarded a large effect-size (Cohen, 2013).

Correlational analyses were conducted to investigate the relationship between the predictor variables. These are presented in Table 3. As can be seen, child social skills were significantly associated with teacher-child relationship. This was the only correlation that can be regarded as strong. The positive relationship between emotion understanding at T2 and T3 was small but significant. This indicates that the rank order stability of emotion understanding between the two measurement points were small. Further, the correlational analysis showed that emotion understanding at 8 years (T3) was significantly predicted by better social skills and better teacher-child relationship when the child was 6 years old (T2). These correlations were, however, small. As for the covariates, better verbal skills and higher SES were significantly related to a higher score on emotion understanding at T2. Verbal skills and social skills were also associated with each other, yielding a small, but significant correlation In addition, gender was significantly related to emotion understanding at T3 (girls showing better emotion understanding than boys). The correlations were, again, small.

Prediction of emotion understanding at age 8

All predictor analyses were conducted using SPSS version 21. Multivariate predictors of emotion understanding at T3 were analyzed in a two steps procedure, using the Complex Sample General Linear Model (GLM) module. In step 1, a series of individual regression analyses were conducted for each of the interpersonal variables and the intrapersonal and demographic variables. This generated unadjusted predictors of emotion understanding at T3. At this level of analyses, child emotion understanding at T3 was significantly predicted by the teacher-child relationship and child social skills. As for the covariates, better verbal skills, but not SES and gender, predicted enhanced emotion understanding when the child was 8-years-old.

In step 2, all variables were entered into a regression analysis in order to produce adjusted predictors of emotion understanding at T3. After this adjustment, the teacher-child relationship became non-significant. Social skills were the only remaining interpersonal variable significantly predicting emotion understanding at T3. As for the covariates, verbal skills, but not SES and gender, significantly predicted emotion understanding at T3. The unadjusted and adjusted results are presented in Table 4.

Finally, moderation analyses were applied to test for interactions between variables as predictors of emotion understanding at 8 years of age. All possible pair of interactions were tested for. Results revealed a significant interaction between child social skills and the teacher-child relationship. To illuminate the nature of this interaction, child social skills were divided into three equal groups, one group scoring in the lower range of social skills, the second scoring in the medium range and the last group scoring in the upper range of social skills. Controlling for all other variables, analyses revealed that the teacher-child relationship predicted better emotion understanding among children scoring at the lower ($\beta = .19$, $p = .065$) and medium ($\beta = .19$, $p = .100$) range of social skills, albeit only at trends. Among children with better social skills, the teacher-child relationship was unpredictive of emotion understanding ($\beta = -.14$, $p = .306$). Hence, the group analyses revealed that there was a differential importance of social competence on the impact of the teacher-child relationship.

Discussion

The main objective of the present study was to investigate interpersonal predictors of emotion understanding in a large representative sample of young school-aged children.

Regarding the interpersonal predictors, the results revealed that more socially skilled 6-year-olds exhibited enhanced emotion understanding at the age of 8. In addition, the teacher-child relationship at 6 years of age was found to have an effect on emotion understanding two years later, however only for children at the lower and medium range of social skills. Further, as regards the intrapersonal variables, 6-year-olds' verbal skills predicted level of emotion understanding when they reached 8 years of age. To the best of my knowledge, no prior study has provided similar results investigating inter- and intrapersonal predictors of emotion understanding in this particular age group. Thus, the present inquiry extends prior research by investigating emotion understanding in a young school-aged population, and by demonstrating that the predictive effects of verbal and social skills holds even when controlling for a range of interpersonal demographic variables. However, both verbal and social skills have been previously investigated in relation to emotion understanding, using samples of different age groups and methods (Beck, 2013; Beck et al., 2012; Bennett, Bendersky, & Lewis, 2005; Dunsmore & Karn, 2004; Garner & Estep, 2001).

