Psychological Bulletin
2013, Vol. 139, No. 4, 735–765

0033-2909/13/$12.00 DOI: 10.1037/a0030737

Gender Differences in Emotion Expression in Children: A Meta-Analytic Review

Tara M. Chaplin
Yale University School of Medicine

Amelia Aldao
Ohio State University

Emotion expression is an important feature of healthy child development that has been found to show gender differences. However, there has been no empirical review of the literature on gender and facial, vocal, and behavioral expressions of different types of emotions in children. The present study constitutes a comprehensive meta-analytic review of gender differences and moderators of differences in emotion expression from infancy through adolescence. We analyzed 555 effect sizes from 166 studies with a total of 21,709 participants. Significant but very small gender differences were found overall, with girls showing more positive emotions ($g = –.08$) and internalizing emotions (e.g., sadness, anxiety, sympathy; $g = –.10$) than boys, and boys showing more externalizing emotions (e.g., anger; $g = .09$) than girls. Notably, gender differences were moderated by age, interpersonal context, and task valence, underscoring the importance of contextual factors in gender differences. Gender differences in positive emotions were more pronounced with increasing age, with girls showing more positive emotions than boys in middle childhood ($g = –.20$) and adolescence ($g = –.28$). Boys showed more externalizing emotions than girls at toddler/preschool age ($g = .17$) and middle childhood ($g = .13$) and fewer externalizing emotions than girls in adolescence ($g = –.27$). Gender differences were less pronounced with parents and were more pronounced with unfamiliar adults (for positive emotions) and with peers/when alone (for externalizing emotions). Our findings of gender differences in emotion expression in specific contexts have important implications for gender differences in children's healthy and maladaptive development.

Keywords: emotion expression, gender/sex differences, observational studies, emotional development, contextual factors

In western popular culture, it is widely held that there are gender differences in children's emotion expressions.[1] Sayings such as "boys don't cry" and "sugar and spice and everything nice—that's what little girls are made of" reflect cultural beliefs and expectations that girls show cheeriness or sadness, whereas boys are strong and calm, showing anger if necessary. These beliefs are reflected in studies that ask adults and children about their expectations about the emotional expressiveness of females and males (e.g., Birnbaum & Croll, 1984; Brody, 1999; Shields, 2002) and to some extent in studies that ask individuals about themselves (e.g., Cox, Stabb, & Hulgus, 2000). Observations of emotional expression are less commonly conducted; when they are, the observed emotions do not always show such consistent gender differences, raising the question of the nature and extent of gender differences in emotion expression. Until now, although there have been empirical reviews of happiness expressions (e.g., LaFrance, Hecht, & Levy Paluck, 2003), there has been no empirical review of observed gender differences in other types of emotion expressions (e.g., negative emotions) across the period when gender differences in emotion likely develop—childhood and adolescence. Delineating the emergence of and contexts under which such differences might appear is important to advancing our understanding of basic information about gender differences and of basic and applied research on children's social and emotional development.

Learning to express emotion is a key feature of healthy social-emotional development. The typically developing infant, for example, communicates contentment or distress that guides the parent's caregiving. Over the first few years of life, children develop flexible patterns of facial, vocal, and behavioral (i.e., bodily) expressions of emotion that allow them to communicate their feelings, adjust those communications according to the situation,

This article was published Online First December 10, 2012.

Tara M. Chaplin, Department of Psychiatry, Yale University School of Medicine; Amelia Aldao, Department of Psychology, Ohio State University.

This work was supported in part through National Institutes of Health Grant K01DA024759 (principal investigator Tara M. Chaplin). We thank Pamela Cole and Susan Nolen-Hoeksema for their advice and thoughtful comments on earlier versions of this paper and the research assistants who assisted with literature searches, coding, and article preparation (Chetna Chandrasekaran, Emily Goncalves, Cameron Grey, Hayley Grunebaum, Gillian Ritter, Jenny Robb, Jessica Simmons, and Rebecca Watsky). We also thank the many authors who provided data from their studies.

Correspondence concerning this article should be addressed to Tara M. Chaplin, Department of Psychiatry, Yale University School of Medicine, 2 Church Street South, Suite 209, New Haven, CT 06519. E-mail: tara.chaplin@yale.edu

[1] We use the term *gender differences* in the present article. The term *sex differences* could also be used. We use "gender" to acknowledge that these differences are not likely solely based on biological sex but may also be socially influenced.

and even mask emotions (Malatesta & Wilson, 1988). They learn which emotions to express and when to express them, communicating their needs to others and, in turn, responding to others' requests and needs. In this way, children's emotion expressions facilitate the development of social relationships (Halberstadt, Denham, & Dunsmore, 2001; Saarni, 1999). Thus, learning socially appropriate ways of expressing different emotions has been considered a central component of the development of emotional competence (Denham, 2007).

Given the importance of emotion expression to healthy development, it is critical to understand whether it is susceptible to gender differences. For example, an individual's ability to be emotionally aware and appropriately communicative of feelings is a hallmark not only of socioemotional competence but also of mental health (Cicchetti, Ackerman, & Izard, 1995; Gross, 1999; Keenan, 2000). An accumulating body of evidence suggests that when a person is limited in the range of emotions expressed or is encouraged to express particular emotions to the exclusion of others, there is a greater likelihood of compromised socioemotional functioning and of risk for developing psychopathology (Chaplin & Cole, 2005; Keenan, 2000; Keenan & Hipwell, 2005; Zahn-Waxler, Shirtcliff, & Marceau, 2008). For example, suppressing the expression of certain emotions has been linked to diminished well-being and a wide variety of forms of psychopathology in adults (e.g., Gross & John, 2003; for a comprehensive review, see Aldao, Nolen-Hoeksema, & Schweizer, 2010). This evidence indicates that the early identification of gender differences in emotion expression could shed light on the mechanisms that underlie known gender differences in the prevalence of particular forms of psychopathology. It is known, for example, that in childhood, boys are more likely to have conduct problems such as defiance and aggression, which are often associated with high levels of anger (Cole, Michel, & Teti, 1994), whereas by adolescence girls are more likely than boys to have symptoms of depression and anxiety (Hankin et al., 1998; Ollendick & Yule, 1990), both of which are associated with sadness and fear.

Research addressing the nature and development of gender differences in emotion expression cannot rely solely on self-report or parent-report questionnaire studies. Although this methodological approach is informative, it should be complemented by methods that capture youths' actual in-the-moment expressions of emotion. For this reason, it is useful to review studies that have examined the behavior of boys and girls using objective criteria by trained independent coders to reach decisions about the emotions expressed and the amount or intensity of those expressions. The present meta-analysis constitutes a much-needed empirical review of gender differences in observed facial, vocal, and behavioral (bodily) expressions of emotion in children and adolescents aged 0–17 years. We hypothesized that gender differences in the expression of emotions would be moderated by contextual factors, particularly the emotion considered, children's developmental level, and the social situation in which emotion is expressed.

General Theories of Gender Differences

There are at least three main types of theoretical models of gender differences in behavior: biological, social developmental, and social constructionist. In practice, however, it should be noted that most researchers and theorists adopt an integrated approach, drawing from more than one of these frameworks at a time. Below we briefly describe these theories of gender differences in behavior and then describe theories that are specific to emotion expression.

Biological theorists propose that girls and boys show innate biological differences. These differences exist prenatally and/or at birth (e.g., genetic differences) or unfold with age/maturation (e.g., hormone differences at puberty) and lead to gender differences in behavior. For example, boys have higher levels of arousal than girls in infancy, and, in early childhood, boys show less language ability and inhibitory control than girls (see Brody, 1999). These early gender differences likely reflect biological factors, such as gender differences in gene expression and the influence of sex hormones (such as testosterone) in utero, which contribute to brain and body differences between males and females (for a review, see Zahn-Waxler, Shirtcliff, & Marceau, 2008). Lower language and inhibitory control abilities may lead boys to have difficulty regulating negative emotions to meet contextual demands and thus may lead them to show, for example, greater levels of unmodulated anger.

In social-developmental theories, it is proposed that children learn gender-role-consistent behaviors over time through cognitive learning, socialization, and experience (for a review, see Liben & Bigler, 2002). Gender schema theory is one social-developmental theory that emphasizes children's active role in their development of gendered behavior. According to this theory, boys and girls develop cognitive schemas for gender based on observing their environments (Martin & Halverson, 1981). Such schemas include information on the behaviors and traits associated with being a boy or a girl. With time, boys and girls develop a schema for their "own" sex (boy or girl) and proceed to select activities and environments that fit with their own sex schemas. Social learning/socialization theories are another example of social-developmental theories. These theories posit that children are encouraged either through explicit teaching or through modeling to adopt gender-role-consistent behaviors (e.g., Bandura, 1969). With regard to gender and emotion, gender schema and socialization theories suggest that gender differences in emotion should become stronger with age as children develop gender schemas and have more socialization experiences. In the present review, we examined age as a moderator of gender differences and proposed that gender differences would be more pronounced with increasing age.

Social constructionist theories focus on the expression of gender differences in behavior in the moment. They agree that there are certain propensities for gender-role-consistent behaviors that are internalized in childhood, as stated in the biological and social-developmental theories. However, they add to these theories by emphasizing the role of context in the expression of these internalized behaviors. They propose that the expression of gender is influenced by the specific context and by larger societal expectations for males and females (e.g., Shields, 2002; West & Zimmerman, 1987). One social constructionist theory that is particularly relevant for emotion expression is Deaux and Major's (1987) gender-in-context theory. This theory states that gender differences in behavior are most likely to be observed in situations in which gender is salient. In other words, gender differences emerge when "perceivers [others] emit expectancies, targets (selves) negotiate their own identities, and the context in which interaction occurs shapes the resultant behavior" (Deaux & Major, 1987, p. 369). Thus, it follows that gender differences in children's emotion

expression may be greater when children are with strangers than with parents because children may believe that strangers expect them to express emotions according to societal guidelines. Gender differences in emotion may also be stronger when children are with peers, because peer contexts are typically segregated by gender and may emit expectancies that boys and girls follow gender roles, with boy peer groups encouraging rough-and-tumble play and girl peer groups emphasizing quiet and cooperative play (Maccoby, 1990; Rose & Rudolph, 2006). In the present meta-analysis, we examined social context as a moderator of gender differences in emotion expression and proposed that gender differences in emotion expression would be larger when children are with unfamiliar adults or peers than when they are with parents or alone.

Theories of Gender Differences in Emotion Expression

A major theory of gender differences in emotion expression, which incorporates biological and socialization models (and allows for the influence of social context, consistent with social constructionist models), has been offered by Brody (e.g., Brody, 1999). Brody has argued that gender differences in emotion expression are the result of a combination of biologically based temperamental predispositions and the socialization of boys and girls to adopt gender-related display rules for emotion expression. In this theory, it is proposed that there are gender-related display rules in the United States and many European cultures for girls to be more emotionally expressive than boys (consistent with this, women have been shown to be more emotionally expressive than men; Kring & Gordon, 1998). In other words, girls are expected to display greater levels than boys of most emotions, particularly happiness and internalizing (or "intropunitive") negative emotions, such as sadness, fear, anxiety, shame, and guilt (Brody & Hall, 2008). Girls are also expected to show more empathy and sympathy both in the form of facial emotional displays and of empathic behaviors (Zahn-Waxler, 2001; Zahn-Waxler, Cole, & Barrett, 1991). These display rules for emotion expression are consistent with gender roles for females to be more relationally oriented, nurturing, and accommodating than males. Such behavior is consistent with women's traditional role as caregivers. Happiness and internalizing emotions facilitate rather than threaten relationships and in some cases (such as for empathy and sadness) can promote closeness with others (Barrett & Campos, 1987; Izard & Ackerman, 2000; Zahn-Waxler & Robinson, 1995).

Boys are generally expected to show less of these tender emotions, in contrast to the display rules for girls' emotions, and they are allowed to express "externalizing" emotions such as anger, contempt, and disgust more than girls. Anger and contempt function to promote the goal of overcoming obstacles, which can involve the pushing outward, rather than internalizing, of distress (Brody, 1999, 2000; Brody & Hall, 2008; notably, contempt can also be directed inward, as in the case of "self-contempt"—see Tompkins, 1962, 1963; however, here we focus on outer-directed contempt). Thus, externalizing emotion expressions are consistent with societal gender roles for males to be assertive, individualistic, independent, and even aggressive, in line with traditional roles for men to protect their families and to overcome dangers that interfere with their ability to provide for their families (Brody, 1999).

Brody (1999, 2000) proposed that gender differences in emotions develop based on a combination of innate predispositions and socialization by parents, teachers, and peers into the cultural gender roles described above. She suggested that, as infants, boys have higher activity levels, arousal, and displays of negative emotion and less language ability and inhibitory control than girls (see also Weinberg, Tronick, Cohn, & Olson, 1999), all of which are likely biologically based. Because of these early differences between boys and girls, Brody proposed that parents and other socialization agents may respond to boys in ways that dampen emotional expressiveness, which encourages boys to limit emotions as a way to down-regulate their high emotional arousal and activity levels. Consistent with this, Buck (1977) found that boys' emotional expressions decreased with age from age 4 to 6, whereas girls' expressions did not. He attributed this finding to gender socialization dampening boys' emotional expressivity. In contrast, it is theorized that parents encourage emotions in their young girls, talking to them about emotions because of girls' larger vocabularies and more communicative skills (indeed, research shows that parents do use more emotion words when talking with daughters than sons; e.g., Kuebli & Fivush, 1992). This would lead girls to be more emotionally expressive than boys in general. Further, given the gender roles for girls to avoid antagonism and to promote comfort in others, parents and other socialization agents may particularly encourage happiness and internalizing emotion expressions in girls, through modeling of gender-specific patterns of emotional expression and/or through reacting to children's emotion expressions in ways that promote adherence to gender roles (Chaplin, Cole, & Zahn-Waxler, 2005a; Fivush & Buckner, 2000). This transmission of gender roles may further encourage girls to show greater positive and internalizing emotions than boys and may also encourage boys to show greater externalizing emotions than girls.

Previous Reviews of Gender and Emotion Expression

Previous reviews have addressed gender differences in some emotion expressions. In their classic narrative review of gender differences in childhood, Maccoby and Jacklin (1974) examined gender differences in two types of emotion expressions: frustration reactions (outbursts of negative emotions such as anger or crying in response to frustrating situations) and fear. They reported that infant boys and girls were similar in their frustration reactions but that girls' negative emotional outbursts diminished with age more than boys'. As a result, toddler (18-month-old) boys showed greater frustration reactions than girls. This developmental pattern may reflect a trend for girls to decrease their display of externalizing emotions, such as angry outbursts, because they are acquiring an implicit understanding of society's female gender roles or because of girls' increasing advantage in language and self-regulation abilities in the toddler years. Interestingly, Maccoby and Jacklin reported no consistent gender differences for children's expression of fear.

