

The Development of Emotion Understanding in Children: The Importance of Parents, Teachers, and Peers

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Data availability:

Due to consent restrictions from participants, data are only available to TESS researchers. The analytic code necessary to reproduce the analyses presented in this paper is available from the first author.

The materials necessary to attempt to replicate the findings presented here are available from the first author.

Author Note

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Abstract

Emotion understanding develops through emotion socialization provided by children's social environments, but the relative importance of various socializing agents has not been determined. In this prospective study, the unique contributions of parents, teachers, and peers to changes in emotion understanding from 4 to 8 years of age were therefore investigated in a birth cohort sample of 924 Norwegian children (50.1% boys). A warm parent-child relationship at 4 years of age predicted increased emotion understanding at 6 years of age but not from 6 to 8 years of age. A close teacher-child relationship forecasted enhanced emotion understanding at both 6 and 8 years of age. The results are in accordance with previous research on parents' roles and bring new knowledge by underscoring the importance of teachers in children's development of emotion understanding.

Keywords: Children, emotion understanding, emotion socialization, parent-child relationship, teacher-child relationship, peers

Public significance statement

This study of Norwegian 4- to 8-year-old children suggests that the parent-child relationship as perceived by the child, predicts their later development of emotion understanding in the preschool years. After school entry, however, the teacher-child relationship predicts later emotion understanding development. Thus, to promote children's emotional competence, interventions that support emotion socialization behaviors might need to be directed not only to parents but also to teachers.

The Development of Emotion Understanding in Children: The Importance of Parents, Teachers, and Peers

Emotion understanding (EU) refers to knowledge about emotions in oneself and others, how emotions are elicited and expressed, and what they communicate (Pons et al., 2010; Saarni et al., 2006). Better EU is associated with better social competence, academic success, and mental health (Denham, Bassett, Way, et al., 2012; Klein et al., 2018; Rieffe & De Rooij, 2012). Therefore, there is a need to identify factors that promote or hinder EU development.

EU develops gradually from the discrimination of facial expressions in infancy (Ruba & Repacholi, 2019) to the understanding of complex concepts such as mixed emotions in later childhood (Castro et al., 2016). Its development is influenced by intrapersonal factors such as verbal ability and temperament (Harris et al., 2005; Verron & Teglassi, 2018), interpersonal factors such as parents' socialization behaviors (Denham et al., 2015), and environmental factors such as culture (Raval & Walker, 2019). Eisenberg's model of emotion socialization provides a comprehensive framework that has influenced emotion research for more than 20 years (Eisenberg, 2020; Eisenberg, Cumberland, & Spinrad, 1998). Regarding interpersonal factors, the socialization behaviors of parents have received considerable attention. Such behaviors include teaching (e.g., talking about emotions), modeling (e.g., expressing emotions), and contingent responding (e.g., responding to the child's emotions in a supportive way). For an overview, see Denham et al. (2015).

Parents usually represent their child's first significant social relationships in infancy and early childhood (Fonagy et al., 2002); however, over time, their social realm increases, as do their social relationships (Levitt, 2005; Seibert & Kerns, 2009). By school entry, friends and teachers may have become increasingly important agents in children's social contexts (Pianta

et al., 2003). Although the importance of teachers and friends is acknowledged (Eisenberg, 2020), research addressing the role of these relationships in emotional development is still scarce. The present inquiry examined the potential contributions of children's relationships with their parents, teachers and peers on changes in EU from 4 to 8 years of age, in a Norwegian context.

The Role of Parents

Children develop EU through socialization processes inherent in interactions with their parents (Eisenberg, 2020; Eisenberg, Cumberland, & Spinrad, 1998). Research has demonstrated associations between parents' specific socialization practices, such as mental state talk and sensitive responding, and children's emotional competence (e.g., Ereky-Stevens, 2008; Tompkins et al., 2018). However, the nature of parents' socialization practices and how these practices are perceived by their child may depend on the degree of closeness or warmth between them, as experienced by both the parents and the child, that is, the parent-child relationship (Eisenberg, Spinrad, & Cumberland, 1998). Parents who experience a positive relationship with their child are more likely to engage in supportive socialization practices (Root & Rasmussen, 2017). Warm and nonhostile relationships create a safe environment and might enable children to benefit more from their parents' specific emotion socialization practices (Darling & Steinberg, 1993; Eisenberg, Spinrad, & Cumberland, 1998). Such indirect influences have received less attention than more specific parent behaviors (Eisenberg, 2020; Godleski et al., 2020). Warmth and the expression of positive emotions in the family have been found to contribute to children's emotion regulation (Fosco & Grych, 2012); however, to the best of our knowledge, the effect on EU has not yet been studied.

