



Three meta-analyses of children's emotion knowledge and their school success



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ABSTRACT

In this study, we examine the associations between children's emotion knowledge (recognition of emotions in faces and knowledge of external and internal causes for others' emotions) and three dimensions of school success: academic performance, peer acceptance, and school adjustment. Forty-nine studies with 6903 participants (aged from 3 to 12 years) and 185 effect sizes were analyzed in three random-effects multilevel meta-analyses. The mean effect sizes for the associations between emotion knowledge and academic performance, peer acceptance, and school adjustment were $r = 0.32$, $r = 0.19$, and $r = 0.19$, respectively. Among middle-class children, associations between emotion knowledge and academic performance and peer acceptance were stronger. The results of these meta-analyses demonstrate a robust overall relation between emotion knowledge and school success, underline the social contributions to school success, and emphasize the need to conduct further research on the pathways underlying the associations between emotion knowledge and school success.

Emotion knowledge, often also referred to as emotion understanding, is a multifaceted construct whose influence on children's social and cognitive development has attracted much scientific interest in recent years. Castro, Cheng, Halberstadt, and Grünh (2016) introduced a conceptual framework of emotion understanding involving recognition and knowledge abilities that reviewed and reorganized existing paradigms of emotion knowledge (e.g., Denham, 1998; Izard, 2001; Pons, Harris, & de Rosnay, 2004) and highlighted the focus of emotion understanding as localized in the self, in specific others, and in generalized others. In this conceptualization, emotion recognition covers the perception and labeling of prototypical and non-prototypical emotional expressions and the use of relevant contextual cues for perceiving and labeling emotions. (It is thus related to the receiving affective messages component of the Affective Social Competence model by Halberstadt, Denham, & Dunsmore, 2001.) Emotion knowledge skills include understanding internal and external causes of emotions, qualities of emotions, consequences and function of emotions, cultural rules and norms, and management of emotions. Although emotion knowledge consists of these different facets, emotion recognition and labeling is the most basic and is the component most often examined, especially in children (Castro et al., 2016; Izard, 2001). The different components are thought to develop successively in conjunction with the development of cognitive skills, such as perceiving, controlling attention, learning, and remembering (e.g., Denham, 1998; Pons et al., 2004). However, most studies have limited their investigations of

emotion knowledge to identifying the emotional cues in other people, an approach that excludes young children's knowledge of their own emotions (Castro et al., 2016). Therefore, the present meta-analytical review focuses on children's knowledge of other people's emotions. In Denham and Brown's (2010) model of social-emotional learning (SEL), this component is referred to as "social awareness."

Many researchers have created reliable and valid measures of emotion knowledge in children that chart this continuous development. For example, the Affect Knowledge Test (AKT; Denham, 1986) encompasses tasks that target a basic level of emotion knowledge that can be observed in children between three and five years old. Additionally, the Test of Emotion Comprehension (TEC; Pons & Harris, 2000) contains tasks that rely on more advanced levels of emotion knowledge for children up to twelve years of age (for a description of emotion knowledge levels and developmental stages, see Pons et al., 2004). The present meta-analyses included both studies that measured only the basic levels of emotion knowledge and studies of more advanced components. Studies on emotional intelligence or emotional competence are also incorporated (e.g., Billings, Downey, Lomas, Lloyd, & Stough, 2014). In these studies, emotion knowledge represents a key component (Saarni, 1999) and is often measured by the emotion understanding subscale of the Mayer-Salovey-Caruso Emotional Intelligence Test: Youth Version (2004). It is important to include studies of the more advanced components of emotion knowledge because they target skills developed by children in elementary school that might

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make additional contributions to their school success.

From a scientific point of view, a meta-analysis of the association between children's emotion knowledge and their school success combines literature from the disparate fields of developmental and educational psychology and emphasizes the social and emotional foundations of children's success in school (e.g., Denham & Brown, 2010; Zins, Bloodworth, Weissberg, & Walberg, 2007). Practical considerations also advocate an analysis of these relations. A quantitative review may provide supportive evidence to include the components of emotion knowledge in programs that attempt to prevent or treat problem behaviors (e.g., bullying, substance abuse). Moreover, uncovering the moderators of the association between emotion knowledge and school success may help to improve these interventions.

1. Theoretical perspectives and research review of emotion knowledge correlates

The present meta-analyses focus on the relation between emotion knowledge and school success for children in preschool, kindergarten and elementary school. Our conception of school success (or school readiness for preschool children) embraces the following child-related indicators: (1) academic performance, which is usually represented by school grades or measured through objective tests; (2) peer acceptance, which is measured by peer status or peer victimization; and (3) behavioral and affective adjustment to school in terms of classroom behavior, academic engagement, and attitude toward school. These three types of school success are related to each other (e.g., Denham et al., 2012; Mostow, Izard, Fine, & Trentacosta, 2002) and some authors conceptualize school adjustment to be an aggregate of regulatory skills, academic performance, and peer relationships (Pianta, 1997; Shields et al., 2001). However, we differentiate between these three types because we believe that school success should not be limited to academic performance.