In a later meta-analysis of gender differences in temperament in infants and children (3 months to 13 years old), Else-Quest, Hyde, Goldsmith, and Van Hulle (2006) found a small but significant effect size for fearfulness (but no significant differences for sadness or anger), with higher fearfulness in girls than boys ($d = -0.12$). However, their analysis relied mainly on evidence from

parent-report temperament questionnaires (e.g., fearfulness was usually measured as parents' reports of their children's distress or withdrawal from sudden changes or novelty). The data were therefore limited to parent perceptions of child behaviors and expressions that reflect temperament dimensions more than actual observations of child emotion expressions.

Else-Quest et al. (2006) also examined positive mood, as assessed by questionnaires. The questionnaires measured parents' perceptions of children's positive emotion experience and/or expression. The meta-analysis revealed a very small effect size in which girls were described as having higher levels of positive mood than boys ($d = -0.09$). Else-Quest et al. also analyzed one observational measure of positive emotion expression: smiling behavior. They did not find a significant overall gender difference for smiling behavior, although there was a trend for a gender difference emerging with age, with girls smiling more than boys as they reached middle childhood. Consistent with this increase in gender differences in positive emotion expression with age, Hall and Halberstadt's (1986) meta-analysis of children ages 2 to 12 years did not find a significant gender difference in smiling, but LaFrance et al.'s (2003) meta-analysis of adults and adolescents found significant gender differences (females higher than males) in smiling behavior ($d = -0.41$). Taken together, these studies suggest that gender differences in positive emotion expression may emerge with increasing age into adolescence. The present meta-analysis included studies from infancy through adolescence to more closely examine this developmental trend and identify points in development at which gender differences emerge.

Moderators of Gender Differences in Emotion Expression

It is important to note that gender differences in emotion expression (as with other behaviors) are not always found, despite the prevalent view that they are robust (Hyde, 2005). Consequently, an examination of gender differences that appreciates that they may depend upon factors such as age and context is needed. For example, gender differences in emotion expression may depend on the situational context, including the emotional valence of the situation (e.g., one that is negative or positive in tone), the social context (i.e., who is present at the time), and whether the child is expected to modulate expression of emotion to meet a social demand (e.g., smiling when grandmother gives you an undesirable gift). Below we discuss these and other factors that may moderate gender differences in emotion expression.

Developmental Level

In accordance with social-developmental theories (Brody & Hall, 2008) and biological/maturational theories (e.g., Buck, 1984), it can be hypothesized that gender differences become stronger with age because over time children have more experience with and opportunities to adopt male and female gender roles and because biologically based gender differences in emotion expression skill unfold over time. If this is the case, there should be relatively few gender differences in infancy. In the toddler and preschool years, parents and other caregivers (implicitly or explicitly) socialize children's emotions to teach children how to communicate needs and tolerate limits without strong negative emotion in the course of preparing them to enter school (e.g., Eisenberg, Cumberland, & Spinrad, 1998). Within this socialization, caregivers may socialize gender-role-consistent display rules for emotion (e.g., Chaplin, Casey, Sinha, & Mayes, 2010), which may lead to gender differences in emotion expressions and other behaviors emerging at this time (e.g., Keenan & Shaw, 1997). These views are supported by Maccoby and Jacklin's (1974) review, which reported no gender differences in infant frustration reactions but emerging gender differences in the toddler period. Also consistent with this notion, a later study found that boys decreased in sadness/anxiety expression during a frustrating game from preschool to early school age, leading to larger gender differences (girls greater than boys) in sadness/anxiety expression by early school age (Chaplin et al., 2005a).

As children develop through the school age years, they gain in their ability to modulate emotional expression (Kopp, 1982). However, their emotional lives continue to develop. For instance, the social, biological, and cognitive changes associated with adolescence may contribute to an increased emphasis on the importance of behaving according to gender roles, as youths become increasingly aware of larger society and their roles in it (e.g., Hill & Lynch, 1983). Also, hormonal changes during puberty may trigger changes in emotion-related neural circuitry differently for boys and girls, further contributing to gender differences in emotion expression (e.g., De Bellis et al., 2001). Thus, gender-role-consistent gender differences in emotion expressions, with girls showing greater happiness and internalizing emotions and boys showing greater externalizing emotions, may be strongest in adolescence.

Interpersonal Context

Emotions have been very important to adaptation (Izard, 1977) because of their sensitivity to variations in situational context. They alert and prepare us to act to maintain conditions that support our goals for well-being and to change conditions that threaten our goals for well-being (Barrett & Campos, 1987). Therefore, it especially important to consider contextual influences, particularly the interpersonal context, when evaluating the nature and development of gender differences in emotion expression. Consistent with the social constructionist theoretical model, fewer gender differences in emotion expression may be found when children are with someone they trust and know well (such as a parent) than when children are with an unfamiliar person (e.g., an experimenter) or with a peer, because people are more likely to behave in a "socially acceptable" manner with persons they do not know well. In addition, gender differences in expression may be less obvious when children are alone, with no one to communicate to, than when they are with another person.

Zeman and Garber (1996) found that children were more likely to report expressing negative emotions (including sadness and anger) in front of a parent or when alone than when with a peer; this was because of an expectation that parents would respond to these emotions with acceptance, whereas peers would respond with ridicule or rejection. Because children are comfortable expressing a range of emotions with parents, both girls and boys may feel free to express positive, externalizing, and internalizing emotions, leading to smaller gender differences in these emotions when with parents. Supporting this notion, LaFrance et al. (2003) found

that gender differences in smiling (with women > men) were smaller when with a familiar person than an unfamiliar person.

Valence of Task

The degree to which gender differences in emotion expression are found may also be influenced by the type of task in which they are observed. In laboratory studies, emotion expression is often assessed in tasks that are designed to elicit positive or negative states (e.g., winning a game or discussing a conflict) or that are intended to be neutral (e.g., watching a neutral film clip). In naturalistic studies, the contexts can also be viewed as eliciting mostly positive affect (e.g., free play with a parent) or mostly negative affect (e.g., peer rejection).

The valence of the situation may have an impact on whether gender differences are found in emotion expression. It has been proposed that gender differences are more pronounced in uncomfortable, negative situations (LaFrance et al., 2003). In these contexts, girls may be more likely to display positive emotions and to minimize expression of anger and other externalizing emotions because of their tendencies to strive to relieve social tension (especially with another participant or an experimenter) or to appear cheerful in spite of tension. This tendency to minimize interpersonal tension, including through nonverbal emotional expression, is consistent with female gender roles to be relationship oriented, to care for others, and to manage emotions in the service of others (Hochschild, 1983). Consistent with this idea, Hall and Halberstadt's (1986) meta-analytic review found that the gender difference in positive emotion expressions (with females higher than males) was most pronounced in negative or "uncomfortable" situations.

Demand Characteristics

Several studies have assessed child emotion expressions in tasks that investigate whether children are able to alter the expression of socially undesirable emotions; that is, to mask or modulate negative feelings. For example, in the disappointment task (e.g., Saarni, 1984), school-age children are given an undesirable gift by an experimenter. In this situation, the cultural display rule is to smile politely in front of the gift giver, even if one is disappointed by the gift. In studies using variations of the disappointment task, girls have been found to display less negative emotion than boys and to show more cheeriness than boys when they are in front of the experimenter (e.g., Cole, 1986; Saarni, 1984). This gender difference may be explained by (a) girls' greater propensity for responding in ways that preserve relationships (e.g., with the experimenter), consistent with female gender roles, and (b) girls' greater skill at modulating facial expressions (Davis, 1995). On the basis of these findings, we predicted stronger gender differences in positive emotion expressions (with girls greater than boys) and in externalizing emotion expressions (with boys greater than girls) in those tasks with a demand to hide negative emotions.

Hypotheses

On the basis of our review of the theoretical and empirical literature, we were able to form specific hypotheses about the conditions under which gender differences would be shown in studies of observed emotion expression. First, we hypothesized that there would be gender differences in the expression of three categories of emotions: positive emotions (e.g., happiness), internalizing negative emotions (e.g., sadness, fear), and externalizing negative emotions (e.g., anger, contempt). To test this hypothesis, we selected each of the three emotion categories and tested the effect size for gender differences against zero. We hypothesized, consistent with gender role theory (e.g., Brody & Hall, 2008), that girls would show more positive emotions and internalizing emotions than boys and boys would show more externalizing emotions than girls. We then followed up this first hypothesis with tests of gender difference effect sizes for specific emotion expressions in each category (e.g., sadness, fear, anger).

We also explored gender differences in expressions of general negative emotions, given that many studies reported on negative emotion expression but did not differentiate the type of negative emotion that was observed. We did not have a directional hypothesis about general negative emotions. Because they could reflect either externalizing emotion expressions (which are likely to be higher for boys) or internalizing emotions (which are likely to be higher for girls), it is possible that negative emotion expressions could be greater for boys or greater for girls.

Next, we explored at what levels of target moderators (i.e., age, interpersonal context, valence of task, demand characteristics) gender differences were found. On the basis of the available literature, we specified hypotheses regarding the directions of these effects. For age, consistent with increasing socialization pressures (and differential maturation of boys and girls) over time, we proposed that gender-role- consistent gender differences would be unobserved in infancy, would increase with age, and would be strongest in adolescence. For interpersonal context, consistent with theories that pressure to conform to gender roles is strongest when with an unfamiliar other or with peers, we predicted that the proposed gender differences in emotion expression (girls greater than boys in positive and internalizing emotions, boys greater than girls in externalizing emotions) would be stronger when the child is with an unfamiliar adult or with peers than when with a parent or alone. For task valence, consistent with past findings that gender differences in smiling were strongest in "uncomfortable" situations, we predicted that gender-role-consistent gender differences would be stronger in tasks that elicit negative states than in those that elicit positive or neutral states. For demand characteristics, consistent with findings that girls are better able (or more motivated) to regulate emotions to meet situational demands, we predicted that girls would show greater positive emotion and less externalizing emotion than boys when there was a demand to mask negative feelings than when there was not such a demand.

Method

Literature Searches

We searched for studies that provided data on observed emotion expression in the past 32 years (from 1979 to 2010) through PsycINFO and Medline and also requested unpublished or in-press data from an emotional development listserve. We searched for studies that observed emotion expression regardless of whether gender differences were examined. We chose 1979 as a starting

point because three major emotion coding systems—the Facial Action Coding System (FACS; Ekman & Friesen, 1978), the Maximally Discriminative Facial Movement Coding System (MAX; Izard, 1979), and Oster's coding system for infants (Oster, 1978)—were published around that time.

We conducted two searches: one in PsycINFO and a complementary one in MEDLINE. We conducted searches in both databases in order to be as comprehensive as possible. We conducted a keyword search for the following terms, specified as subject headings [sh] and/or as keywords [kw] (for subject headings in PsycINFO, we further specified them as either "focused" searches or "auto exploded" searches, ones that search for the subject heading and related headings): Emotions [sh: focused], Expressed Emotion [sh: focused], Emotional responses [sh: focused, PsycINFO only], Emotional states [sh: focused, PsycINFO only], Facial expressions [sh: exploded], Emotion [kw], Happiness [sh: exploded, mp], Disgust [sh: exploded, kw], Shame [sh: exploded, kw], or Pride [sh: exploded, kw]. We also considered Sadness, Fear, Anxiety, and Anger as keywords, but preliminary searching found that those words resulted primarily in articles that were already obtained through the other search terms (such as "Emotions") or in articles on depression, anxiety disorders, or behavior problems.

We limited the search results to human studies, with children or adolescents as the empirical population (age zero to 17 years), journal articles, English language, and publication years 1979–2010. We did not include book chapters because data presented in book chapters are often preliminary and are included in later empirical journal articles. The PsycINFO search resulted in 9,865 records. The MEDLINE search resulted in 5,064 additional (unique) records. Thus, in total, 14,929 records were searched for inclusion by the first author. In addition, we received data from authors in the emotional development listserve for 15 studies (nine were in-press articles, four were additional data from published studies, two were articles under review).

The inclusion criteria were that the study method involved observations of facial, behavioral (i.e., bodily), and/or vocal emotion expressions in samples with a mean age of up to 17 years that included at least two boys and two girls.

Exclusion criteria consisted of the following:

1. The sample included children with developmental disorders (e.g., Down's syndrome), as these children may have distinct emotion expression patterns.

2. The study presented pilot data that were included in another paper.

3. Emotion expression data were combined with nonemotion behaviors (e.g., attempts to touch caregiver) because we could not isolate the emotion expression.

4. Emotion expression was measured primarily through verbal statements (e.g., "I feel sad"; Rubin & Hubbard, 2003), as these statements reflect internal emotion experience rather than emotion expression. However, we retained studies that included verbalizations within a larger code for facial, vocal, or behavioral (i.e., bodily) expressions of emotion.

5. Positive and negative emotions were included as two ends of one scale, because we could not determine the category of emotion (e.g., did a high score reflect high negative emotion or low positive emotion?).

6. The study used untrained coders (e.g., mothers) and did not assess interrater reliability. Studies with untrained coders were included if reliability was assessed and was acceptable.

7. If the data came from an intervention study, we included data only at preintervention as emotion expressions may be altered by interventions.

After we reviewed the articles, 459 met our inclusion criteria (nine were from listserve members). We examined these studies to determine whether they included enough information to calculate gender-difference effect sizes. Of the 459 studies, 114 (25%) included adequate information. For papers lacking sufficient information that were conducted in the past 12 years (from 1999 to 2010; $N = 209$), we requested data from the authors. Authors provided data for 52 of these studies. As in other meta-analysis studies (e.g., Else-Quest et al., 2006), data were not requested for articles published prior to the past 12 years, as these data are known to be difficult to retrieve. Thus, we included a total of 166 studies (see Table 1 and references marked with an asterisk in the reference list).

A Description of the Study of Emotion Expression

Notably, the measurement of observed emotion can occur in several ways, many of which are represented in the articles included in this review. First, studies in this review ranged in whether they measured the frequency, intensity, and/or duration of emotion expressions. Second, studies ranged in the unit of analysis from microanalytic second-by-second ratings to global ratings of emotion expressions across an entire episode. Third, studies ranged in whether they used a widely established coding system (such as the FACS system); used facial, vocal, and/or behavioral cues that were informed more or less by an established system (e.g., smiling behavior or crying behavior); or, in a few cases, used a cultural informant approach and allowed coders to simply identify the occurrence of a particular emotion expression (e.g., Baker, Haltigan, Brewster, Jaccard, & Messinger, 2010). Fourth, studies ranged in whether they measured emotion expression in highly structured tasks (e.g., the infant still-face task) and/or an unstructured task (e.g., observing a child in the playground at school).