Parent-child relationships are often measured by parent reports or observations (Fosco & Grych, 2012; Root & Rasmussen, 2017). However, as repeatedly chronicled in a variety of

topics, child reports are typically only modestly correlated with reports from parents (De Los Reyes & Kazdin, 2005; Rescorla et al., 2013) or external observers (Gearing et al., 2015).

Assuming that relationship quality moderates the effect of emotion socialization behaviors on EU (Darling & Steinberg, 1993; Eisenberg, Spinrad, & Cumberland, 1998), we argue that it is important to investigate the parent–child relationship from the child perspective. Therefore, in the present study, child reports were used to measure parent–child relationship quality.

The Role of Teachers

Evidently, a child’s relationship with a teacher differs from that with a parent. Teachers are more likely to be replaced over time, and they also have a larger group of children to attend to. On the other hand, teachers may observe certain social situations, such as group processes, more frequently than parents do and may thus be vital socializing agents in these situations. Indeed, teachers’ importance for children’s emotional development has been advocated by a range of scholars (Denham, Bassett, & Zinsser, 2012; Pianta et al., 2003; Valiente et al., 2020). Empirical reports of teachers’ roles in children’s EU development are scarce; however, teachers’ emotion-related behaviors have been associated with children’s socioemotional development in general, even as early as in toddlerhood (King & La Paro, 2018). A student–teacher relationship characterized by affection, support, and low levels of conflict will likely provide an environment in which emotional learning is possible for the child (Pianta, 1999) and may facilitate positive socioemotional outcomes. Garner and colleagues (Garner & Waajid, 2008) found that the association between the teacher–child relationship and school outcomes was mediated by children’s EU. In a later report, closeness in the teacher–child relationship was associated with better EU, but only for children in some preschool types (university-affiliated preschools and suburban Head Start preschools) and not for those in others (urban Head Start preschools) (Garner et al., 2014). Thus, there are reasons

to expect associations between a close and positive relationships with teachers and EU development in children; however, the cross-sectional nature of previous studies provides little information regarding the directionality of the association. Although the need for research has been recognized for a decade (Denham, Bassett, & Zinsler, 2012; Valiente et al., 2020), the contribution of student–teacher relationships to children’s EU development has not been subjected to a proper prospective test. The present study is a significant contribution in this respect.

The Role of Peers

When interacting with peers, children are exposed to a range of emotion-related situations. This includes their own emotional experiences, emotions expressed by others, and the enactment of roles and situations during pretend play (Ashiabi, 2007). Naturally, in preschool and elementary school, peers are less advanced regarding EU compared to adult socializers such as teachers and parents (Pons et al., 2004). Thus, peers might provide a socializing environment different from that provided by adults and thus further enhance or hamper EU development beyond what is achieved from interactions with parents and teachers.

Studies have reported associations between positive aspects of peer relationships, such as friendship stability and prosocial interactions, and EU (Dunsmore & Karn, 2004; Torres et al., 2015; Ursache et al., 2019). However, conflicts and negative emotions are also likely to appear in peer interactions. In line with emotion socialization theory (Eisenberg, Cumberland, & Spinrad, 1998), any emotion-related social interaction might promote EU development, irrespective of valence. One exception to this is exposure to punitive reactions, such as bullying, that might induce anxiety, fear, or anger and thus hinder emotional learning (Eisenberg, Cumberland, & Spinrad, 1998). We therefore investigate whether the extent of

socializing with peers, combined with the absence of bullying, predicts heightened EU development.

Verbal ability

Among the intrapersonal factors that contribute to EU development, verbal ability is of particular importance. Numerous studies have documented associations between children's verbal ability levels and emotional competence (e.g., Beck et al., 2012; Harris et al., 2005). Evidently, children need an emotion-related receptive vocabulary to be able to reflect upon their own and others' emotions in a sophisticated way (Pons et al., 2006), and their expressive language skills enable them to engage in more mental state talk that further enhances their EU (Taumoepeau & Ruffman, 2008). Furthermore, children with better language skills are also more likely to obtain skills required to develop high-quality relationships with parents, teachers, and peers (Chow et al., 2021; Davis & Qi, 2020; Feldman et al., 2019). Consequently, with verbal ability being associated with both relationship quality and the level of EU, there is a risk of spurious results reflecting verbal ability rather than relationship quality. Therefore, to reduce this risk, verbal ability was included as a covariate in the present study.

Within-person Development and Confounding

Researchers have thus far questioned which factors predict whether a child has lower or higher EU compared to *other children*—i.e., a between-person approach—and applied correlation or regression-type approaches to answer this question. However, to the extent that research aims to provide findings that allow for causal interpretations (albeit with uncertainty), how other children are doing cannot be involved in any causal processes for a specific child; only within-person processes can be. We therefore sought to identify parent-, peer- and teacher-related factors that predict changes in children's overall levels of EU

through a fixed-effects approach (Allison, 2009), thereby simultaneously adjusting for all (unknown) time-invariant effects that might be responsible for between-person differences in EU.