Interpersonal factors

Social skills were the only interpersonal variable significantly predicting emotion understanding after adjusting for all other variables, confirming a part of our first hypothesis. Although prior research has shed light on the reverse causal pathway (e.g. how emotion understanding predicts enhanced social skills), some studies have examined the ways in which social skills contribute to emotion understanding (Arsenio & Cooperman, 1996; Asher & Rose, 1997; Dockett & Degotardi, 1997; Dunsmore & Karn, 2004). Dunsmore and Karn (2004) claim that positive stable friendships in kindergarten offer the child opportunities to learn about emotions and emotion labeling, and to consolidate this knowledge through repeated interactions with friends. This is in line with Banerjee and colleagues (2011) conclusion that peer interactions are an important context for the development of an understanding of others' mental states. A similar view proposes that complex interaction and pretend play with friends allow children to explore their emotions (Parker & Gottman, 1989). Children's emotional responses during peer interaction and their understanding of these emotions may influence their opportunities to practice and learn about emotions (Arsenio & Cooperman, 1996). Taken together, this supports the notion that social interactions may provide contexts for development of emotion understanding (Arsenio & Cooperman, 1996; Dunn & Brown, 1994; Dunsmore & Karn, 2004).

From the growing amount of research on the topic of social skills in relation to emotion understanding, it may be inferred that the relationship between emotion understanding and social skills is a bidirectional one. Superior emotion understanding may lay the groundwork for social skills (Denham et al., 2003; Fabes et al., 1999; Garner, 1996; Smith, 2001), and, at the same time, better social skills and opportunities for social interaction are prerequisites for the development of emotion understanding (Banerjee et al., 2011; Dunsmore & Karn, 2004; Maguire & Dunn, 1997). The present study adds to the line of research with a unidirectional focus. A possible bidirectional nature of this relationship should be the focus in future research.

Considering the remaining interpersonal variables included in the study, none of them contributed to the prediction of enhanced emotion understanding after adjusting for the other inter- and intrapersonal variables. This disconfirms the hypothesis that attachment representations, parental emotional availability, teacher-child relationship and child social skills predict child emotion understanding over a two-year span in elementary school. This is consistent with a by Kårstad and colleagues (in press), investigating similar predictors of emotion understanding, but at an earlier age. Equally, a couple of other studies reveal the same results regarding the same age group investigated in the current study. In particular, in their cross-sectional study, Jones and colleagues (2002) found that parents' emotion-focused responses had no effect on child emotional competence. In general, the findings concerning the contribution of parents' emotion-focused socialization efforts, such as comforting, reassurance and calming are less consistent than findings regarding problem-oriented parental reactions (Eisenberg et al., 1998; Eisenberg et al., 1996; Eisenberg et al., 1999). This highlights the idea that such emotion-focused socialization strategies may not be optimal responses to school-aged children's emotional displays. When starting elementary school, children are expected to exhibit a more advanced emotion understanding and be able to regulate emotional states to a greater extent than younger children. Thus, comforting and reassurance may undermine the child learning about emotions. Taken together, this indicates that the same parental socializing efforts may have different effects on child outcomes, depending on age. Because specific predictors of emotion understanding may vary as a function of the child's age and developmental level, we may not be in the position to draw conclusions about school-aged children based on knowledge about younger children. Future research should extend the focus on predictor variables to include predictors hypothesized to

play an important role for this specific age group, and to a lesser degree, build on knowledge about factors that have been found significant for a younger age group.

Interactional effects

Our interactional analyses showed results for the interrelatedness of the teacher-child relationship and child social skills in predicting emotion understanding. No other predictors yielded such interrelatedness. The idea that socialization by others than parents play a more important role in the development of emotion understanding in the early school-aged period provided the framework for the inclusion of the teacher-child relationship as a predictor variable. The importance of the teacher-child relationship was dismissed when adjusting for all variables, however, the unadjusted analyses revealed significant results. It would therefore be premature to conclude that the quality of the teacher-child relationship does not have an effect on emotion understanding. This is underscored when testing for interactions. The results from the group analyses reveal that the teacher-child relationship predict emotion understanding, but only for children scoring at the lower and medium range of social skills. For children scoring at the upper range of social skills, the effect is slightly reversed. The results may indicate that children with poorer social skills benefit more from the relationship with a teacher. It is possible that the teacher-child relationship may compensate for the lack of social competency and social interaction by giving the child opportunities to learn about emotions from a more competent adult, and thus, protecting these children from delayed emotional development. These results highlights the importance of the teacher as a socializing agent, especially among those children not in the position to make use of superior social skills as a tool for more frequent interactions with peers in their emotional development. Contrary, children with better social skills may benefit from interactions with friends to the extent that positive interactions with a teacher may be redundant.