Study Coding

The following information was recorded or coded for each article. Moderator variables are noted with an asterisk.

1. The number of boys and girls in the sample.

2. Emotion expressions were coded into one of four categories: Positive (happiness, surprise, positive emotion–unspecified), Internalizing (sadness, fear, anxiety [i.e., a combination of fear and distress/tension], shame, sympathy/empathic concern, internalizing negative emotion–unspecified), Externalizing (anger, disgust, contempt, externalizing negative emotion–unspecified), or General Negative emotion (negative emotion–unspecified, embarrass-

Table 1
Gender Difference Effect Sizes (Hedges's g), Participant Numbers for Boys (NB) and Girls (NG), and Moderator Codes for Each Study, by Emotion Category (Aggregated Data)

Study	*g*	NB	NG	Age	Context	Valence of task	Demand
			Positive emotion expressions				
Baker et al. (2010)	0.94	9	9	Infant	w Parent	Pos	No
Barry & Kochanska (2010)	0.25	51	51	Infant	w Parent	Pos/neg	No
Barry & Kochanska (2010)	0.03	49	48	Tod/pre	w Parent	Pos/neg	No
Becker-Stoll et al. (2001)	−0.74	15	27	Adol	w Parent	Neg	No
Bennett et al. (2002)	−0.15	94	80	Infant	w Adult	Pos	No
Bennett et al. (2002)	−0.08	87	72	Infant	w Adult	Neg	No
Bennett et al. (2002)	0.18	87	72	Infant	w Adult	Pos	No
Bennett et al. (2002)	−0.10	86	71	Infant	w Adult	Neg	No
Berman & Smith (1984)	−1.05	64	64	Child	w Peer	Pos	No
Berman & Smith (1984)	−0.67	64	64	Child	w Peer	Neutral	No
Bertin & Striano (2006)	−0.35	9	9	Infant	w Adult	Pos	No
Bertin & Striano (2006)	−0.09	9	9	Infant	w Adult	Neg	No
Bigelow & Walden (2009)	0.33	18	20	Infant	w Parent	Pos	No
Biringen et al. (1995)	0.44	23*	23*	Infant	w Parent	Pos	No
Birnbaum & Croll (1984)	−0.67	23	20	Tod/pre	w Peer	Neg	No
Bohnert et al. (2003)	0.00	53	34	Child	w Adult	Neg	Yes
Brooker & Buss (2010)	−0.27	46	42	Tod/pre	w Adult	Neg	No
Buss (2011)	0.09	63	48	Tod/pre	w Adult	Pos	No
Buss (2011)	0.12	63	47	Tod/pre	w Parent	Neg	No
Buss (2011)	0.20	62	47	Tod/pre	w Adult	Neg	No
Buss (2011)	0.19	63	48	Tod/pre	Alone	Neg	No
Chapell (1997)	−0.09	1,043	1,275	Child	w Peer	Neutral	No
Chaplin et al. (2005b)	−0.11	36	24	Tod/pre	w Parent	Neg	No
Chaplin et al. (2005b)	0.23	36	24	Child	w Parent	Neg	No
Cohn & Tronick (1983)	−1.77	12	12	Infant	w Parent	Pos/neg	No
Cole (1986)	0.14	10	10	Tod/pre	w Adult	Pos	No
Cole (1986)	−1.87	10	10	Tod/pre	w Adult	Neg	Yes
Cole (1986)	−0.40	10	10	Tod/pre	w Adult	Neutral	No
Cole (1986)	−0.58	10	10	Child	w Adult	Pos	No
Cole (1986)	−1.02	10	10	Child	w Adult	Neg	Yes
Cole (1986)	−0.49	10	10	Child	w Adult	Neutral	No
Cole, Zahn-Waxler, & Smith (1994)	0.10	49	30	Tod/pre	Alone	Neg	No
Cole, Zahn-Waxler, & Smith (1994)	0.15	49	30	Tod/pre	w Adult	Neg	Yes
Cole et al. (2003)	−0.20	53	32	Tod/pre	w Parent	Neg	No
Cossette et al. (1996)	−0.42	33	33	Infant	w Parent	Pos	No
Cossette et al. (1996)	0.14	33	33	Infant	Alone	Pos	No
Cossette et al. (1996)	0.07	33	33	Infant	w Parent	Neg	No
Cossette et al. (1996)	0.22	33	33	Infant	Alone	Neg	No
Crossman et al. (2009)	0.37	13	12	Infant	Alone	Neg	No
Davis (1995)	−0.10	32	31	Child	w Adult	Pos	No
Davis (1995)	−0.16	32	31	Child	w Adult	Neg	Yes
Davis et al. (2000)	0.03	74*	77*	Adol	w Parent	Neg	No
Dennis et al. (2002)	−0.50	34	26	Tod/pre	w Parent	Pos	No
Dennis et al. (2002)	−0.37	34	26	Tod/pre	w Parent	Neg	No
Dennis et al. (2009a)	−0.24	58	55	Tod/pre	w Parent	Neg	No
Dennis et al. (2009a)	−0.02	58	55	Tod/pre	Alone	Neg	No
Dennis et al. (2010)	−0.14	37	35	Tod/pre	w Adult	Neg	No
Dennis et al. (2010)	−0.26	37	35	Tod/pre	Alone	Neg	No
DeSantis et al. (2005)	−0.01	842	797	Tod/pre	w Peer	Neutral	No
DeSantis et al. (2005)	−0.36	102	98	Adol	w Peer	Neutral	No
Dodd et al. (1999)	−0.23	296	306	Child	Alone	Neutral	No
Dodd et al. (1999)	−0.49	1,652	1,769	Adol	Alone	Neutral	No
Durbin (2010)	−0.04	106	92	Tod/pre	w Adult	Pos	No
Durbin (2010)	−0.04	104	88	Tod/pre	w Adult	Neg	No
Durbin (2010)	−0.02	106	92	Tod/pre	Alone	Neg	No
Eisenberg, Cumberland, et al. (2001)	0.05	95	118	Child	w Adult	Neg	Yes
Eisenberg et al. (2008)	−0.34	62	64	Adol	w Parent	Neg	No
Eisenberg, Losoya, et al. (2001)	−0.77	83	86	Child	w Adult	Pos	No
Fabes et al. (1990)	0.14	66	51	Child	Alone	Neg	No
Farris (2000)	0.62	32	32	Infant	w Parent	Pos	No
Farris (2000)	−0.19	32	32	Infant	w Adult	Neg	No
Fiamenghi (2007)	0.90	5	4	Infant	w Parent	Neutral	No

(*table continues*)

Table 1 (*continued*)

Study	*g*	NB	NG	Age	Context	Valence of task	Demand
Fiamenghi (2007)	−0.98	5	4	Infant	Alone	Neutral	No
Flannery et al. (1993)	−0.71	44	41	Adol	w Parent	Pos/neg	No
Garner & Power (1996)	−0.50	44	38	Tod/pre	w Adult	Neg	Yes
Garrett-Peters & Fox (2007)	−0.34	15	14	Tod/pre	w Adult	Neg	Yes
Garrett-Peters & Fox (2007)	−0.06	15	15	Child	w Adult	Neg	Yes
Ghera et al. (2009)	0.18	108	100	Tod/pre	w Adult	Pos	No
Hayden et al. (2006)	−0.10	50	48	Tod/pre	w Adult	Neg	No
Hayden et al. (2010)	−0.10	218	195	Tod/pre	w Adult	Neg	No
Hestenes et al. (1993)	0.54	26	34	Tod/pre	w Peer	Pos	No
Holodynski (2004)	−0.06	31	29	Child	w Adult	Pos	No
Holodynski (2004)	0.21	31	29	Child	Alone	Pos	No
Hubbard (2001)	0.28	55*	56*	Child	w Peer	Neg	No
Izard & Abe (2004)	−0.40	24	36	Infant	w Parent	Neg	No
Izard & Abe (2004)	0.28	24	36	Tod/pre	w Parent	Neg	No
Izard et al. (1995)	0.03	28*	38*	Infant	w Parent	Pos/neg	No
Izard et al. (2008)	−0.03	33	39	Tod/pre	w Peer	Pos	No
Jones et al. (2002)	−0.44	46*	54*	Child	w Peer	Pos	No
Kawakami et al. (2006)	−0.27	3	5	Infant	Alone	Neutral	No
Kawakami et al. (2008)	−0.06	12	10	Infant	Alone	Neutral	No
Kieras et al. (2005)	−0.19	28	34	Tod/pre	w Adult	Pos	No
Kieras et al. (2005)	−0.32	28	34	Tod/pre	w Adult	Neg	Yes
Kochanska (2001)	0.41	56	56	Tod/pre	w Adult	Pos	No
Kochanska (2001)	0.47	56	56	Tod/pre	w Adult	Neg	No
Kochanska & Coy (2002)	0.45	52	52	Infant	w Parent	Pos	No
Liew et al. (2004)	−0.29	40	38	Tod/pre	w Adult	Neg	Yes
Litter & Walker (1993)	−0.91	16	9	Child	w Parent	Neutral	No
Luby et al. (2009)	−0.17	34	36	Tod/pre	w Adult	Pos	No
Martin et al. (2002)	0.06	35	25	Tod/pre	w Parent	Pos	No
Martin et al. (2002)	−0.02	35	25	Tod/pre	w Parent	Neg	No
Matias & Cohn (1993)	−1.15	10	10	Infant	w Parent	Pos/neg	No
Messinger et al. (2001)	0.12	8	5	Infant	w Parent	Pos	No
Miller et al. (2002)	−0.02	100	125	Infant	w Parent	Pos	No
Miller et al. (2002)	0.04	101	125	Infant	w Parent	Neg	No
Miller et al. (2002)	−0.06	101	125	Infant	w Parent	Neutral	No
Miller, Fine, et al. (2006)	−0.07	25	35	Tod/pre	w Peer	Pos	No
Miller, Seifer, et al. (2006)	0.14	58	71	Tod/pre	w Peer	Pos	No
Moore (2009)	0.12	28	16	Infant	w Parent	Pos	No
Moore (2009)	−0.69	28	16	Infant	w Parent	Neg	No
Moore (2009)	0.30	27	16	Infant	w Adult	Neg	No
Moore et al. (2001)	0.01	63	58	Infant	w Parent	Pos	No
Moore et al. (2001)	0.06	60	57	Infant	w Parent	Neg	No
Moore et al. (2009)	−0.10	74	73	Infant	w Parent	Pos	No
Moore et al. (2009)	−0.14	74	72	Infant	w Parent	Neg	No
Mumme et al. (1996)	−0.20	22	23	Infant	w Parent	Neg	No
Mumme et al. (1996)	−1.50	22	23	Infant	w Parent	Pos/neg	No
Otta (1998)	0.05	44	35	Tod/pre	w Peer	Neutral	No
Otta (1998)	−0.54	94	77	Child	w Peer	Neutral	No
Oveis et al. (2009)	0.00	31	34	Tod/pre	w Parent	Neutral	No
Oveis et al. (2009)	0.10	45	43	Tod/pre	Alone	Neutral	No
Parlade et al. (2009)	−0.29	17	20	Infant	w Adult	Pos	No
Parlade et al. (2009)	0.12	10	12	Infant	w Parent	Neg	No
Quas et al. (2000)	0.04	72	57	Tod/pre	w Adult	Neg	No
Radke-Yarrow et al. (1993)	0.27	21	19	Tod/pre	w Parent	Neg	No
Reissland & Shepherd (2006)	−0.24	38	30	Infant	w Parent	Pos	No
Rockhill et al. (2007)	−0.04	81	91	Child	w Peer	Pos	No
Rockhill et al. (2007)	0.47	81	91	Child	w Peer	Neg	No
Saarni (1984)	−0.43	7	8	Child	w Adult	Pos	No
Saarni (1984)	−0.76	7	8	Child	w Adult	Neg	Yes
Safyer & Hauser (1994)	−0.36	37	46	Adol	w Adult	Neg	No
Sallquist et al. (2010)	−0.22	112	94	Tod/pre	w Parent	Pos	No
Sallquist et al. (2010)	−0.21	112	94	Tod/pre	w Adult	Pos	No
Sallquist et al. (2010)	−0.18	89	78	Tod/pre	w Adult	Pos	No
Sarra & Otta (2001)	0.07	8	11	Tod/pre	w Peer	Pos	No
Sheeber & Sorenson (1998)	−0.35	16	34	Adol	w Parent	Neg	No
Sheeber et al. (1997)	−0.15	314	375	Adol	w Parent	Neg	No
Sheeber et al. (2009)	−0.10	51	99	Adol	w Parent	Pos	No
Sheeber et al. (2009)	0.06	51	100	Adol	w Parent	Neg	No

Table 1 (*continued*)