Cultural Context

Emotion socialization and EU development are likely to vary across cultural contexts. For example, whereas Western industrialized countries (e.g., the United States, Western Europe) tend to embrace individualistic values such as personal development and autonomy, many Asian, African and Latin American countries emphasize interdependence, group cohesion and social responsibilities (Hofstede, 2011). Such differences are likely to also affect how children are encouraged to understand their own and others' emotions (Raval & Walker, 2019). Even within the categories of individualistic and collectivistic cultures, differences among countries can be found; Molina et al. (2014) reported that Italian preschool children understood the difference between hidden and expressed emotions at an earlier age than German children and suggested that differences in child-rearing practices and socialization goals could contribute to these differences.

Beyond cultural differences, countries also have differing political and economic systems that may contribute to the context in which children's EU is developed. For example, in a comparison of EU in Brazilian and Norwegian children, Kårstad et al. (2016) found that differences in family socioeconomic status explained children's levels of EU better than cultural belonging.

Norway is a Western, industrialized country that thus shares many similarities with other Western countries. For example, independence and autonomy are highly valued, and children's free play without adult intervention is highly prioritized in preschool (Norwegian Directorate for Education and Training, 2017). Another salient characteristic of Norway is the

high levels of education; among adults aged 25-40 years, 60% of women and 40% of men have a university or college degree (Statistics Norway [SSB], 2021a). Health care, education and daycare are affordable and accessible for all, and almost 95% of all 3- to 5-year-old children spend more than 40 hours per week in preschool (SSB, 2021b). Parenting practices are commonly based on low levels of punishment and high levels of emotional support. Bjørk et al. (2020) reported higher levels of supportive emotion-socialization practices and lower levels of nonsupportive practices in a sample of Norwegian parents compared to parents from other Western societies.

Against this backdrop, the present study investigated whether children's relationships with their parents, peers and teachers predicted changes in EU from 4 to 6 and 6 to 8 years of age in a Norwegian context. Given the described characteristics of Norwegian society, there is reason to expect that their relationship with their parents influences their EU development. Moreover, due to the time they spend in preschool and the emphasis on free play without adult intervention, we also expect teachers and peers to play an important role. Thus, we hypothesized that all three types of relationships would uniquely predict changes in EU.

Methods

Participants and Procedure

The present study is part of the Trondheim Early Secure study (Steinsbekk & Wichstrøm, 2018). Two birth cohorts of 4-year-olds born in 2003 and 2004 in Trondheim, Norway, were invited to participate in the study together with their parents. The letter of invitation included the Strengths and Difficulties Questionnaire 4-16 version (SDQ; Goodman, 2001). The parents completed the SDQ and brought it to the community health check-up appointment, which is routinely scheduled for all Norwegian 4-year-olds. To increase variability and thus power, children with social, emotional, and behavioral problems

were oversampled. To accomplish this, the SDQ total problems score was divided into four strata (scores of 0-4, 5-8, 9-11, and 12-40). Participants were drawn from these strata with increasing drawing probability, so children with higher SDQ scores were more likely to be invited to participate in the study. This oversampling was adjusted for in the analyses.

The recruitment and follow-up procedures are presented in Figure 1. Of the eligible families, 82.5% consented to participate at the initial testing. Attrition from inclusion to participation did not vary by sex ($\Delta\chi^2 = 0.23 [1], p = .63$) or SDQ strata ($\Delta\chi^2 = 5.70 [3], p = .13$).