To my knowledge, no study has found similar interactions predicting emotion understanding for this particular age group. However, one cross-sectional study demonstrated that the teacher-child relationship might compensate for the lack of a secure relationship between child and mother contributing to the child's emotional development (Mitchell-Copeland et al., 1997). Van Ijzendoorn, Sagi and Lambermon (1992) obtained similar results with a younger age group. In addition, Ahnert, Pinquart and Lamb (2006) conducted a meta-analysis demonstrating that alternative relationships (e.g. with teachers) may compensate for the lack of, or insecure relationship to parents. These studies highlight the possibility that

teachers may function as a compensatory socialization agent, not only when the child lacks a secure relationship to a parent, but also when the child lacks interactional experience with peers as a result of poor social skills. This in turn, may protect the child from a delayed or unhealthy emotional development. Knowledge about such processes is essential because they inform us about the importance of the teacher's role in emotional development.

Intrapersonal factors

Regarding intrapersonal factors, verbal skills was the only factor significantly predicting emotion understanding. Due to the general accepted idea that verbal skills and emotion understanding is positively related, most studies investigating the predictors of emotion understanding choose to control for verbal skills. As is the case in the present inquiry. However, several studies have investigated language ability as a uniquely contributing factor to individual differences in emotion understanding. Such studies reveal that language ability in young children predicts enhanced emotion understanding (Beck, 2013; Beck et al., 2012; Eisenberg et al., 2005; Pons et al., 2003; Rosnay & Harris, 2002). The early years of school is not only an important period for emotional development, it is also a period of rapid development of language, coinciding with the systematization of the learning of written and spoken language within the school context. This learning process leads to an increase in lexical-semantic abilities (Nation et al., 2010; Nippold, 1988), literacy (Nippold, 1988) and the pragmatic use of language (Scott, Healey, & Norris, 1995), among other things.

Language ability may be one of several gateways to learning about emotions. If so, how do verbal skills contribute to enhanced emotion understanding? There may be several pathways accounting for this relationship. Research has provided evidence for a direct pathway between child verbal skills and emotion understanding (Beck, 2013; Beck et al., 2012; Cutting & Dunn, 1999). For example, children with superior language skills are more able to ask questions about others' and owns' emotions and to better understand the answers. In addition, these children are capable of describing accurately their own emotions. This may make it easier for the child to make sense of his or her social and emotional world (Beck et al., 2012; Denham et al., 2007). Further, research on interpersonal factors has demonstrated an indirect pathway linking emotional discourse and family discussion about emotions to the development of emotion understanding (Denham et al., 2007; Denham et al., 1997; Dunn, Brown, & Beardsall, 1991; Morris et al., 2007). For example, frequency, diversity of emotional talk and causal discussions about emotions in the family of three-years-olds,

predicted children's ability to recognize emotions in others at 6 years of age (Dunn et al., 1991). Furthermore, parental supportive discussions about emotions, as opposed to unsupportive emotion talk, predict adaptive emotion regulation and more favorable emotional and psychological child outcomes (Morelen & Suveg, 2012). In other words, it is not only the quantity of emotion talk in the family that matters, the quality is of equal importance. In order to untangle the differing pathways between verbal skills and emotion understanding, future research should use a multivariate approach, assessing verbal skills as an independent variable contributing to emotion understanding, and not as a covariate.