Study	*g*	NB	NG	Age	Context	Valence of task	Demand
Sheeber et al. (2007)	−0.02	84	158	Adol	w Parent	Neg	No
Soussignan & Schaal (1996)	−0.63	26	24	Child	w Adult	Neg	No
M. W. Sullivan & Lewis (2003a)	0.15	13	12	Infant	Alone	Neg	No
C. Sullivan et al. (2012)	0.07	38	43	Tod/pre	w Peer	Pos	No
Underwood et al. (1999)	0.35	198	184	Child	w Peer	Neg	No
Van Beek et al. (2006)	−0.56	18	21	Adol	w Peer	Neutral	No
Venezia et al. (2004)	−0.24	10	12	Infant	w Adult	Pos	No
Walker et al. (1993)	0.75	15	9	Infant	w Parent	Neutral	No
Walker et al. (1993)	−0.10	17	8	Child	w Parent	Neutral	No
Walker et al. (1993)	−0.04	13	6	Adol	w Parent	Neutral	No
Weinberg et al. (1999)	0.45	38	43	Infant	w Parent	Pos	No
Weinberg et al. (1999)	0.52	38	43	Infant	w Parent	Neg	No
Weinberg et al. (2006)	0.24	69	64	Infant	w Parent	Pos	No
Weinberg et al. (2008)	0.28	44	50	Infant	w Parent	Pos	No
Weinberg et al. (2008)	0.28	44	50	Infant	w Parent	Neg	No
Zahn-Waxler et al. (1995)	−0.03	55	34	Tod/pre	w Adult	Neg	No
Zimmerman et al. (2001)	−0.29	14	26	Adol	w Peer	Neg	No
			Internalizing emotion expressions				
Alessandri & Lewis (1996)	−2.42	21	21	Tod/pre	w Parent	Neg	No
Baker et al. (2010)	−0.57	9	9	Infant	w Parent	Pos	No
Becker-Stoll et al. (2001)	0.02	15	27	Adol	w Parent	Neg	No
Bennett et al. (2002)	−0.10	94	80	Infant	w Adult	Pos	No
Bennett et al. (2002)	0.13	87	72	Infant	w Adult	Neg	No
Bennett et al. (2002)	−0.02	87	72	Infant	w Adult	Pos	No
Bennett et al. (2002)	−0.07	86	71	Infant	w Adult	Neg	No
Berlin & Cassidy (2003)	−0.53	46	30	Tod/pre	w Parent	Neg	No
Bigelow & Walden (2009)	−0.49	18	20	Infant	w Parent	Pos	No
Birnbaum & Croll (1984)	−0.43	23	20	Tod/pre	w Peer	Neg	No
Bohnert et al. (2003)	0.23	53	34	Child	w Adult	Neg	Yes
Brooker et al. (2012)	0.03	50	47	Tod/pre	w Parent	Pos	No
Brooker et al. (2012)	0.05	53	50	Tod/pre	w Adult	Neg	No
Brooker et al. (2012)	−0.06	39	40	Tod/pre	Alone	Neg	No
Buss (2011)	0.19	63	48	Tod/pre	w Adult	Pos	No
Buss (2011)	0.06	63	47	Tod/pre	w Parent	Neg	No
Buss (2011)	0.16	62	47	Tod/pre	w Adult	Neg	No
Buss (2011)	0.08	63	48	Tod/pre	Alone	Neg	No
Buss & Kiel (2004)	0.52	32	35	Tod/pre	w Parent	Neg	No
Buss & Kiel (2004)	−0.29	31	30	Tod/pre	w Adult	Neg	No
Buss & Kiel (2004)	0.19	33	35	Tod/pre	Alone	Neg	No
Camras et al. (1998)	−0.48	35	36	Infant	w Adult	Neg	No
Chaplin et al. (2005a)	−0.52	36	24	Tod/pre	w Parent	Neg	No
Chaplin et al. (2005a)	−1.14	36	24	Child	w Parent	Neg	No
Cole, Zahn-Waxler, & Smith (1994)	−0.11	49	30	Tod/pre	Alone	Neg	No
Cole, Zahn-Waxler, & Smith (1994)	0.16	49	30	Tod/pre	w Adult	Neg	Yes
Crossman et al. (2009)	−0.21	13	12	Infant	Alone	Neg	No
Davis (1995)	−0.45	32	31	Child	w Adult	Pos	No
Davis (1995)	−0.61	32	31	Child	w Adult	Neg	Yes
Davis et al. (2000)	−0.08	74*	77*	Adol	w Parent	Neg	No
Dennis et al. (2009a)	−0.08	58	55	Tod/pre	w Parent	Neg	No
Dennis et al. (2009a)	−0.28	58	55	Tod/pre	Alone	Neg	No
Dennis et al. (2009b)	0.06	59	57	Tod/pre	w Parent	Neg	No
Dennis et al. (2009b)	0.25	59	57	Tod/pre	Alone	Neg	No
Durbin (2010)	−0.02	106	92	Tod/pre	w Adult	Pos	No
Durbin (2010)	0.02	104	88	Tod/pre	w Adult	Neg	No
Durbin (2010)	−0.03	106	92	Tod/pre	Alone	Neg	No
Eisenberg & Fabes (1995)	−0.03	41*	35*	Tod/pre	w Adult	Neg	No
Eisenberg et al. (1990)	0.16	22	31	Tod/pre	w Adult	Neg	No
Eisenberg et al. (1990)	0.23	22	31	Tod/pre	w Adult	Neutral	No
Eisenberg et al. (1991)	0.05	69	58	Child	Alone	Neg	No
Eisenberg et al. (1992, 1993)	0.02	66	51	Child	w Parent	Neg	No
Eisenberg et al. (1992, 1993)	0.02	63	48	Child	Alone	Neg	No
Eisenberg et al. (1996)	−0.13	102	97	Child	Alone	Neg	No
Eisenberg et al. (1996)	−0.30	102	97	Child	Alone	Neutral	No
El-Sheikh (2005)	−0.30	89	91	Child	Alone	Neg	No
Fabes et al. (1990)	0.11	66	51	Child	Alone	Neg	No

(*table continues*)

Table 1 (*continued*)

Study	*g*	NB	NG	Age	Context	Valence of task	Demand
Fabes et al. (1993)	0.07	32	31	Child	Alone	Neg	No
Fabes et al. (1994)	0.25	51	50	Child	Alone	Neg	No
Garrett-Peters & Fox (2007)	−0.51	15	14	Tod/pre	w Adult	Neg	Yes
Garrett-Peters & Fox (2007)	−0.30	15	15	Child	w Adult	Neg	Yes
Gralinski et al. (1995)	−0.67	28	31	Adol	w Adult	Neg	No
Gurthrie et al. (1997)	−0.02	102	97	Child	Alone	Neg	No
Hanish et al. (2004)	1.00	68	58	Tod/pre	w Peer	Pos	No
He et al. (2010)	−0.08	82	100	Infant	w Parent	Neg	No
He et al. (2011)	0.00	54	55	Tod/pre	w Parent	Neg	No
Holodynski (2004)	0.20	31	29	Child	Alone	Neg	No
Hubbard (2001)	−0.07	55*	56*	Child	w Peer	Neg	No
Izard et al. (1995)	0.17	28*	38*	Infant	w Parent	Pos/neg	No
Izard et al. (2008)	0.32	33	39	Tod/pre	w Peer	Pos	No
Jenkins (2000)	−0.19	41	30	Child	w Peer	Pos	No
Jones et al. (2002)	−0.62	46*	54*	Child	w Peer	Pos	No
Knafo et al. (2008)	−0.13	195	196	Infant	w Parent	Neg	No
Knafo et al. (2008)	−0.23	195	196	Infant	w Adult	Neg	No
Knafo et al. (2008)	−0.16	175	175	Tod/pre	w Parent	Neg	No
Knafo et al. (2008)	−0.11	175	175	Tod/pre	w Adult	Neg	No
Kochanska (2001)	−0.54	56	56	Tod/pre	w Adult	Neg	No
Kochanska & Coy (2002)	−0.50	52	52	Infant	w Adult	Neg	No
Lewis & Ramsay (2002)	−0.17	29	31	Tod/pre	w Adult	Pos	No
Lewis & Ramsay (2002)	−0.83	29	31	Tod/pre	w Adult	Neg	No
Lewis et al. (1989)	0.08	25	19	Tod/pre	w Parent	Neg	No
Lewis et al. (1989)	0.18	25	19	Tod/pre	w Adult	Neg	No
Lewis et al. (1989)	0.03	25	19	Tod/pre	Alone	Neg	No
Losonczy-Marshall (2008)	−0.20	33	49	Infant	Alone	Neg	No
Luby et al. (2009)	−0.18	34	36	Tod/pre	w Adult	Neg	No
Malatesta-Magai et al. (1994)	−0.15	10	11	Tod/pre	w Parent	Pos	No
McShane & Hastings (2009)	−0.23	52	62	Tod/pre	w Peer	Pos	No
Miller, Fine, et al. (2006)	0.35	25	35	Tod/pre	w Peer	Pos	No
Miller, Seifer, et al. (2006)	−0.09	58	71	Tod/pre	w Peer	Pos	No
Mills et al. (2008)	−0.06	120	89	Tod/pre	w Adult	Neg	No
Mills et al. (2010)	−0.15	128	97	Tod/pre	w Adult	Neg	No
Radke-Yarrow et al. (1993)	−0.53	21	19	Tod/pre	w Parent	Neg	No
Reissland & Shepherd (2006)	0.11	38	30	Infant	w Parent	Pos	No
Rudolph et al. (2009)	−0.01	96	105	Child	w Peer	Neg	No
Saarni (1984)	0.30	7	8	Child	w Adult	Pos	No
Saarni (1984)	0.14	7	8	Child	w Adult	Neg	Yes
Safyer & Hauser (1994)	−0.38	37	46	Adol	w Adult	Neg	No
Sheeber & Sorenson (1998)	0.07	16	34	Adol	w Parent	Neg	No
Sheeber et al. (1997)	−0.06	314	375	Adol	w Parent	Neg	No
Sheeber et al. (2009)	0.18	51	99	Adol	w Parent	Pos	No
Sheeber et al. (2009)	−0.03	51	100	Adol	w Parent	Neg	No
Sheeber et al. (2007)	0.08	84	158	Adol	w Parent	Neg	No
M. W. Sullivan & Lewis (2003a)	−0.54	8	8	Infant	Alone	Neg	No
Tromsdorff et al. (2007)	−0.28	24	30	Tod/pre	w Adult	Neg	No
Underwood et al. (1999)	−0.31	198	184	Child	w Peer	Neg	No
Vaish et al. (2009)	0.26	8	8	Tod/pre	w Adult	Neg	No
Vaish et al. (2009)	0.04	8	8	Tod/pre	w Adult	Neutral	No
Valiente et al. (2004)	0.11	85	74	Child	Alone	Neg	No
Valiente et al. (2004)	0.16	85	74	Child	Alone	Neutral	No
Volbrecht et al. (2007)	−0.17	112	149	Tod/pre	w Parent	Neg	No
Weinberg et al. (1999)	0.18	38	43	Infant	w Parent	Pos	No
Weinberg et al. (1999)	0.11	38	43	Infant	w Parent	Neg	No
Whittle et al. (2008)	0.16	74	63	Child	w Parent	Neg	No
Zahn-Waxler et al. (1992)	−0.35	178	190	Infant	w Parent	Neg	No
Zahn-Waxler et al. (1992)	−0.33	178	190	Tod/pre	w Parent	Neg	No
Zahn-Waxler et al. (1995)	−0.43	55	34	Tod/pre	w Adult	Neg	No
Zahn-Waxler et al. (1996)	−0.18	250*	251*	Tod/pre	w Adult	Neg	No
Zahn-Waxler, Park, et al. (2008)	−0.62	51	31	Tod/pre	w Adult	Neg	No
Zahn-Waxler, Park, et al. (2008)	−0.68	51	31	Child	w Adult	Neg	No
Zimmerman et al. (2001)	−0.10	14	26	Adol	w Peer	Neg	No

Table 1 (*continued*)

Study	*g*	NB	NG	Age	Context	Valence of task	Demand
			Externalizing emotion expressions				
Barry & Kochanska (2010)	0.23	50	51	Infant	w Parent	Neg	No
Barry & Kochanska (2010)	0.19	49	48	Tod/pre	w Parent	Neg	No
Becker-Stoll et al. (2001)	0.09	15	27	Adol	w Parent	Neg	No
Bennett et al. (2002)	−0.12	94	80	Infant	w Adult	Pos	No
Bennett et al. (2002)	−0.01	87	72	Infant	w Adult	Neg	No
Bennett et al. (2002)	−0.02	87	72	Infant	w Adult	Pos	No
Bennett et al. (2002)	0.01	86	71	Infant	w Adult	Neg	No
Birnbaum & Croll (1984)	0.89	23	20	Tod/pre	w Peer	Neg	No
Bohnert et al. (2003)	0.12	53	34	Child	w Adult	Neg	Yes
Brooker et al. (2012)	−0.09	50	47	Tod/pre	w Parent	Pos	No
Brooker et al. (2012)	−0.15	53	50	Tod/pre	w Adult	Neg	No
Brooker et al. (2012)	0.24	39	40	Tod/pre	Alone	Neg	No
Buss (2011)	0.12	63	48	Tod/pre	w Adult	Pos	No
Buss (2011)	0.11	62	47	Tod/pre	w Adult	Neg	No
Buss (2011)	−0.07	63	48	Tod/pre	Alone	Neg	No
Buss & Kiel (2004)	0.21	32	35	Tod/pre	w Parent	Neg	No
Buss & Kiel (2004)	0.40	33	35	Tod/pre	Alone	Neg	No
Chaplin et al. (2009)	0.25	111	114	Tod/pre	w Parent	Neg	No
Chaplin et al. (2005b)	0.14	36	24	Tod/pre	w Parent	Neg	No
Chaplin et al. (2005b)	−0.09	36	24	Child	w Parent	Neg	No
Cole, Zahn-Waxler, & Smith (1994)	0.31	49	30	Tod/pre	Alone	Neg	No
Cole, Zahn-Waxler, & Smith (1994)	−0.08	49	30	Tod/pre	w Adult	Neg	Yes
Cole et al. (2003)	0.17	53	32	Tod/pre	w Parent	Neg	No
Crossman et al. (2009)	0.50	13	12	Infant	Alone	Neg	No
Davis et al. (2000)	−0.52	74*	77*	Adol	w Parent	Neg	No
Dennis (2006)	0.17	59	57	Tod/pre	w Parent	Neg	No
Dennis (2006)	0.05	59	57	Tod/pre	w Adult	Neg	No
Dennis et al. (2009a)	−0.10	58	55	Tod/pre	w Parent	Neg	No
Dennis et al. (2009a)	0.33	58	55	Tod/pre	Alone	Neg	No
Durbin (2010)	0.12	106	92	Tod/pre	w Adult	Pos	No
Durbin (2010)	0.20	104	88	Tod/pre	w Adult	Neg	No
Durbin (2010)	0.18	106	92	Tod/pre	Alone	Neg	No
Eisenberg et al. (2008)	−0.05	62	64	Adol	w Parent	Neg	No
El-Sheikh (1994)	0.81	19	21	Tod/pre	Alone	Neg	No
El-Sheikh (2005)	0.44	89	91	Child	Alone	Neg	No
Gralinski et al. (1995)	−0.40	28	31	Adol	w Adult	Neg	No
Hanish et al. (2004)	0.62	68	58	Tod/pre	w Peer	Pos	No
He et al. (2010)	0.02	82	100	Infant	w Parent	Neg	No
He et al. (2011)	0.05	54	55	Tod/pre	w Parent	Neg	No
Hubbard (2001)	0.52	55*	56*	Child	w Peer	Neg	No
Hubbard et al. (2002)	0.19	138	134	Child	w Peer	Neg	No
Izard et al. (1995)	0.12	28*	38*	Infant	w Parent	Pos/neg	No
Izard et al. (2008)	0.23	33	39	Tod/pre	w Peer	Pos	No
Jenkins (2000)	0.05	41	30	Child	w Peer	Pos	No
Jones et al. (2002)	0.43	46*	54*	Child	w Peer	Pos	No
Kieras et al. (2005)	0.08	28	34	Tod/pre	w Adult	Pos	No
Kieras et al. (2005)	0.29	28	34	Tod/pre	w Adult	Neg	Yes
Kochanska & Coy (2002)	0.60	52	52	Infant	w Parent	Pos	No
Locke et al. (2009)	0.01	173	181	Child	w Adult	Pos	No
Locke et al. (2009)	0.04	172	185	Child	w Adult	Neg	No
Luby et al. (2009)	0.38	34	36	Tod/pre	w Adult	Neg	No
Malatesta et al. (1986)	−1.01	14	14	Infant	w Parent	Pos	No
Malatesta et al. (1989)	−0.59	32	26	Tod/pre	w Parent	Pos	No
Miller, Fine, et al. (2006)	0.43	25	35	Tod/pre	w Peer	Pos	No
Miller, Seifer, et al. (2006)	0.16	58	71	Tod/pre	w Peer	Pos	No
Mills et al. (2008)	0.13	122	89	Tod/pre	w Adult	Neg	No
Mills et al. (2010)	0.10	128	97	Tod/pre	w Adult	Neg	No
Morris et al. (2010)	0.58	20	20	Tod/pre	w Parent	Neg	No
Morris et al. (2010)	0.16	35	23	Child	w Parent	Neg	No
Radke-Yarrow et al. (1993)	0.45	21	19	Tod/pre	w Parent	Neg	No
Rudolph et al. (2009)	0.05	96	105	Child	w Peer	Neg	No
Safyer & Hauser (1994)	−0.13	37	46	Adol	w Adult	Neg	No
Sheeber & Sorenson (1998)	−0.33	16	34	Adol	w Parent	Neg	No
Sheeber et al. (1997)	−0.21	314	375	Adol	w Parent	Neg	No
Sheeber et al. (2009)	−0.14	51	99	Adol	w Parent	Pos	No
Sheeber et al. (2009)	−0.35	51	100	Adol	w Parent	Neg	No