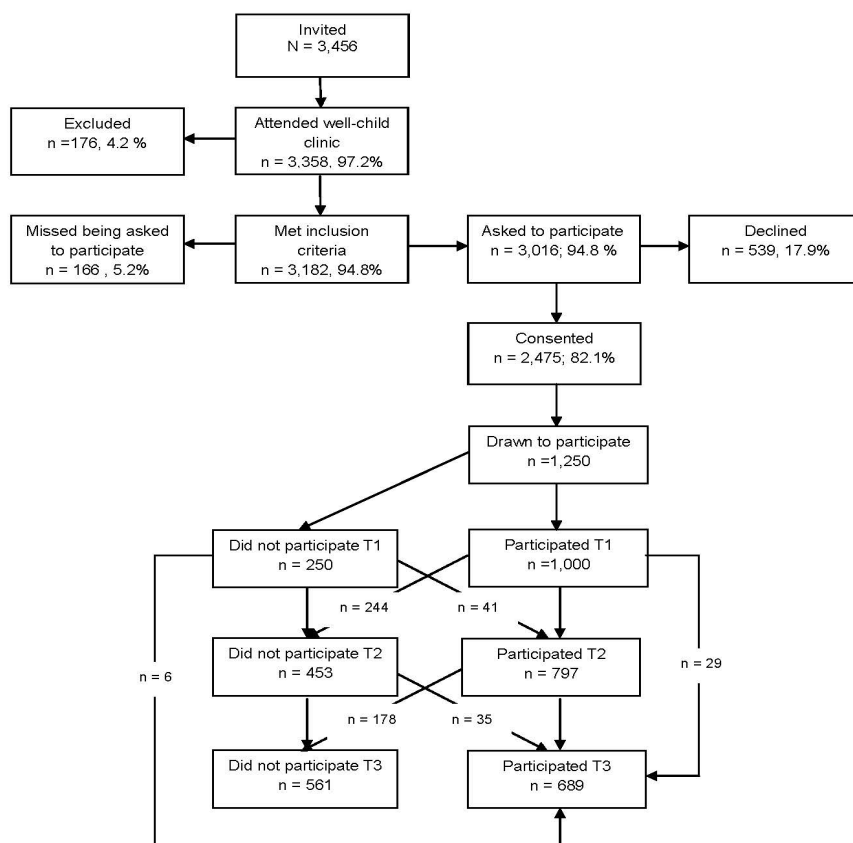


Figure 1. Recruitment and follow-up

Children were tested individually at the university clinic at Norwegian University of Science and Technology (NTNU). The initial testing took place when the children were 4

years old (T1; $n=924$, $M_{age}=4.4$ years, $SD=.53$), and retesting took place two (T2; $n=756$, $M_{age}=6.7$ years, $SD=.19$) and four (T3; $n=677$, $M_{age}=8.8$ years, $SD=.24$) years later. At T1, 50.1% of the children were boys, and 94.7% were of Norwegian ethnic origin. The responding parent had a bachelor's degree or higher in 64.6% of the families. The study was approved by the Regional Committee for Medical and Research Ethics.

The attrition from T1 to T2 and T3 did not vary according to sex or EU score. Language ability and the teacher-child relationship predicted reduced attrition from T1 to T2 (OR=.99, 95% CI=.98-1.00, $p=.031$, and OR=.98, 95% CI=.96-.99, $p=.010$, respectively) and from T1 to T3 (OR=.98, 95% CI = .98-.99, $p<.001$, and OR=.98, 95% CI=.96-.99, $p=.010$, respectively). Better peer-child relationships predicted reduced attrition from T1 to T3 (OR=.67, 95% CI = .48-.94, $p=.019$). Even so, the combined effect of these predictors on attrition was very small in size (Cox & Snell $R^2=.010$ from T1 to T3). Additionally, Little's normed MCAR test was 1.14, suggesting that data were missing at random (MAR).

Measures

Emotion understanding

EU was measured at T1, T2 and T3 using the Test of Emotion Comprehension (TEC; Pons et al., 2004). The TEC is administered in booklet form, with each page displaying a drawing of a child in a situation, for example, receiving a present. The face of the protagonist is left blank, and four alternative facial expressions representing different emotions are displayed at the bottom of the page. The experimenter reads a vignette about the scene and asks the child to point at the facial expression that might represent the character's emotions. The 21 items are the same for all ages and are divided into nine components. One point is given for each component the child masters. While some studies have described scoring procedures where partial credit is given for elaborate and well justified, although incorrect

responses (Garrett–Peters et al., 2017), the scoring in the present study was performed according to the original recommendations; that is, one point for correct answers and zero points for all other answers (Pons et al., 2004). Support for the factor structure of the TEC and sensitivity to developmental change has been reported (Cavioni et al., 2020; Pons et al., 2004), as well as high internal consistency, with median Cronbach’s alpha scores of $\alpha = .90$ (Albanese et al., 2010). Because all components were scored dichotomously, Armor’s theta (Armor, 1973) was used as a measure of reliability in the current study, revealing high internal consistency ($\theta = .82$ at 4 years of age, $\theta = .83$ at 6 years of age, $\theta = .86$ at 8 years of age).