The relations between emotion knowledge and school success have been studied primarily with regard to the model of social-emotional learning (Denham & Brown, 2010; Zins et al., 2007), which stresses that learning in school is a profoundly social process. According to the SEL model, children's effective social interactions are based on five social and emotional skills: (1) self-awareness, (2) self-regulation, (3) social awareness, (4) responsible decision making, and (5) relationship skills. Self-awareness and social awareness rely heavily on emotion knowledge (Denham & Brown, 2010). When children have an understanding of the emotions of their peers and teachers, successful interactions are more likely. These children tend to be liked better by their peers and friends in school (Dunsmore & Karn, 2004; Miller et al., 2005) and are better able to exchange knowledge and other academic resources with them. Children with supportive relationships are likely to be more engaged in school, have more personal resources available for learning, and show higher academic achievements (Rimm-Kaufman et al., 2014; Zins et al., 2007).

In some respects, the Affective Social Competence (ASC) model by Halberstadt et al. (2001) elucidates the social awareness and self-regulation components of the SEL model (Denham & Brown, 2010). Sending, receiving, and experiencing affective messages are key components of ASC. All three components require children to recognize, identify, contextualize, and manage emotional messages. Becoming aware of and identifying emotional cues in an affective interpersonal interaction are important skills when building supportive relationships with teachers and peers. Children who can recognize and identify positive and negative emotions in other children will be more successful in their interactions with them, especially when children's expressions become subtler in primary school (Miller et al., 2005). Children with friends in (pre-) school are likely to attend school with more joy, show more engagement in learning, and perform better academically (e.g., Ladd, Kochenderfer, & Coleman, 1997).

1.1. Academic performance

When considering school success, academic performance typically comes to mind first. Although some studies have examined academic performance in specific domains, such as in mathematics or literacy (e.g., Bierman et al., 2008; Zhou & Ee, 2012), other studies have investigated academic performance as a more general construct (e.g., Denham, Bassett, Zinsler, & Wyatt, 2014; Trentacosta & Izard, 2007). The empirical relations between emotion knowledge and academic performance have generally been positive and significant, with effect sizes ranging from small to medium. Although the relation between emotion knowledge and academic performance is assumed to be mediated by social skills, e.g., peer acceptance (Denham & Brown, 2010), in some studies this mediation was nonexistent (Trentacosta & Izard, 2007) or emotion knowledge mediated the relation between social skills and academic outcomes (Torres, Domitrovich, & Bierman, 2015). There may be other factors that account for the relation between these constructs that have not yet been identified or that we could not include in our meta-analyses. For example, cognitive abilities and executive functions are usually related both to emotion knowledge and to academic performance (e.g., Rhoades, Warren, Domitrovich, & Greenberg, 2011; von Salisch, Haenel, & Denham, 2015; von Salisch, Haenel, & Freund, 2013), but because there were too few results, we could not include these relations. In the present meta-analyses, we expect higher levels of emotion knowledge to be directly associated with better academic performance.

1.2. Peer acceptance

As in prior research, peer acceptance is defined as the ability to build positive relationships to peers in kindergarten or school and is often measured by the sociometric status within the class (e.g., Arsenio, Cooperman, & Lover, 2000; Cassidy, Parke, Butkovsky, & Braungart, 1992; Trentacosta & Izard, 2007). Since the 1980s, many studies have documented positive relations between emotion knowledge and peer acceptance among children in preschool, kindergarten and elementary school (e.g., Cassidy et al., 1992; Denham, McKinley, Couchoud, & Holt, 1990; Goldman, Corsini, & DeUrioste, 1980) as well as in low-income and minority populations (e.g., Arsenio et al., 2000; Miller et al., 2005; Smith, 2001; Windingstad, McCallum, Bell, & Dunn, 2011). However, several studies have found no significant relations between emotion knowledge and peer acceptance (e.g., Dunsmore & Karn, 2004; Trentacosta & Izard, 2007). We therefore expect that emotion knowledge will be related to peer acceptance, although at only a moderate level.

Trentacosta and Fine (2010) published a meta-analysis of emotion knowledge and social competence that was guided by the clinical question of predicting externalizing and internalizing problem behaviors. School success was not among their outcomes. Although there is some overlap with the studies we included in our analysis for peer acceptance, social competence was considered by Trentacosta and Fine (2010) to be a much broader construct than peer acceptance alone that included helping behavior and other social skills. Additionally, we focused only on peer acceptance in the school context, whereas Trentacosta and Fine (2010) also included parental ratings of social competence. Overall, not only the passage of time and an outpouring of research results in recent years but also our sole prior focus on school success warrant the publication of a new meta-analysis of emotion knowledge and peer acceptance.

1.3. School adjustment

School adjustment has been measured as a combination of (1) a behavioral component (such as cooperation with teachers and peers or paying attention in class or aggressive behavior) and (2) an affective component (such as attitude toward school and engagement in

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