(*table continues*)

Table 1 (*continued*)

Study	*g*	NB	NG	Age	Context	Valence of task	Demand
Sheeber et al. (2007)	−0.48	84	158	Adol	w Parent	Neg	No
Snyder et al. (2003)	−0.10	138	132	Tod/pre	w Parent	Pos	No
Spinrad et al. (2009)	0.63	43	41	Tod/pre	w Adult	Neg	No
M. W. Sullivan & Lewis (2003a)	−0.42	8	8	Infant	Alone	Neg	No
Weinberg et al. (1999)	0.25	38	43	Infant	w Parent	Pos	No
Weinberg et al. (1999)	0.46	38	43	Infant	w Parent	Neg	No
Whittle et al. (2008)	−0.07	74	63	Child	w Parent	Neg	No
Zahn-Waxler et al. (1995)	0.58	51	31	Tod/pre	w Parent	Neg	No
Zahn-Waxler et al. (1995)	−0.26	55	34	Tod/pre	w Adult	Neg	No
Zahn-Waxler, Park, et al. (2008)	−0.06	51	31	Tod/pre	w Adult	Neg	No
Zahn-Waxler, Park, et al. (2008)	−0.05	51	31	Child	w Adult	Neg	No
Zimmerman et al. (2001)	−0.35	14	26	Adol	w Peer	Neg	No
			Negative emotion expressions				
Baker et al. (2010)	−0.48	9	9	Infant	w Parent	Pos	No
Bigelow & Walden (2009)	−0.19	18	20	Infant	w Parent	Pos	No
Biringen et al. (1995)	−0.50	23*	23*	Infant	w Parent	Pos	No
Brooker & Buss (2010)	0.26	46	42	Tod/pre	w Adult	Neg	No
Carlson & Wang (2007)	−0.08	25	28	Tod/pre	w Adult	Neg	Yes
Cole (1986)	0.73	10	10	Tod/pre	w Adult	Pos	No
Cole (1986)	−0.15	10	10	Tod/pre	w Adult	Neg	Yes
Cole (1986)	−0.40	10	10	Tod/pre	w Adult	Neutral	No
Cole (1986)	−0.31	10	10	Child	w Adult	Pos	No
Cole (1986)	−0.14	10	10	Child	w Adult	Neg	Yes
Cole (1986)	−0.27	10	10	Child	w Adult	Neutral	No
Cole et al. (1996)	0.07	50	30	Tod/pre	Alone	Neg	No
Conradt & Ablow (2010)	0.23	42	53	Infant	w Parent	Pos	No
Cossette et al. (1996)	0.13	33	33	Infant	w Parent	Pos	No
Cossette et al. (1996)	−0.23	33	33	Infant	Alone	Pos	No
Cossette et al. (1996)	−0.37	33	33	Infant	w Parent	Neg	No
Cossette et al. (1996)	−0.01	33	33	Infant	Alone	Neg	No
Crockenberg & Leerkes (2004)	0.11	40*	40*	Infant	w Parent	Neg	No
Crockenberg & Leerkes (2004)	0.08	43*	44*	Infant	Alone	Neg	No
Crossman et al. (2009)	0.17	13	12	Infant	Alone	Neg	No
Davis (1995)	0.17	32	31	Child	w Adult	Pos	No
Davis (1995)	0.57	32	31	Child	w Adult	Neg	Yes
Dennis et al. (2002)	0.22	34	26	Tod/pre	w Parent	Pos	No
Dennis et al. (2002)	−0.21	34	26	Tod/pre	w Parent	Neg	No
Dennis et al. (2010)	0.16	37	35	Tod/pre	w Adult	Neg	No
Dennis et al. (2010)	−0.25	37	35	Tod/pre	Alone	Neg	No
Eisenberg & Fabes (1995)	0.29	49*	42*	Tod/pre	w Peer	Neg	No
Eisenberg, Fabes, et al. (1998)	0.03	28*	24*	Child	w Parent	Neg	No
Eisenberg, Cumberland, et al. (2001)	0.02	95	118	Child	w Adult	Neg	Yes
Eisenberg et al. (2008)	−0.36	62	64	Adol	w Parent	Neg	No
Eisenberg et al. (2008)	0.00	62	64	Adol	Alone	Neg	No
Eisenberg et al., 1994)	0.30	45	48	Tod/pre	w Peer	Neg	No
Fabes & Eisenberg (1992)	0.58	33	36	Tod/pre	w Peer	Neg	No
Fabes et al. (1990)	−0.25	66	51	Child	Alone	Neg	No
Fabes et al. (1999)	−0.18	77	58	Tod/pre	w Peer	Pos	No
Fabes et al. (2002)	0.11	48	46	Tod/pre	w Peer	Pos	No
Fiamenghi (2007)	−0.35	5	4	Infant	w Parent	Neutral	No
Flannery et al. (1993)	−0.09	44	41	Adol	w Parent	Pos/neg	No
Gaertner et al. (2008)	0.10	128	103	Tod/pre	w Parent	Neg	No
Garrett-Peters & Fox (2007)	0.09	15	14	Tod/pre	w Adult	Neg	Yes
Garrett-Peters & Fox (2007)	0.11	15	15	Child	w Adult	Neg	Yes
Gazelle & Druhen (2009)	0.38	66	96	Child	w Adult	Pos	No
Gazelle & Druhen (2009)	0.10	55	88	Child	w Adult	Neg	No
Ghera et al. (2009)	−0.18	108	100	Tod/pre	w Adult	Pos	No
Graziano et al. (2010)	0.25	32	25	Tod/pre	Alone	Neg	No
Haley et al. (2006)	−0.55	25	19	Infant	w Parent	Pos	No
Haley et al. (2006)	−0.51	25	19	Infant	w Parent	Neg	No
Hayden et al. (2006)	0.12	50	48	Tod/pre	w Adult	Neg	No
Hayden et al. (2010)	−0.14	218	195	Tod/pre	w Adult	Neg	No
Izard & Abe (2004)	0.32	24	36	Infant	w Parent	Neg	No
Izard & Abe (2004)	0.13	24	36	Tod/pre	w Parent	Neg	No
Izard et al. (1995)	0.02	28*	38*	Infant	w Parent	Pos/neg	No

Table 1 (*continued*)

Study	*g*	NB	NG	Age	Context	Valence of task	Demand
Kieras et al. (2005)	0.06	28	34	Tod/pre	w Adult	Pos	No
Kieras et al. (2005)	0.36	28	34	Tod/pre	w Adult	Neg	Yes
Kochanska (2001)	0.29	52	52	Tod/pre	w Adult	Pos/neg	No
Lewis & Ramsay (2002)	0.05	29	31	Tod/pre	w Adult	Pos	No
Lewis & Ramsay (2002)	0.12	29	31	Tod/pre	w Adult	Neg	No
Lewis et al. (1989)	−0.56	25	19	Tod/pre	w Parent	Neg	No
Lewis et al. (1989)	−0.29	25	19	Tod/pre	w Adult	Neg	No
Lewis et al. (1989)	−0.05	25	19	Tod/pre	Alone	Neg	No
Lewis et al. (1991)	−0.59	25	19	Tod/pre	w Adult	Neg	No
Liew et al. (2004)	0.41	40	38	Tod/pre	w Adult	Neg	Yes
Malatesta-Magai et al. (1994)	−0.08	10	11	Tod/pre	w Parent	Pos	No
Malatesta-Magai et al. (1994)	0.79	20	21	Tod/pre	w Peer	Neg	No
Martin et al. (2002)	−0.32	35	25	Tod/pre	w Parent	Pos	No
Martin et al. (2002)	0.19	35	25	Tod/pre	w Parent	Neg	No
Miller et al. (2002)	0.01	100	125	Infant	w Parent	Pos	No
Miller et al. (2002)	0.17	101	125	Infant	w Parent	Neg	No
Miller et al. (2002)	0.16	101	125	Infant	w Parent	Neutral	No
Miller, Fine, et al. (2006)	0.07	25	35	Tod/pre	w Peer	Pos	No
Miller, Seifer, et al. (2006)	0.02	58	71	Tod/pre	w Peer	Pos	No
Mirabile et al. (2009)	−0.41	20	35	Tod/pre	w Parent	Neg	No
Moore (2009)	0.08	28	16	Infant	w Parent	Pos	No
Moore (2009)	0.49	28	16	Infant	w Parent	Neg	No
Moore (2009)	0.60	27	16	Infant	w Adult	Neg	No
Moore & Calkins (2004)	0.15	43	30	Infant	w Parent	Pos	No
Moore & Calkins (2004)	0.12	43	30	Infant	w Parent	Neg	No
Moore et al. (2009)	0.07	74	73	Infant	w Parent	Pos	No
Moore et al. (2009)	0.26	74	72	Infant	w Parent	Neg	No
Mumme et al. (1996)	0.21	22	23	Infant	w Parent	Neg	No
Mumme et al. (1996)	0.76	22	23	Infant	w Parent	Pos/neg	No
Oveis et al. (2009)	−0.02	31	34	Tod/pre	w Parent	Neutral	No
Pauli-Pott & Mertesacker (2009)	0.43	58	43	Infant	w Parent	Pos	No
Quas et al. (2000)	−0.05	72	57	Tod/pre	w Adult	Neg	No
Radke-Yarrow et al. (1993)	0.19	21	19	Tod/pre	w Parent	Neg	No
Rockhill et al. (2007)	0.31	81	91	Child	w Peer	Pos	No
Rockhill et al. (2007)	0.02	81	91	Child	w Peer	Neg	No
Ross & Karraker (1999)	−0.01	22	18	Infant	w Parent	Pos	No
Ross & Karraker (1999)	−0.39	22	18	Infant	w Parent	Neg	No
Ross & Karraker (1999)	−0.34	22	18	Infant	Alone	Neg	No
Saarni (1984)	0.53	7	8	Child	w Adult	Pos	No
Saarni (1984)	0.60	7	8	Child	w Adult	Neg	Yes
Sheeber & Sorenson (1998)	−0.62	16	34	Adol	w Parent	Neg	No
Sheeber et al. (1997)	−0.37	314	375	Adol	w Parent	Neg	No
Sheeber et al. (2009)	−0.42	51	99	Adol	w Parent	Pos	No
Sheeber et al. (2009)	−0.36	51	100	Adol	w Parent	Neg	No
Sheeber et al. (2007)	−0.49	84	158	Adol	w Parent	Neg	No
Stifter & Spinrad (2002)	0.05	65	51	Infant	w Parent	Pos	No
Stifter & Spinrad (2002)	−0.02	65	51	Infant	w Adult	Neg	No
M. W. Sullivan & Lewis (2003a)	0.17	8	8	Infant	Alone	Neg	No
Tromsdorff et al. (2007)	0.13	24	30	Tod/pre	w Adult	Neg	No
Underwood et al. (1999)	0.26	198	184	Child	w Peer	Neg	No
Volbrecht et al. (2007)	0.08	111	153	Tod/pre	w Parent	Neg	No
Weinberg et al. (1999)	0.35	38	43	Infant	w Parent	Pos	No
Weinberg et al. (1999)	0.58	38	43	Infant	w Parent	Neg	No
Weinberg et al. (2006)	0.11	69	64	Infant	w Parent	Pos	No
Weinberg et al. (2008)	0.13	44	50	Infant	w Parent	Pos	No
Weinberg et al. (2008)	−0.08	44	50	Infant	w Parent	Neg	No
Zahn-Waxler et al. (1992)	−0.10	178	190	Infant	w Parent	Neg	No
Zahn-Waxler et al. (1992)	−0.28	178	190	Tod/pre	w Parent	Neg	No
Zimmerman et al. (2001)	−0.11	45	46	Child	w Parent	Neg	No

Note. Hedges's *g* effect sizes and *N*s represent aggregated data (values averaged across data points that were within the same level of all moderators). Age indicates the primary age in the sample. Context refers to interpersonal context, and Demand refers to whether there was a demand to minimize negative emotion in the task. Tod/pre indicates toddler/preschool; Adol indicates adolescent, w indicates with; Neg indicates negative task valence; Pos indicates positive task valence; Pos/neg indicates that the task had both positive and negative components.