Child Relationships with Parents and Peers

The Berkeley Puppet Interview (BPI; Measelle et al., 1998) is a semistructured interview in which two puppets are used. For each item, the puppets make statements about themselves and then prompt the child to make a statement about him- or herself (e.g., Puppet 1: “I am good at making friends.” Puppet 2: “I am not good at making friends.” Puppet 1: “What about you, [child’s name]?”) The interview is videotaped and scored by trained raters on a scale from 1-7, with a higher score indicating a more positive response from the child. High internal consistency has been reported for both the parent and peer relationship scales (Imrie et al., 2022; Stone et al., 2014). Congruent and concurrent validity, as well as the factor structure, has been found to be acceptable (Ringoot et al., 2013; Stone et al., 2014). In the present study, inspection of the data revealed that in 93% of the cases, negative responses were scored as 2, and positive responses were scored as 5. The remaining scores were scarcely used, suggesting that the values were close to being dichotomously distributed. Therefore, prior to analysis, scores of 1-4 were converted into 0, and scores of 5-7 were converted into 1, thus creating a dichotomous value for each item.

To assess children's perceptions of the parent-child relationship, the scores of three subscales of the BPI Parent-Child Scales were averaged: warmth and enjoyment, negative affect (reversed), and responsiveness. Internal consistency was good at both 4 years of age and 6 years of age ($\theta = .83$ and $\theta = .86$, respectively). For children's perceptions of relationships with their peers, the scores of two subscales from the BPI Social Scales were averaged: bullied by peers and asocial with peers ($\theta = .77$ and $\theta = .87$ at 4 and 6 years of age, respectively).

Teacher-Child Relationship

The Student-Teacher Relationship Scale (STRS; Pianta & Steinberg, 1992) is a teacher report assessing a teacher's relationship with each individual child on three dimensions: closeness, dependency, and conflict. The sum of these dimensions, producing a total score of relationship quality, was used (Cronbach's $\alpha = .83-.88$). Previous studies have reported similar reliability coefficients and meaningful correlations with relevant measures (Doumen et al., 2009; Drugli, 2013). A full list of the items is available at <https://education.virginia.edu/faculty-research/centers-labs-projects/castl/measures-developed-robert-c-pianta-phd>. The daycare teacher who knew the child best completed the scale when the child was 4 years old, and the child's primary teacher completed the scale when the child was 6 years old.

Verbal Ability

The third version of the Peabody Picture Vocabulary Test (Dunn & Dunn, 1997) was used to measure verbal comprehension at T1 ($\alpha = .98$). At T2, the vocabulary subtest from the Wechsler Abbreviated Scales of Intelligence (Wechsler, 1999) was used as a measure of verbal intelligence ($\theta = .86$). Both of these tests are widely used and have shown acceptable

reliability and validity in various contexts (Campbell et al., 2001; Castellino et al., 2011; Pae et al., 2012; Ryan & Gontkovsky, 2021).

Statistical Analysis

Because of the oversampling of children with emotional and behavioral problems, to arrive at correct population estimates, we involved population weights corresponding to the number of children in the population in a specific stratum divided by the number of participants in that stratum. Because most predictors were only measured at T1 and T2, cross-lagged within-person methods such as the random intercept cross-lagged panel model (RI-CLPM; Hamaker et al., 2015) were not feasible because these methods require at least three measurement points for variables. Therefore, to examine the predictive power of social relationships on within-person changes in EU, a fixed-effects regression approach was applied (Figure 2). Following Allison (2009), a time-invariant factor was created loading on measures of EU at 4, 6, and 8 years of age. In effect, between-person differences in EU were, hence, partialled out, and measures of EU at 4, 6, and 8 years of age captured the change in each child's EU level. The effects of predictors on EU were adjusted for this time-invariant factor. Change in EU at 8 years of age was regressed on parent, peer, and teacher relationships at 6 years of age, verbal intelligence, and EU at 6 years of age. Changes in EU at 6 years of age was regressed on measures of these predictors at 4 years of age, EU at 4 years of age, and verbal comprehension. The predictors were allowed to correlate, and EU at 4 years of age was allowed to correlate with other measures at 4 years of age. We first tested a random effects model, assuming that predictors were uncorrelated with the time-invariant EU factor. The fit of this model was compared to a fixed effects model, which assumes that predictors are correlated with the time-invariant factor, using the Satorra–Bentler scaled chi-square test (Bryant & Satorra, 2012). Importantly, when utilizing within-person information only, fixed

effects models have reduced statistical power (Allison, 2009). In contrast, the random effects model has more statistical power than the fixed effects model because it also incorporates between-person information but depends on the somewhat unrealistic assumption that all time-invariant confounders are independent of the other covariates in the model (Firebaugh et al., 2013). As a way of addressing these limitations of both approaches, we compared the fit of these models to that of a hybrid model where the predictors not correlated with the time-invariant factor were set to exogenous. We applied a robust maximum likelihood estimator and a full information maximum likelihood (FIML) procedure to account for missing data under the assumption that they were missing at random (MAR), as indicated by the attrition analyses. We followed general guidelines to interpret the effect sizes in the cross-lagged within-person analyses, considering .03, .07, and .12 to represent small, medium and large effects, respectively (Orth et al., 2022).