Finally, our results show that there was a significant increase in emotion understanding from 6 to 8 years. This is in line with prior research on child emotional development (Harris, 1989, 1999, 2000; Pons & Harris, 2005; Pons et al., 2004; Pons et al., 2003; Rosnay & Harris, 2002). The small but significant correlation between emotion understanding at T2 and T3 indicates that the rank order stability of emotion understanding between the two measurement points were small. In other words, children with relatively poor emotion understanding at 6 years were not necessarily the ones with relatively poor emotion understanding at 8 years, compared to the rest of the population. This indicates that, even though children's emotion understanding develop consistently from 6 to 8 years as a group, there are large variations when it comes to rate of individual development within the population. Some children may develop an understanding of emotions rapidly, while others may be slower. Others again, may experience varying speed of development. This finding does not replicate earlier studies on the stability of emotion understanding, which has found that individual differences in emotion understanding are stable across the developmental period. Previous studies show that emotion understanding at one time-point is predictive of individual differences more than one year later (Harris, 1999; Pons & Harris, 2005; Pons et al., 2003), while the present study disconfirms this. The reason for these differing results may be that in the current study I have chosen to control for other inter- and intrapersonal variables, which has not been done in previous research. Another possibility is that emotion understanding in fact, is not as stable as first assumed. More research is needed on individual differences in the development emotion understanding to achieve more clarity in this area.

Strengths and limitations

The main strength of the present study is the large community based sample, and a prospective multivariate analysis of data including several interpersonal variables. Despite

these strengths, some limitations should be considered when interpreting the findings. First, because our sample was predominantly Norwegian (93 %) and community based, generalization to other populations, such as a clinical population or populations of other nationalities, should be done with caution. Further, 108 participants dropped out from the study between the two measurement points. However, this drop-out seems random as analyses show that not one variable included in the present study predicted this drop-out.

Second, TEC includes fixed emotion outcome responses, which makes the child locked to one of four responses when giving his or her answer. It is possible that the children would have responded differently if the questions were more varied and open or if they had the opportunity to choose between wider ranges of emotional responses. Moreover, some of the components of TEC consisted of only one test item, which could possibly compromise variability.

Third, emotional availability was measured using a laboratory setting which may undermine the ecological validity of the results. In addition, EA showed only moderate reliability, which may have reduced the power of parental emotional availability in predicting emotion understanding.

Fourth, EA and FAD rely on parental report. As is the case with most self-report measures, such parental reports may be biased toward social desirability. This is especially true when the object of inquiry is their own children (Morsbach & Prinz, 2006). In addition, EA makes use of only one informant, which in this study predominantly was the mother (81.1 %). Including the father perspective could have yielded different results. A similar reasoning applies to use of the SSRS. By including parental- and self-reports in addition to teacher report, a more reliable measure of child social skills may have been obtained.

Fifth, I acknowledge that the list of predictor variables used in the current investigation is not exhaustive. For example, parents' attitudes towards the child expressing emotions is found to be an important predictor of emotion understanding and emotion regulation (Eisenberg et al., 1992; Eisenberg et al., 1996). Parental beliefs and attitudes were not a factor assessed in the present study, and were therefore not included. In addition, a bidirectional influence between predictors and emotion understanding is likely and should therefore be the focus of future research.

Finally, it should be acknowledged that the GLM is not the optimal way to analyze prospective data. Mixture/growth modelling would have been a more appropriate model. However, because weighted analyses could only be conducted in the Complex Samples module in SPSS, the SPSS was chosen as the preferred statistical program. Unfortunately, this program does not allow for mixture modelling in the Complex Samples module.

Conclusions

Despite these limitations, it is concluded that the development of emotion understanding in young school-aged children is predicted primarily by verbal and social skills. Further, the teacher-child relationship must be considered together with child social skills, as children with poorer social skills may benefit from a relationship with a teacher in the development of emotion understanding. This gives support to an ecological view on the development on emotion understanding in that both interpersonal (social skills and teacher-child relationship) and intrapersonal (verbal skills) factors serve as predictors of emotion understanding. These conclusions were supported by the use of a large community-based sample, and strengthened by the use of multivariate model adjusting for other possible predictors.