* Indicates that the *N*s for boys and girls were not given for a subsample on which emotion expression data were collected. In these cases, NB and NG were estimated (based on the percentage of boys/girls in the overall sample). In a few cases, the *N*s differed slightly between the data provided by the authors and the data reported in the paper. When this occurred, we used the *N*s from the data provided by the author.

ment).[2] Sympathy was included as an internalizing emotion expression because it includes mild sadness expression in the context of seeing another person suffering. Embarrassment was coded as a general negative emotion because it does not fit clearly as internalizing or externalizing. We also coded interest, joy at another's expense, pride, and overall emotionality, and we examined gender differences in these four emotion expressions in separate analyses. We did not code interest, joy at another's expense, pride, and overall emotionality as part of one of the emotion categories for several reasons. First, interest and overall emotionality include aspects of both positive and negative emotion and therefore do not fit clearly into an emotion category (with interest expressions sometimes signaling approach and sometimes signaling response to challenge or wariness; M. W. Sullivan & Lewis, 2003b). Second, joy at another's expense and pride are positive emotions, yet they are not focused on maintaining interpersonal harmony (as with regular happiness) and so did not clearly fit into the positive emotion category. We intended to examine guilt but did not find studies that had observed guilt expressions and provided enough information to calculate effect sizes. Four studies differentiated happy expressions as either Duchenne ("felt enjoyment") or non-Duchenne smiles. The gender effect size was not significantly different for these two types of happy expressions, Q (1, 5) = .02, *ns*, and so they were combined in the analyses.

In order to determine the emotion expression (e.g., anger, happiness) presented in an article, we took two steps. First, we examined what the article authors said they were coding (e.g., anger, happiness). Then, we carefully examined the Method section to determine what cues or coding system the authors used to identify that emotion expression. If they used an established coding system or if the cues were consistent with established facial, vocal, or postural cues in the literature (e.g., smiling for happiness, downturned lip corners for sadness, furrowed brow and lips pressed or squared off for anger, nose crinkle for disgust), we coded it as that emotion. If the cues were inconsistent with established cues for that emotion expression (e.g., if sadness was coded when a child yawned), we dropped the article from our analysis.

3. Primary age of the sample was coded as infant (0–17 months), toddler (18 months–2 years), preschool (3–5 years), child (6–12 years), or adolescent (13–17 years). If the age range for a sample spanned more than one category, we chose the category corresponding to the mean age. We combined toddler and preschool groups (consistent with other meta-analyses such as Else-Quest et al., 2006) to reduce the number of levels of this moderator.

4. Primary race of participants (race for greater than 50%) was recorded. We considered examining race as a moderator, but we did not have enough variability (for 86% of effect sizes, the primary race was Caucasian).

5. Primary interpersonal context was coded as with parent, with non-parental adult (e.g., an experimenter), with peers (including siblings), or alone. If the child was with more than one person, the person most directly interacting with the child was coded.

6. Primary type of task was coded as positive (tasks that likely elicit positive emotion, such as winning a game or playing), negative (tasks that elicit negative emotion, such as losing a game or receiving a disappointing gift), or neutral (tasks that elicit neither positive nor negative emotion, such as watching a film of a dolphin swimming). In 7 studies, there was no "primary" task type (half of the task was negative and half was positive). These studies were excluded from analyses of task effects.

7. The demand characteristics of the task were also coded. Demand situations were those in which children were in a negative task but were asked to (or social convention suggested that they should) change their display of emotion to appear more positive.

8. The means and standard deviations, for boys and girls, for emotion expression. If these were not available, F, t, r, or χ^2 values or frequency data were recorded.

Articles were coded by the first author. Thirty-eight articles (23%) were double-coded by a trained research assistant and were checked for interrater reliability for the moderator variables. Kappa statistics were .91 for age, .79 for emotion, .72 for task valence, and .71 for interpersonal context (mean κ = .81), indicating good reliability.

Effect Size Calculations

In order to parsimoniously reflect differences between girls and boys in their emotion expressions, we conducted analyses by calculating an effect size, namely, Hedges's g. Hedges's g is similar to Cohen's d except that it subtracts 2 from the n in the calculation of the pooled standard deviation (Rosenthal & DiMatteo, 2001). To calculate g, we subtracted the scores of girls from those of boys and divided by the pooled standard deviation. Therefore, positive effect sizes reflected more emotion expression by boys than girls and negative effect sizes indicated that girls showed more emotion than boys. Hedges's g can be interpreted using the same conventions as Cohen's d (Hallion & Ruscio, 2011). Following conventions by Hyde (2005), we labeled effect sizes of .11–.24 as "small," .25–.34 as "small to medium," .35–.64 as "medium," and .65 and above as "large." We labeled significant effect sizes of .08–.10 as "very small." Although Hyde would label effect sizes from .08 to .10 as "close to zero," we labeled them as "very small" because they were significantly different from zero. In addition, we calculated the inverse variance weight by using the sample size in each group and the effect size (Lipsey & Wilson, 2001). This allowed us to adjust for differences in precision in samples varying in their size (i.e., larger samples are more precise; Hedges & Olkin, 1985; Hedges & Vevea, 1998; Lipsey & Wilson, 2001).

When studies did not provide raw data to calculate effect sizes and instead provided statistics (e.g., F ratio, t ratio, r coefficient), we applied transformation formulas to convert to g (Lipsey & Wilson, 2001). Similarly, if studies provided frequencies, we calculated the phi coefficient (an r-family metric) and then converted it to our g-metric statistic. When necessary, we reverse-coded effect sizes, so that positive scores always reflected that boys expressed more emotion than girls.

Most studies provided multiple effect sizes, therefore violating the assumption of independence of meta-analyses (Lipsey & Wilson, 2001). We addressed this problem by narrowing our definition of the construct (Aldao et al., 2010; Augustine & Hemenover, 2009; Thomas, Vartanian, & Brownell, 2009). In particular, we

[2] We included studies of discrete emotions (e.g., happiness, sadness, anger) and also studies of second-order emotions (e.g., anxiety, sympathy) that may be composed of more than one discrete emotion (see Izard & Bartlett, 1972).

defined each combination of study, emotion expression category (positive, internalizing, externalizing, negative), age, interpersonal context, task type, and demand characteristics as a construct. We then averaged effect sizes within each construct to provide one effect size per construct (Rosenthal & DiMatteo, 2001). In other words, for each study, we averaged the data that were provided if they were within the same level of emotion category and of all of our moderators. So, for example, if one study examined happy expressions in preschoolers in two tasks designed to elicit positive emotion with mother, the two effect sizes were averaged to form one effect size. In contrast, if one study examined happiness and anger expressions in preschoolers in two tasks designed to elicit positive emotion with mother, we would have two effect sizes—one for positive emotion expression (happiness), averaged across the tasks, and one for externalizing emotion expression (anger), averaged across the tasks. We chose to average the effect sizes rather than randomly select one representative effect size in order to be most inclusive of all data points. For analyses on gender differences in the specific emotion expressions (e.g., happiness, sadness, fear), we created another collapsed data set that defined each combination of study, specific emotion, age, context, task, and demand as a construct.

Random Effects Models

We assumed that our effect sizes were sampled from a universe of possible sample sizes. Therefore, we conducted random effects models, as they assume that effect sizes differ from the population by sampling error plus random variability among the studies (Field, 2003; Hedges & Vevea, 1998; Hunter & Schmidt, 1990; Lipsey & Wilson, 2001; Rosenthal & DiMatteo, 2001). Random effects models produce larger standard errors, therefore reducing the probability of Type I errors (for a review of risks resulting when not using random effects models when appropriate, see Field, 2003). This conservative approach has been used frequently in recent meta-analytic reviews (e.g., Aldao et al., 2010; Richardson, Abraham, & Bond, 2012). We conducted all analyses in SPSS 19.0 using the macros from Lipsey and Wilson (2001).

Analytical Plan

Main analyses. We tested the first hypothesis, that there would be gender differences in the three emotion categories (positive, internalizing, and externalizing), and the exploratory hypothesis regarding gender differences in general negative emotions. To do this, we evaluated whether the Hedges's g for each of the four emotion categories (positive, internalizing, externalizing, and general negative) was significantly different from 0 by calculating a z statistic and testing it against 0 using random effects models. If the effect was significantly larger than 0, this indicated that boys expressed more emotion than girls. Conversely, if the effect was significantly smaller than 0, this indicated that girls expressed more emotion. Lack of significant differences suggested that boys and girls did not differ in the expression of that emotion category. We then tested the effect sizes against zero for each of the specific emotions that made up the four larger emotion categories and the specific emotions of interest, joy at another's expense, pride, and overall emotionality.

Next, we examined whether there was substantial heterogeneity for each emotion expression category by calculating the Q statistic (Hedges & Ollkin, 1985). If the Q statistic was significant, we proceeded to examine which moderators could account for this heterogeneity. For each emotion category, we selected cases within each level of the moderator (e.g., infants, peer context) and tested the effect sizes against 0.

Additional analyses. In a series of additional analyses, we examined whether there were differences in the magnitude of gender differences among the various levels of the moderators, for each emotion expression category. We tested this by incorporating the moderators as between-subjects effects in analyses of variance (ANOVA) for each emotion category. A significant between-subjects effect indicated that there were differences in the magnitude of gender differences in emotion expression depending on the level of the moderator. These significant main effects were followed up with post hoc comparisons. To conduct these, we ran one ANOVA for each comparison with a Bonferroni adjustment to control for multiple testing.

Comparing moderators. In order to better understand which moderators had the strongest effects when controlling for the effects of the other moderators, we conducted additional regression analyses including all of the moderator variables in the same regression model. We did this by running simple multiple regressions (one each for positive, internalizing, externalizing, and negative emotion expression categories), treating each effect size as a data point without weighting by sample size. We dummy coded each of the moderators (age, interpersonal context, task valence, and demand characteristics) and entered them as predictor variables.

Results

The analyses on the emotion expression categories involved 445 effect sizes and 21,709 participants (10,856 boys) from a total of 164 studies. The analyses on the specific emotion expressions (e.g., sadness, anxiety) involved 555 effect sizes from 166 studies.

Hypothesis 1: Gender Differences in Each Emotion Expression Category and in Specific Emotion Expressions

Positive emotion expressions. As shown in Table 2, there was a significant, yet very small mean effect size (g) for positive emotions of –.08, indicating greater positive emotion expression for girls than boys. The Q statistic was significant, Q (145) = 451.85, $p < .0001$, suggesting substantial heterogeneity. For the specific emotion expressions within the positive emotion category, only positive emotion–unspecified showed a significant (small) effect size with girls showing more emotion than boys.

Internalizing negative emotion expressions. There was a significant, yet very small mean effect size (g) for internalizing emotions of –.10, indicating greater internalizing emotion expressions for girls than boys. The Q statistic was significant, Q (109) = 231.63, $p < .0001$, indicating substantial heterogeneity. For the specific emotion expressions within the internalizing emotion category, fear and sympathy expressions showed significant very small to small effect sizes and shame showed a significant medium effect size, with girls showing more emotion than boys.

Externalizing negative emotion expressions. There was a significant, yet very small mean effect size (g) for externalizing

Table 2
Mean Hedges's g *Effect Sizes, 95% Confidence Intervals (CI), and Number of Effect Sizes* (k) *by Emotion*

Category and emotion	*g*	95% CI		*k*
		LL	*UL*	
Positive composite	−.08**	−0.14	−0.03	146
Happiness	−.05	−0.12	0.02	90
Surprise	−.03	−0.13	0.08	13
Positive, not specified	−.15**	−0.24	−0.06	64
Internalizing composite	−.10***	−0.16	−0.05	110
Sadness	−.06	−0.12	0.004	69
Fear	−.10**	−0.17	−0.03	24
Anxiety	−.01	−0.09	0.07	33
Shame	−.56*	−1.01	−0.11	6
Sympathy	−.13**	−0.22	−0.04	17
Internalizing, not specified	−.04	−0.42	0.35	7
Externalizing composite	.09**	0.03	0.15	78
Anger	.10**	0.03	0.16	77
Contempt	−.26*	−0.49	−0.04	3
Disgust	−.02	−0.15	0.11	8
General negative composite	.03	−0.03	0.08	111
Negative, not specified	.04	−0.02	0.09	105
Embarrassment	−.19	−0.43	0.06	6
Other emotions				
Pride	.42	−0.56	1.41	3
Joy at another's expense	.29*	0.06	0.51	4
Interest	−.16*	−0.29	−0.02	19
Overall emotionality	−.12	−0.54	0.31	4

Note. Positive *g*s indicate boys > girls and negative *g*s indicate girls > boys. Significance is derived from testing the mean effect size against zero. There were zero effect sizes for externalizing emotion, not specified. Mean *g*s, CIs, and *p* values were obtained from random effects models. *LL* = lower limit; *UL* = upper limit.
* $p < .05$. ** $p < .01$. *** $p < .001$.

emotions of .09, indicating greater externalizing emotion expressions for boys than girls. The *Q* statistic was significant, $Q(77) = 161.76$, $p < .0001$, suggesting substantial heterogeneity. In terms of specific emotion expressions in the externalizing emotion category, anger expressions showed a significant very small effect size with boys higher than girls. Unexpectedly, contempt expressions showed a significant small to medium effect size with girls showing higher contempt than boys.

General negative emotion expressions. The effect size for general negative emotions was not significant, indicating no significant differences between boys and girls in the expression of general negative emotions. The *Q* statistic was significant, $Q(110) = 192.50$, $p < .0001$, indicating substantial heterogeneity. Neither of the emotion expressions included in the general negative emotion category showed significant effect sizes.

Other emotion expressions. Expressions of joy at another's expense showed a significant small to medium mean effect size favoring boys. Interest expressions showed a significant small effect size, with girls higher than boys. Effect sizes for gender differences in pride and overall emotion expressions were not significant.

Hypothesis 2: Gender Differences in Each Emotion Expression Category by Moderators

Given that all four emotion categories were characterized by substantial heterogeneity, we proceeded with moderation analyses to examine potential sources of this variability. Mean effect sizes for gender differences in each emotion expression category (positive, internalizing, externalizing, general negative) by age, interpersonal context, type of task, and demand characteristics of task are summarized in Table 3 and below.