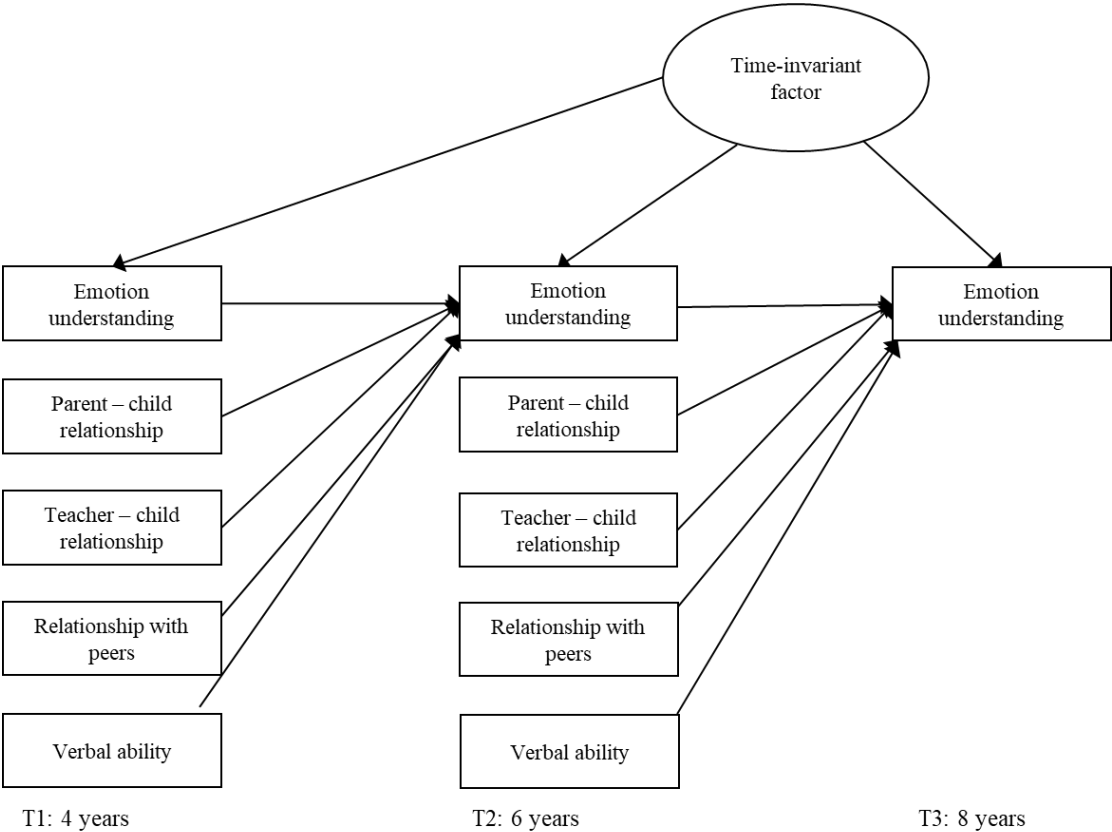


Figure 2. Conceptual model. For clarity, only effects on EU are shown, although correlations among all variables in the model are assumed.

Transparency and openness

Data were analyzed using Mplus, version 8.5 (Muthén & Muthén, 1998-2017). Due to participant consent restrictions, the data are not publicly available. The analytic code and materials necessary to replicate the findings are available from the first author. The study design and its analysis were not preregistered.

Results

Descriptive statistics and correlations among the study variables are presented in Table 1. A latent growth model showed that EU increased by approximately one component per year (yearly growth = 1.03, 95% CI = 1.00, 1.07, $p < .001$). At T3, 21.4% of the children received the maximum score on the TEC. A model where variances of the TEC were fixed to be similar fit the data worse than a model where these variances could differ ($\Delta\chi^2=66.99$, $df=2$, $p < .001$), whereas a model where variances at T1 and T2 were fixed to be similar and the variance at T3 could differ did not evince a poorer fit than a freely estimated model ($\Delta\chi^2=3.13$, $df=1$, $p=.077$). Taken together, this shows that the variance at T3 was smaller than that at T1 and T2—which did not differ from each other. Even so, the variance in the TEC at T3 was highly significant ($p < .0001$).

The random effects model had a better model fit than the baseline model with no restrictions, yet it was not satisfactory.

The fixed effects model showed good model fit. Inspection of the fixed effects model revealed that two predictors were correlated with the time-invariant factor: verbal ability at T1 ($r=.61$, $p < .001$) and at T2 ($r=.84$, $p=.001$). Therefore, these were allowed to correlate freely in

a hybrid model, which had higher statistical power than the fixed effects model. The hybrid model did not have a worse fit than the fixed effects model and was therefore preferred (RMSEA=.014; CFI=.993; TLI=.980).