The findings underscore the need for interventions specifically targeted at promoting social and language skills during the first years of school. The school is a natural context for learning such skills, both during and between classes. Moreover, the current study emphasizes the important role of the teacher as a socialization agent, which may help to promote the child's emotional development and compensate for lack of social interaction with peers. Teachers, in addition to health workers, nurses and others working with the child and family, should be observant on poor verbal and social skills when meeting children who is possibly delayed in their emotion understanding. Subsequent interventions focused on strengthening the child's language and social skills could thereby promote emotion understanding. Future research should examine possible mediators between the predictors and outcomes found in the present prospective study, and develop interventions targeting language, social skills and the teacher-child relationship in order to promote emotion understanding.

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Table 1

Sample characteristics

Characteristics	%
Gender of Child	
Male	49.8
Female	50.2
Gender of parent informant	
Male	18.9
Female	81.1
Ethnic origin of biological mother	
Norwegian	93.0
Western	6.7
Other countries	.3
Ethnic origin of biological father	
Norwegian	93.0
Western	6.3
Other countries	.7
Parents living together (> 6 months)	85.7

Table 2

Descriptive statistics of the study variables

	6 years (T2)			8 years (T3)		
	M (SD)	Max-min	N	M (SD)	Max-min	N
EU	5.91 (1.42)	5.82-5.99	638	7.53 (1.17)	7.47-7.62	638
Interpersonal predictors						
Attachment representations	.08 (.01)	.07-.09				
Family climate	1.68 (.01)	1.66-1.71				
Parental emotional availability	100.49 (.38)	99.74-101.24				
Teacher-child relationship	115.27 (.24)	114.80-115.78				
Social skills	57.62 (.42)	56.80-58.44				
Intrapersonal/demographic predictors						
Verbal skills	16.67 (.165)	16.35-16.99				
Gender (% girls)	50.6					
Parental SES (%)						
Unskilled workers	.6					
Skilled workers	14.1					
Lower professionals	36.2					
Higher professionals	36.7					
Leaders	12.5					

Note: EU = emotion understanding, SES = socioeconomic status.

Table 3

Correlations between variables

	EU T2	EU T3	Attachment representations	Family climate	Emotional availability	Teacher-child relationship	Social skills	Verbal skills	Gender (% girls)	SES
EU T2	-	.229**	.021	-.018	.042	.122**	.215**	.298**	.047	.074*
EU T3		-	-.073	-.054	.021	.173**	.202**	.237**	.083*	.068
Attachment representations			-	.038	-.076	-.123**	-.189**	-.129**	-.251**	-.079
Family climate				-	-.005	-.049	-.069	-.071	-.044	-.049
Emotional availability					-	.093*	.111*	.076*	.042	.115**
Teacher-child relationship						-	.590**	.092**	.155**	.073
Social skills							-	.250**	.215**	.124**
Verbal skills								-	.064	.196**
Gender (% girls)									-	-.035
SES										-

Note: EU = emotion understanding, SES = socio-economic status. *p <.05, **p <.01

Table 4

Predictor factors at age six for emotion understanding at age eight. Unadjusted and adjusted coefficients.

	Unadjusted					Adjusted for all predictors and covariates				
	B	SE B	β	95 % CI	p-value	B	SE B	β	95 % CI	p-value
EU T2	.17	.03		.12 - .23	.000	.15	.04	.20	.10 -.28	.000
Interpersonal predictors										
Attachment representations	-.32	.27		-.86 - .21	.238	.11	.32	.02	-.07 - .10	.739
Family Climate	-.16	.09		-.33 - .12	.077	-.06	.12	-.02	-.11 - .06	.588
Parental Emotional Availability	.00	.00		-.01 - 01	.544	.00	.01	.01	-.08 - .10	.864
Teacher-Child Relationship	.02	.01		.01 - .03	.000	.01	.01	.07	-.04 - .17	.196
Social Skills	.02	.00		.01 - .02	.000	.01	.01	.13	.02 - .24	.018
Intrapersonal and demographic covariates										
Verbal skills	.05	.01		.04 - .07	.000	.04	.01	.15	-.06 - .24	.001
Gender (% girls)	-.13	.08		-.28 - .03	.102	-0.7	.11	.03	-.06 - .12	.527
SES	.08	.05		-.02 - .17	.101	.05	.05	.04	-.05 - .13	.357

Note: EU = emotion understanding, SES = Socioeconomic status, B = unstandardized regression coefficient, β = standardized regression coefficient.