Age effects. For positive emotion expressions, consistent with hypotheses, gender differences were not present in infancy and the toddler/preschool period, but significant small and small to medium effect sizes emerged in the childhood age group (mean $g = -.20$, girls > boys) and remained in adolescence (mean $g = -.28$, girls > boys; see Table 3). For internalizing emotion expressions, there were significant small-magnitude effect sizes in infancy through childhood age groups (for infancy, mean $g = -.14$; for preschool/toddler, mean $g = -.09$; for childhood, mean $g = -.12$, girls > boys) but not in the adolescent age group. For externalizing emotion expressions, gender differences were not present in infancy, but significant positive small effect sizes emerged in the toddler/preschool age group (mean $g = .17$, boys > girls) and remained in the childhood age group (mean $g = .13$, boys > girls). Unexpectedly, there was a significant negative (girls > boys) small to medium effect size for externalizing emotion expressions in adolescents (mean $g = -.27$). Similarly, for general negative emotion expressions, there was a significant small-magnitude positive (boys > girls) effect size in the childhood age group (mean $g = .14$), and a significant negative (girls > boys) medium effect size emerged in the adolescent group (mean $g = -.35$). This pattern of findings suggests that gender differences in externalizing and negative emotion expressions (with boys > girls) emerged

Table 3
Mean Hedges's g *Effect Sizes, 95% Confidence Intervals (CI), and Number of Effect Sizes (*k*) for Emotion Categories by Level of Each Moderator*

	Age			
Emotion category	Infant	Toddler/preschool	Child	Adolescent
Positive	.02 CI = −.09, .12 (*k* = 50)	−.04 CI = −.10, .02 (*k* = 53)	−.20** CI = −.35, −.06 (*k* = 28)	−.28*** CI = −.42, −.13 (*k* = 15)
Internalizing	−.14** CI = −.23, −.05 (*k* = 19)	−.09* CI = −.18, .003 (*k* = 54)	−.12* CI = −.23, −.01 (*k* = 27)	−.06 CI = −.17, .06 (*k* = 10)
Externalizing	.09 CI = −.07, .25 (*k* = 13)	.17**** CI = .09, .24 (*k* = 41)	.13* CI = .03, .24 (*k* = 13)	−.27**** CI = −.36, −.17 (*k* = 11)
Negative	.08 CI = −.002, .15 (*k* = 41)	.03 CI = −.05, .11 (*k* = 45)	.14** CI = .04, .24 (*k* = 17)	−.35**** CI = −.45, −.24 (*k* = 8)

	Interpersonal context			
Emotion category	With parents	With adult	With peer(s)	Alone
Positive	−.05 CI = −.13, .04 (*k* = 59)	−.12** CI = −.20, −.03 (*k* = 49)	−.12 CI = −.26, .02 (*k* = 21)	−.02 CI = −.20, .16 (*k* = 17)
Internalizing	−.12* CI = −.22, −.01 (*k* = 34)	−.16**** CI = −.24, −.08 (*k* = 41)	−.03 CI = −.27, .21 (*k* = 12)	−.03 CI = −.10, .05 (*k* = 23)
Externalizing	.01 CI = −.10, .12 (*k* = 32)	.05 CI = −.02, .11 (*k* = 25)	.29*** CI = .13, .44 (*k* = 11)	.28*** CI = .14, .42 (*k* = 10)
Negative	−.03 CI = −.11, .05 (*k* = 55)	.08 CI = −.01, .17 (*k* = 33)	.19** CI = .06, .33 (*k* = 11)	−.06 CI = −.20, .08 (*k* = 12)

	Valence of task		
Emotion category	Positive task	Negative task	Neutral task
Positive	−.02 CI = −.12, .07 (*k* = 49)	−.04 CI = −.11, .02 (*k* = 68)	−.23** CI = −.37, −.08 (*k* = 22)
Internalizing	.001 CI = −.16, .16 (*k* = 21)	−.13**** CI = −.19, −.07 (*k* = 84)	−.02 CI = −.34, .30 (*k* = 4)
Externalizing	.08 CI = −.05, .21 (*k* = 19)	.09* CI = .02, .16 (*k* = 58)	N/A N/A (*k* = 0)
Negative	.04 CI = −.04, .13 (*k* = 34)	.01 CI = −.06, .09 (*k* = 68)	.05 CI = −.16, .27 (*k* = 5)

	Demand to change emotion	
Emotion category	Non-demand task	Demand task
Positive	−.07* CI = −.13, −.01 (*k* = 134)	−.27* CI = −.50, −.05 (*k* = 12)
Internalizing	−.10*** CI = −.16, −.05 (*k* = 104)	−.13 CI = −.46, .20 (*k* = 6)
Externalizing	.09** CI = .03, .15 (*k* = 75)	.10 CI = −.16, .37 (*k* = 3)
Negative	.01 CI = −.04, .07 (*k* = 101)	.17* CI = .004, .33 (*k* = 10)

Note. Positive *g*s indicate boys > girls and negative *g*s indicate girls > boys. Significance is derived from testing the mean effect size against zero. N/A indicates too few studies to calculate mean effect size. Mean *g*s, CIs, and *p* values were obtained from random effects models.
* $p < .05$. ** $p < .01$. *** $p < .001$. **** $p < .0001$.

in the toddler/preschool or childhood age period and then changed direction (to become girls > boys) in adolescence.

Although the previous analyses indicated that effect sizes were significantly different from zero for some age groups, we also conducted a series of more conservative analyses to determine whether the four age groups differed from one another in their effect sizes. We did this by testing the main effect of age in ANOVA analyses for each emotion.

In these analyses, the main effect of age was significant for positive, $Q(3, 142) = 14.62$, $p < .01$; externalizing, $Q(3, 74) = 42.89$, $p < .0001$; and general negative emotion expressions, $Q(3, 107) = 38.96$, $p < .0001$. The main effect of age was not significant for internalizing emotion expressions. Follow-up comparisons for positive emotion expressions (with Bonferroni-adjusted critical value of .008) showed significant differences in the strength of effect sizes between the adolescent and infant groups, $Q(1, 63) = 12.37$, $p < .001$, and the adolescent and toddler/preschool groups, $Q(1, 66) = 14.50$, $p < .001$, with greater gender differences (girls > boys) in the adolescent group than the other groups. Follow-up comparisons for externalizing emotion expressions showed significant differences in the strength of effect sizes between the adolescent and infant groups, $Q(1, 22) = 19.55$, $p < .0001$; the adolescent and toddler/preschool groups, $Q(1, 50) = 43.18$, $p < .0001$; and the adolescent and child groups, $Q(1, 22) = 31.10$, $p < .0001$, with negative (girls > boys) effect sizes in the adolescent groups and positive (boys > girls) effect sizes in the other groups. Follow-up comparisons for general negative emotion expressions showed significant differences between the adolescent and infant groups, $Q(1, 47) = 47.17$, $p < .0001$; the adolescent and toddler/preschool groups, $Q(1, 51) = 23.04$, $p < .0001$; and the adolescent and child groups, $Q(1, 23) = 49.28$, $p < .0001$, with negative (girls > boys) effect sizes in the adolescent groups and positive (boys > girls) effect sizes in the other groups. This indicated that the main effect of age on gender differences in emotion expressions might be driven by a developmental transition, with (a) girls showing greater positive emotion than boys by adolescence and (b) boys showing more externalizing and negative emotions than girls prior to adolescence but girls showing greater externalizing and negative emotions than boys in adolescence.

Interpersonal context effects. For positive and internalizing emotion expression categories, significant small-magnitude effect sizes were found with a nonparental adult (for positive, mean $g = -.12$; for internalizing, mean $g = -.16$, girls > boys) but not with peers or when alone. Also, for internalizing emotion expressions, a significant small-magnitude effect size was found with parents (mean $g = -.12$, girls > boys). For externalizing and general negative emotion expressions, significant small to medium and small effect sizes were found in the peer context (for externalizing, mean $g = .29$; for negative, mean $g = .19$, boys > girls) but not in the parental or nonparental adult contexts. Additionally, a significant small to medium effect size was found for externalizing emotion expressions when alone (mean $g = .28$, boys > girls). In sum, as predicted, gender differences were mostly larger when children were with unfamiliar adults (for internalizing emotions) or with peers (for externalizing and negative emotions) than when they were with parents. Unexpectedly, the gender difference was also present for externalizing emotion expressions when alone.

In the additional ANOVA analyses, the main effect of interpersonal context was significant for externalizing, $Q(3, 74) = 17.17$, $p < .001$, and negative emotion expressions, $Q(3, 107) = 10.83$, $p < .05$, but not for positive or internalizing expressions. Follow-up Bonferroni-corrected comparisons for externalizing expressions showed significant differences in effect sizes between the peer and parent contexts, $Q(1, 41) = 7.15$, $p < .008$, and between the peer and nonparental adult contexts, $Q(1, 34) = 10.73$, $p < .008$, with larger gender differences (boys > girls) in the peer than the parent and unfamiliar adult contexts. In addition, there were significant differences in effect sizes between the alone and nonparental adult contexts, $Q(1, 33) = 9.24$, $p < .008$, with stronger gender differences in externalizing emotion expressions (boys > girls) when alone than when with unfamiliar adults. For negative emotion expressions, follow-up comparisons showed a significant difference in effect sizes between the peer and alone contexts, $Q(1, 21) = 7.80$, $p < .008$, with stronger gender differences (boys > girls) in the peer than the alone contexts.

Valence of task. As shown in Table 3, for internalizing and externalizing emotion expressions, there were very small to small magnitude significant effect sizes for the negative tasks (for internalizing emotions, mean $g = -.13$, girls > boys; for externalizing emotions, mean $g = .09$, boys > girls) but no significant effect sizes for the positive or neutral tasks. For the positive emotion category, the mean effect size was significant for the neutral task only (mean $g = -.23$, small magnitude). For negative emotion expressions, the effect sizes for different task types did not reach significance. As hypothesized, gender-role-consistent gender differences in emotion expression were most pronounced in tasks designed to elicit negative emotions, at least for internalizing and externalizing emotions. Unexpectedly, gender differences in positive emotion expressions were largest in neutral tasks.

In the additional ANOVA analyses comparing across the task types, the main effect of valence of task was significant only for positive emotion expressions, with $Q(2, 136) = 6.90$, $p < .05$. Follow-up comparisons showed a significant difference in effect sizes between the negative and neutral tasks, $Q(1, 88) = 7.53$, $p < .008$, with stronger gender differences (girls > boys) in the neutral than the negative tasks.

Demand characteristics. As shown in Table 3, the effect size for the positive emotion expression category was significant and of very small magnitude in nondemand tasks (mean $g = -.07$, girls > boys) and was significant and of small to medium magnitude in studies with a demand that children mask their negative emotions (mean $g = -.27$, girls > boys). For negative emotion expressions, the effect size for nondemand tasks was not significant, but the effect size was significant and of small magnitude for demand tasks ($g = .17$, boys > girls). For internalizing and externalizing emotion expressions, there were significant very small effect sizes for nondemand studies (for internalizing, $g = -.10$, girls > boys; for externalizing, $g = .09$, boys > girls) but no significant effect sizes for demand studies. Overall, as predicted, gender-role-consistent gender differences in positive and general negative emotion expressions were stronger in demand situations. This prediction did not hold true for internalizing and externalizing emotion expressions. In the additional ANOVA analyses, the main effect of demand characteristics was not significant.

Comparing the Relative Contribution of the Moderators

Regression analyses that included all of the moderators in one model were conducted to test the relative contribution of each moderator to gender differences in emotion expressions. For the positive emotion expression category, only age remained as a significant predictor ($\beta = .29$, $p < .001$ for infant vs. adolescent). For internalizing emotion expressions, task valence and interpersonal context remained significant ($\beta = .23$, $p < .05$ for positive vs. negative task; $\beta = -.24$, $p < .05$ for parent vs. alone context). For externalizing emotion expressions, age and context remained significant predictors ($\beta = .56$, $p < .0001$ for infant vs. adolescent; $\beta = -.27$, $p < .01$ for parent vs. peer context). For negative emotion expressions, age and context remained significant ($\beta = .25$, $p < .05$ for infant vs. toddler/preschool; $\beta = .51$, $p < .0001$ for infant vs. adolescent; $\beta = -.30$, $p < .01$ for parent vs. peer context).

Publication Bias

Meta-analyses are susceptible to the so-called *file drawer problem* (Rosenthal, 1979), by which published studies are more likely to be those that have found significant effects than those that have not. We sought to address this issue by including studies that examined emotion expression regardless of whether they focused on gender differences. However, this did not preclude the possibility that a substantial number of studies with null findings were excluded. We therefore proceeded to empirically examine the presence of publication bias in several ways. First, as shown in Figures 1a–1d, we created funnel plots for each emotion expression category, in which we plotted a measure of precision (1/standard error) by the effect sizes (Rothstein, 2008). In this type of graph, larger studies (i.e., higher precision) appear at the top and smaller studies (lower precision) appear at the bottom. When the plot has a funnel shape, this suggests that, as the sample size increased, the

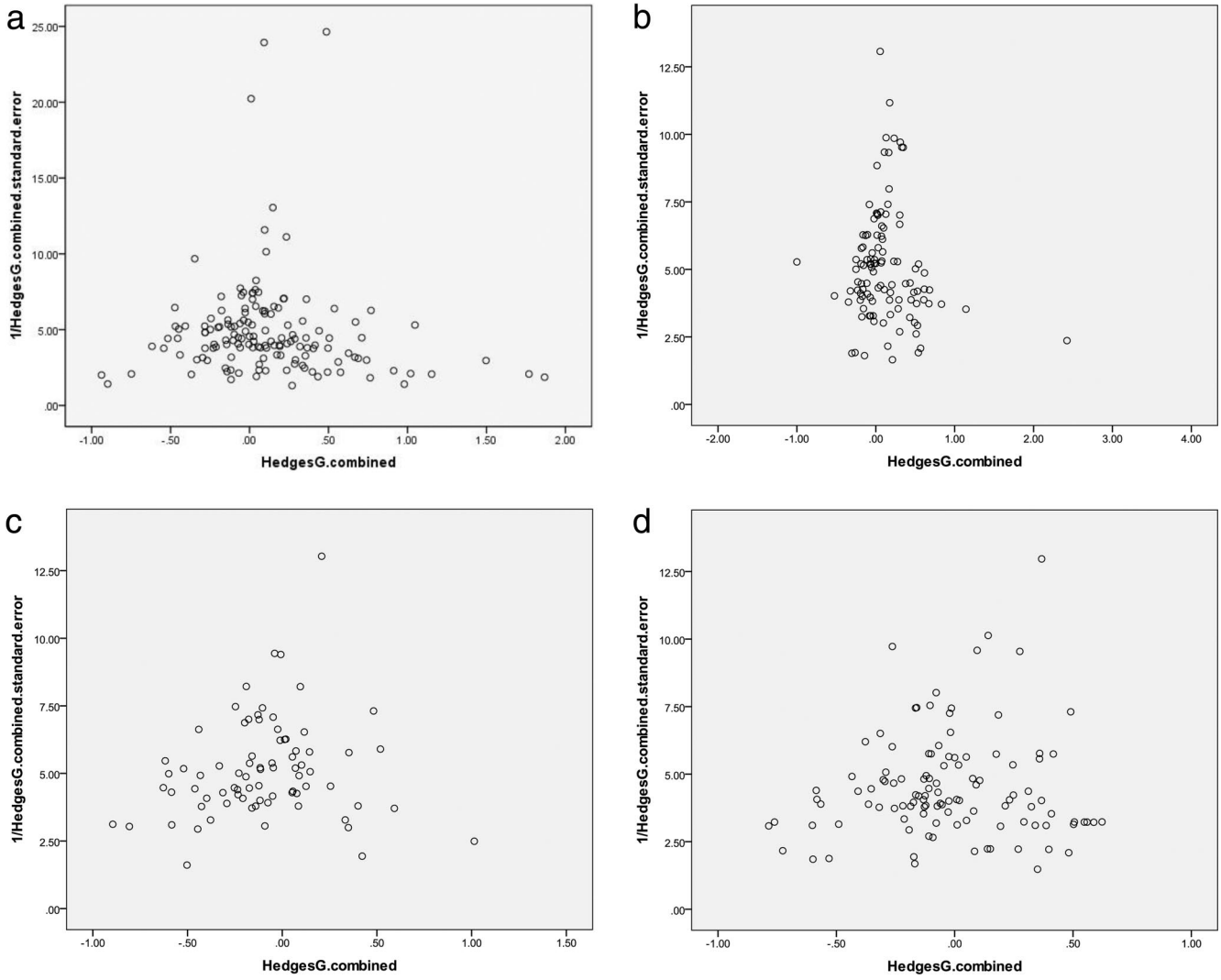

Figure 1. (a) Funnel plot for positive emotion expressions. (b) Funnel plot for internalizing emotion expressions. (c) Funnel plot for externalizing emotion expressions. (d) Funnel plot for general negative emotion expressions.

studies converged more closely around the true mean. This, in turn, is interpreted as suggesting that publication bias is unlikely to have exerted an influence on the results. On the other hand, a lack of funnel shape suggests the presence of publication bias (Rothstein, 2008). As shown in Figures 1a–1d, our plots generally had funnel shapes, indicating that publication bias was unlikely to have influenced our findings.