Table 1. Descriptive statistics and zero-order correlations among study variables

Variable name	Mi	Ma	M	SD	1	2	3	4	5	6	7	8	9	10
1. Emotion understanding T1	0	8	3.36	1.5										
2. Emotion understanding T2	0	9	5.92	1.4	.19									
3. Emotion understanding T3	2	9	7.55	1.1	.09	.21								
4. Quality of parent relationship T1	0.0	1	.80	.15	.10	.16	.11							
5. Quality of parent relationship T2	0.0	1	.87	.11	.03	.12	.07	.18						
6. Being social with peers T1	.00	1	.69	.24	.07	.13	.08	.27	.13					
7. Being social with peers T2	.00	1	.85	.19	.05	.10	.06	.19	.31	.25				
8. Relationship with teachers T1	80	13	117.	7.7	.04	.10	.07	.04	.13	.10	.15			
9. Relationship with teachers T2	73	13	115.	7.9	.04	.10	.16	.03	.13	.03	.13	.24		
10. Language comprehension T1	4	10	66.1	17.	.39	.25	.21	.13	.07	.16	.09	.12	.14	
11. Verbal intelligence T2	0	37	16.7	5.0	.19	.29	.24	.10	.14	.08	.18	.13	.18	.45

Note. * Significant at the .05 level. ** Significant at the .01 level.

The results are presented in Table 2. Better relationships with parents and teachers at 4 years of age predicted increased EU at 6 years of age. A better student–teacher relationship at 6 years of age also predicted improved EU two years later (at 8 years of age), whereas the child’s rating of the relationship with his or her parents was not predictive at this age.

Table 2. Predictors of Emotion Understanding at 6 and 8 Years of Age in Hybrid Fixed and Random Effects Models

Effect	4 years of age → 6 years of age					6 years of age → 8 years of age				
	Est.	SE	95% CI		<i>p</i>	Est.	SE	95% CI		<i>p</i>
			<i>LL</i>	<i>UL</i>				<i>LL</i>	<i>UL</i>	
<i>Fixed effects</i>										
Intercept	1.015	.696	-.34 8	2.379	.144	3.741	.835	2.528	5.690	<.00 1
Language comprehension	.040	.054	-.06 6	.146	.455	-.085	.064	-.211	.041	.185
<i>Random effects</i>										
Relationship with parents	.121	.046	.031	.212	.009	.021	.048	-.074	.115	.670
Relationship with teachers	.087	.040	.009	.166	.030	.155	.046	.065	.244	.001
Relationship with peers	.074	.046	-.01 6	.163	.105	.019	.055	-.089	.126	.735

Note. Standardized estimates. Est. = estimation; SE = standard error; CI = confidence interval; *LL* = lower limit; *UL* = upper limit.

Whether the strength of prediction for changes in EU at 6 years of age differed from that at 8 years of age was examined with the Satorra–Bentler scaled difference chi-square test (Bryant & Satorra, 2012), and no difference in the strength of prediction was observed. Socialization with peers failed to predict changes in EU.

Discussion

We hypothesized that positive relationships with parents and teachers and the degree of socialization with peers would independently predict increased EU while adjusting for time-varying verbal ability and all unmeasured time-invariant effects of confounders. The hypotheses were partly supported, as children's perceptions of their relationships with their parents predicted increased EU at 6 years of age (but not at 8 years of age), and a better student–teacher relationship predicted improved EU at both 6 and 8 years of age. The importance of socialization with peers was not supported.

Parents' Role in EU Development

Our findings are in concordance with those of previous studies that reported associations between parental emotion socialization behaviors and EU in preschool-age children (Bjørk et al., 2020; Tompkins et al., 2018). Our study adds to this body of research by suggesting that a more broadly defined positive parent–child relationship may facilitate EU development in early childhood. It is possible that a positive parent–child relationship provides the groundwork upon which more emotion-focused socialization can be built and influences the development of EU, but the present study was not positioned to investigate this prospect.

From 6 years of age to 8 years of age, parents' effect on their children's EU was no longer significant. This finding contrasts with previous cross-sectional studies that reported associations between parents' beliefs about emotions and children's EU (Castro et al., 2015; Garrett–Peters et al., 2017). However, given the real possibility that better EU in children may influence parent–child interactions and parents' perceptions about them, such cross-sectional studies are not favorably positioned to assess the potential impact of parents on EU in children. Hence, the present findings and those of the previously mentioned studies do not necessarily conflict.

There is no ready explanation for why the prediction of the effect of parents was no longer observed for EU at 8 years of age. To speculate, with increasing age and especially upon school entry, children's social realm increases and involves an increasing number of relationships. As friends and schoolteachers become increasingly important, the role of parents as socializing agents might be reduced accordingly.