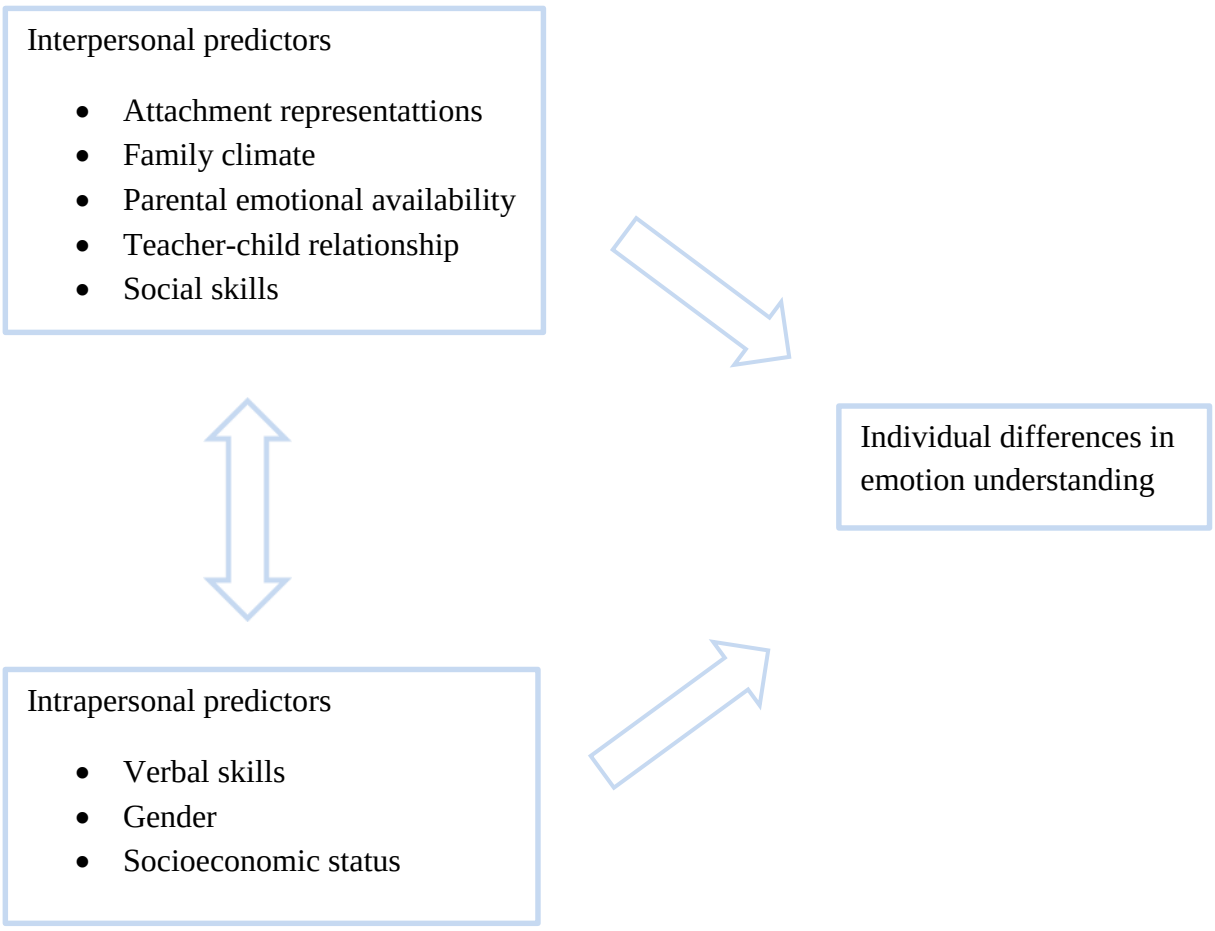

Figure 1. Conceptual model illustrating predictors of emotion understanding: interpersonal and intrapersonal factors.

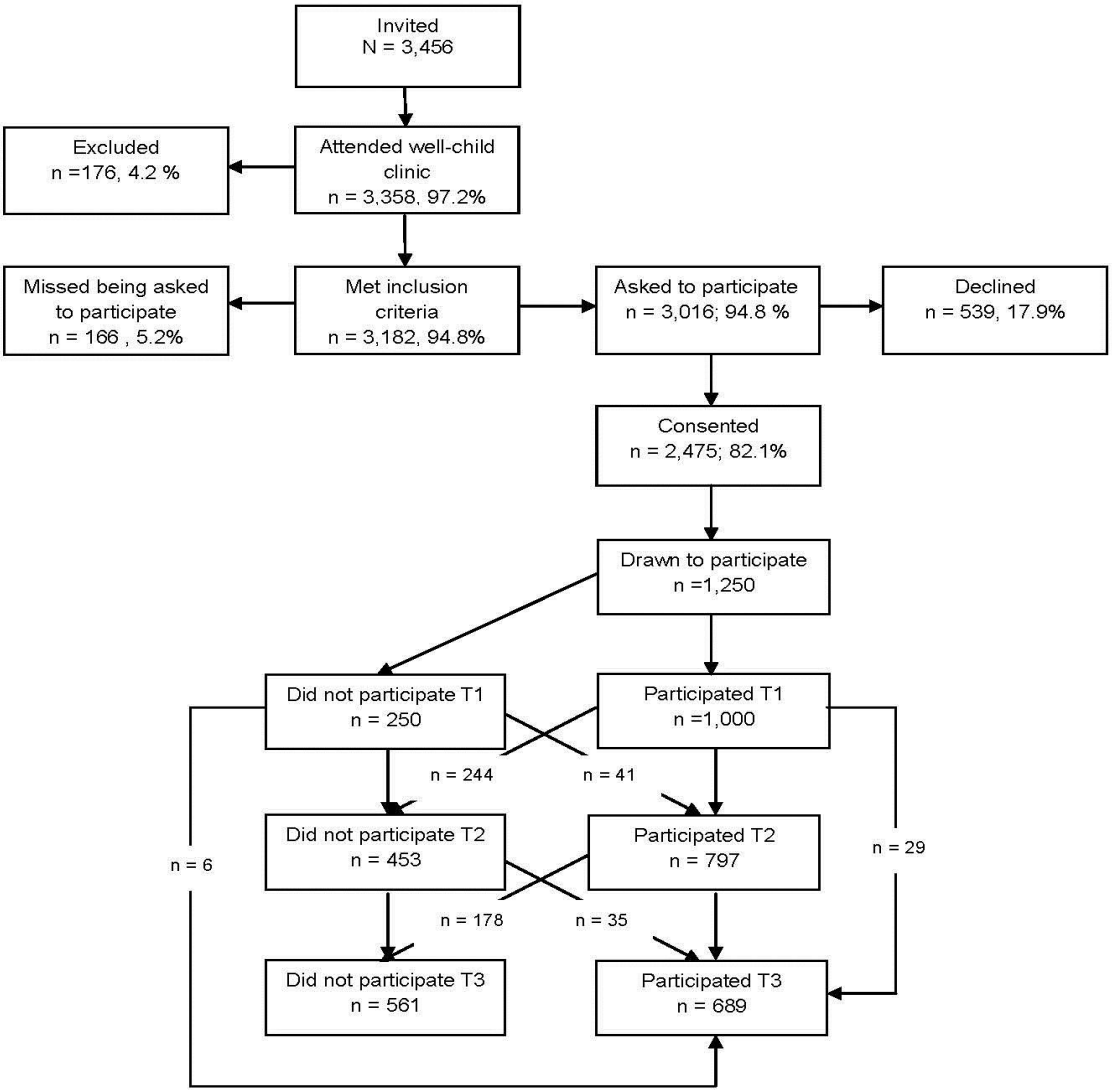

Figure 2. Recruitment and follow-up.