Teachers' Roles in EU Development

Children whose teachers reported having a better relationship with them had increased EU at both 6 and 8 years of age, more so than children whose teachers reported having a less positive relationship. These findings align well with previous studies of development in related areas such as emotional and behavior problems (Drugli, 2013; Maldonado-Carreño & Votruba-Drzal, 2011). They also concur with previous cross-sectional studies that report associations between teacher-child relationships and EU in preschool children (Garner et al., 2014; Garner & Waajid, 2008). To our knowledge, our study is the first to examine the prospective predictive power of teacher-child relationships, thus further underscoring the importance of teacher-child relationships to socioemotional development in children.

Peers' Roles in EU Development

Children's reports about socialization with their friends did not predict EU development. We theorized that children who often socialized with peers and who were not subjected to bullying might have had better access to a range of emotion-related situations suitable for learning about emotions, but this claim was not supported. Notably, the measure of peer relationships in this study addressed social activity with peers in general, not with any specific friend. It is possible that this might have confounded the results.

Previous studies have reported prosocial activities and stable friendships as predictors of better EU (Dunsmore & Karn, 2004; Ursache et al., 2019). These findings could imply that

children's EU benefits primarily from prosocial, friendly peer interactions. Alternatively, it is also plausible that children's EU benefits from all peer interactions, including conflicts and anger, as long as they are in the context of stable friendships or the interaction is dominated by prosocial activity in general. Future studies are needed to investigate these possibilities.

Strengths and Limitations

The current study has a range of strengths, including involving a large and representative sample followed over three waves of data collection spanning from preschool to middle childhood, using multiple informants (children and teachers), and applying a strong statistical procedure that enabled the study of within-person changes, thereby adjusting for unknown time-invariant confounders. However, some limitations need to be acknowledged.

The majority of participating parents were of Norwegian ethnic origin and had a high educational level. The homogeneity of our sample limits our ability to make assumptions regarding the influence of socioeconomic status on children's EU development, which may be influential in other countries where social equity is less. Moreover, 98% of the children were enrolled in a daycare center. Although our sample is representative of the Norwegian population in general in these respects, generalizations to other cultural contexts should be made with caution. It is possible that the significance of preschool teachers is stronger in Norway than in other countries because of the high daycare coverage from an early age. On the other hand, although the characteristics of the relationships might differ among cultures, the processes might still be comparable; for example, if teacher-child relationships at preschool age predicts EU development in a similar fashion across cultures, the effect would still be more salient in cultures such as Norway, where most children are in preschool from an early age and therefore are likely to have a close relationship with a preschool teacher.

By the age of 8 years (T3), 21.4% of the children received the maximum score on the TEC. Moreover, the standard deviations were lower at this timepoint than at T1 and T2. This could indicate a ceiling effect in the measurement of EU, in which case the probability of detecting significant effects would be reduced. However, as the proportion of children who received the maximum score was moderate (21.4%) and lower than the proportion of children who received one or two points lower (34.9% and 25.8%, respectively) and the fact that the variance at T3 was highly significant, we consider the impact of a ceiling effect on Type II error, failing to identify predictors of emotion regulation at T3, to be modest.

Relationships are intrinsically shaped by the persons involved in the relationship (Pianta, 1999). Thus, measuring any type of relationship using only one informant has certain limitations. The measures applied in the current study likely do not provide the full picture of the relationships in question. Supplementary methods such as behavioral observations or reports from the other person in each relationship could have added information about the socialization processes in question and hence affected the results.

Even though we adjusted for all time-invariant confounding, time-varying factors may still influence the results. To illustrate, high EU is associated with high social competence (Denham et al., 2003), and children who receive high scores on these competences might be better liked by their teachers. As teacher–child relationships were measured by teacher reports, it is likely that teachers would rate the relationship more highly if they liked the child. Thus, social competence is a potential confounder in the association between student–teacher relationships and EU. However, as our prediction model adjusted for the overall (time-invariant) level of EU and hence effectively addressed changes in EU using children as their own controls, and because we additionally adjusted for the children’s earlier EU, the findings

suggest that the quality of the relationship with the teacher is not entirely dependent on the child already having high EU and being easy to like.

Conclusions

Our study suggests that the quality of parent–child relationships predicts children’s growth in EU during the preschool years. This could imply that the relational context in which parents’ emotion socialization behaviors occur influences the potential effect of these behaviors. Moreover, after school entry, teacher–child relationships seem to be especially important, possibly at the expense of the importance of parent-child relationships. Thus, to support children’s EU development in the early school years, efforts to promote and sustain favorable student–teacher relationships should be taken into consideration.

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