Second, because of the subjective nature of visual inspection of the funnel plot, we calculated Kendall's tau (Begg & Mazumdar, 1994; Rothstein, 2008), which measures the association between the standard error (i.e., precision) and effect sizes. When there is asymmetry in the funnel plot (i.e., publication bias), this correlation tends to be significant, such that higher standard errors (i.e., smaller studies) are associated with larger effect sizes. Conversely, a lack of significant association provides evidence against the presence of publication bias. Indeed, in this meta-analysis, the Kendall's tau values were nonsignificant (for positive emotion expression, $\tau_b = -.10$, *ns*; for internalizing, $\tau_b = -.02$, *ns*; for externalizing, $\tau_b = .12$, *ns*; for general negative, $\tau_b = -.01$, *ns*), therefore providing quantitative evidence supporting our visual interpretation of the funnel plot.

Third, we calculated fail-safe *N* to estimate the number of studies with a null finding that would be required in order for the significant effects we found to become nonsignificant (i.e., under a mean effect size of .05 in this sample). Because our effect sizes consisted of standardized mean differences, we used Orwin's procedure (1983; Lipsey & Wilson, 2001). We would need 146 more positive, 109 more internalizing, and 62.4 externalizing effect sizes, or about twice as many effect sizes as are in the present meta-analysis. Because the effect size for general negative emotion expression was nonsignificant, we did not calculate the number of studies that would be required for it to become nonsignificant.

Discussion

The present study constitutes a much-needed empirical review of gender differences in various types of observed emotion expressions from infancy through adolescence. We found evidence for significant but very small gender-role-consistent gender differences overall, with girls expressing more positive emotions ($g = -.08$) and more internalizing negative emotions such as sadness and anxiety ($g = -.10$) than boys and boys expressing more externalizing emotions such as anger than girls ($g = .09$). Importantly, we found that the magnitude of these very small gender differences changed (becoming larger or smaller) depending on contextual factors, including age (particularly for positive, externalizing, and negative emotion expressions), interpersonal context (particularly for internalizing, externalizing and negative emotion expressions), and task type (particularly for internalizing emotion expressions). For example, gender differences in positive, externalizing, and general negative emotion expressions were not present in infancy but were of small to medium magnitude in middle childhood and adolescence (with *g*s ranging from .13 to .35). As another example, gender differences in the expression of externalizing emotions (with boys > girls) were virtually nonexistent when with parents ($g = .01$) but were of small to medium magnitude with peers ($g = .29$) and when alone ($g = .28$). Thus, we found very small gender differences overall, but larger gender differences were evident upon closer examination depending on contextual factors.

Contextual View of Emotion Expressions

As noted above, the findings suggest that gender differences in expressions of emotion may not be static and fixed traits of individuals but behaviors that are dependent on complex transactions with the environment, consistent with social constructionist theories of gender differences (West & Zimmerman, 1987). This viewpoint is also consistent with functional theories of emotions, in particular with recent work on emotion regulation suggesting that the ability to modulate the expression of emotions flexibly to meet the demands of different contexts is associated with emotional well-being and is a protective factor against the development of psychopathology following stress (e.g., Bonanno, Papa, Lalande, Westphal, & Coifman, 2004; Cole, Martin, & Dennis, 2004; Cole, Michel, & Teti, 1994; Westphal, Seivert, & Bonanno, 2010, for a review, see Aldao, in press). Although we did not assess for intentional emotion regulation, these context-based differences suggest that girls and boys may modulate expressions of emotion differently depending on situational context.

Age

As predicted, gender differences were not found in infancy for positive, externalizing, and general negative emotion expressions (although they were found for internalizing emotion expressions), but they emerged by the toddler/preschool period (for externalizing emotion expressions) and in childhood (for general negative and positive emotion expressions). The emergence of gender differences in these emotion expressions after infancy may suggest that these gender differences are not innate but rather are socialized. Furthermore, the findings suggest that this socialization effect appears earlier for externalizing than for positive or general negative emotion expressions. However, the lack of gender differences in infancy does not necessarily mean that there are not biological roots for later gender differences in emotion. For example, Buck (1984) and others have argued that girls show a potentially biologically based advantage in language and self-regulation abilities that unfold over time with development. These differences may lead girls to decrease displays of anger and other externalizing emotions and increase displays of positive emotions by the preschool and childhood age periods, leading to the gender differences in externalizing and positive emotion expressions at those times. In addition, we did find a significant effect size for internalizing emotion expressions (with girls greater than boys) in infancy, which may further suggest that gender differences in some emotion expressions may begin quite early and may either be innate or be due to very early socialization responses of caregivers.

Notably with regard to infant emotion expressions, even though proponents of differential emotions theory (see Izard & Malatesta, 1987; Izard, Woodburn, & Finlon, 2010) have long argued that infants' facial expressions correspond to discrete emotion states, some theorists have recently suggested that some facial expressions by infants may not correspond to discrete emotion states (Camras & Shutter, 2010). Although there is still controversy, and we do not know for certain whether or not infant expressions reflect discrete emotion states, it is important to note, for example,

that the gender difference found in infancy for internalizing emotion expressions may not reflect gender differences in the internal experience of internalizing emotions per se but instead may reflect differences in negative emotions more generally or differences in some other nonemotional state.

In terms of our findings for adolescents, contrary to prediction, we found that gender differences in many of the emotion expressions either diminished (for internalizing emotion expressions) or reversed direction (for externalizing and negative emotion expressions) in adolescence (although gender differences were strong for positive emotion expressions at this age). It is possible that the many changes of adolescence, including physiological (e.g., puberty) and social (e.g., at school and in the peer group), bring about an increase in internalizing emotion expressions for both boys and girls, attenuating gender differences for this emotion category. The finding that girls begin to express more externalizing emotions than boys in adolescence may reflect a trend for girls to be more expressive than boys of emotions overall as they reach adolescence. It may also reflect a recent change in gender roles for adolescent girls. For example, Brown (1999) has argued that anger and other externalizing emotion expressions have become more common among adolescent girls in recent years. These findings clearly call for longitudinal research that examines developmental changes in emotion expression patterns from middle childhood into adolescence to better understand this transition.

Interpersonal Context

Gender differences in emotion were also moderated by interpersonal context. Consistent with hypotheses, gender differences typically did not emerge when children were observed with a parent (except for internalizing emotion expressions). Moreover, as expected, very small to small, yet significant, effect sizes emerged for positive and internalizing emotion expressions when children were with an unfamiliar adult, and significant small and small to medium effect sizes emerged for negative and externalizing emotion expressions when children were with peers.

With parents, at least among children who are not in high-risk conditions, children may feel free to express a full range of emotions, including gender-role-inconsistent emotions (Zeman & Garber, 1996). This freedom to express any emotions would then lead to smaller gender differences in emotion expressions. However, when interacting with individuals whom children do not know as well, children may regulate their emotion expressions to conform to societal gender roles (LaFrance et al., 2003), leading to greater gender differences in emotion expressions. For externalizing and general negative emotions, this regulation may be strongest when interacting with peers. Boys may be more inclined than girls to express anger-related emotions with peers as part of their greater tendency to engage in rough-and-tumble play (Rose & Rudolph, 2006). Positive and internalizing emotion expressions, which are more common for girls, show the largest gender differences in the presence of an unfamiliar adult. Girls' more frequent displays of positive emotions may reflect their propensity to engage new persons socially, to foster interpersonal harmony, and to appease adults. This is consistent with Hall and Halberstadt's (1986) theory that girls and women often smile as a way to ease social tension and relieve another's discomfort.

Unexpectedly, significant small to medium-sized gender differences in externalizing emotion expressions (but not in the other emotion categories) were found in conditions when children were alone. In this context, there should not be social pressure to regulate emotion expression according to gender roles, and so there should be smaller gender differences in emotion expression. The gender difference in externalizing emotion expressions (with boys > girls) when alone could reflect a tendency for boys to experience more externalizing emotions than girls. Then boys, who may feel high levels of externalizing emotions, may actively reduce their externalizing emotion displays when in front of unfamiliar adults in order to appear self-controlled and impassive in front of adults. This would be consistent with Buck's (1977) findings that boys begin to minimize their displays of emotions as they are socialized to adhere to gender roles to appear self-controlled. If true, this would suggest that boys may indeed have good regulatory abilities for externalizing emotions.

An alternate explanation for our findings could be that girls' experience in reducing anger and other externalizing emotion expressions when with peers and nonparental adults, at least prior to adolescence, carries over to situations when girls are alone. This leads to gender differences in the alone context, with girls lower than boys in externalizing expressions. This would be consistent with Cole, Zahn-Waxler, and Smith's (1994) finding that at-risk girls (but not boys) suppressed displays of disappointment both when in front of an experimenter who just gave them a disappointing gift and after the experimenter left and they were alone. It would be of interest for future studies to disentangle gender differences in internal feelings versus outward expressions of emotion in different contexts.

Valence of Task

Consistent with hypotheses, significant very small to small gender differences were found for internalizing and externalizing emotion expressions in tasks that were designed to elicit negative emotions. Negative tasks may elicit greater amounts of sadness, fear, anger, and other internalizing and externalizing emotions, resulting in a greater range and greater ability to detect gender differences. This suggests that researchers interested in gender differences in internalizing and externalizing emotion expressions may wish to use tasks that are designed to elicit negative emotion. Unexpectedly and contrary to past meta-analytic findings (Hall & Halberstadt, 1986), significant gender differences in positive emotion expressions were found only in neutral tasks. This suggests that positive and negative tasks may not elicit gender differences for joy and other positive emotion expressions, and instead these are found in neutral tasks. Future research should examine the influence of task structure and social roles in gender differences in child emotion expression.

Demand to Change Emotion

Effect sizes for positive emotion expressions (with girls greater than boys) and general negative emotion expressions (with girls lower than boys) were larger in situations with a demand to minimize or mask negative emotion ($g = -.27$ for positive emotion; $g = .17$ for negative emotion) than in situations without this demand ($g = -.07$ for positive; $g = .01$ for negative). This pattern

of findings suggests that girls are more likely than boys to mask their negative emotions with displays of (presumably unfelt) cheeriness when there is a social demand to do so, such as when receiving a disappointing gift from an experimenter, consistent with several studies on the disappointment task (which were included in this meta-analysis; Cole, 1986; Cole, Zahn-Waxler, & Smith, 1994; Davis, 1995; Saarni, 1984). This may suggest that girls are better at regulating emotion to meet social demands and/or that they are more motivated than boys to cover up negative emotions with positive emotions in order to protect another's feelings, consistent with the female gender role to be relationally oriented and caring (Davis, 1995). However, we must be cautious in drawing conclusions from these findings, given that this pattern was found only for positive and general negative emotion expressions and not for internalizing and externalizing emotion expressions and given that the demand characteristics moderator did not contribute significantly to the prediction of gender differences when controlling for the other moderators.

The Role of Specific Emotions

In addition to emotions depending on situational factors, neither all positive emotions nor all internalizing or externalizing emotions are the same. A more nuanced view of gender differences in emotion expression requires attention to each specific emotion. Therefore, we examined gender differences in the specific emotion expressions that composed each emotion expression category. We found very small to small magnitude effect sizes favoring girls for all of the specific emotion expressions in the positive emotion category (happiness, surprise, and positive emotion–unspecified), although the only effect size that reached significance was for positive emotion–unspecified ($g = -.15$). Of the internalizing emotion expressions, all were in the direction of girls greater than boys, with two (fear and sympathy) showing significant very small to small effect sizes (gs $= -.10, -.13$) and one (shame) showing a significant medium effect size ($g = -.56$). Notably, the effect size for shame was the largest effect size found in the current meta-analysis. That most of the specific positive and internalizing emotion expressions showed similar patterns of gender differences may suggest that the specific emotions within each emotion category, although they have unique functions (Barrett & Campos, 1987; Izard, 1977), share similar gender-role-influenced display rules.

It is notable that shame had the largest gender difference effect size, given theories that females experience and express greater shame than males (Ferguson & Eyre, 2000). One recent meta-analysis of self-reported experience of self-conscious emotions found that females reported significantly higher levels of shame and guilt than males starting in adolescence (for adolescents, $d = -0.33$ for shame and $d = -0.38$ for guilt). Thus, girls may both express and experience higher shame than boys. Notably, shame is an emotion that occurs when one perceives that the self is inadequate in some way, and expressions of shame may be an attempt to conform to the female gender role in western society to be meek and self-effacing (H. B. Lewis, 1971; M. Lewis, 2000; Tangney, 1993). Excessive experiences of shame have been linked to depression and eating disorders in college-age samples (Reimer, 1996; Tangney, Wagner, & Gramzow, 1992). These disorders are more common in females than males (e.g., Hankin et al., 1998). Future research should examine the role of the expression of shame in the development of gender differences in these disorders.

Of the externalizing emotion expressions, only anger showed a significant, very small effect size favoring boys ($g = .10$), suggesting that gender differences with boys greater than girls in externalizing emotion expressions may be driven by differences in anger. Unexpectedly, contempt showed a significant small to medium effect size favoring girls ($g = -.26$). Contempt is a relatively subtle externalizing emotion expression (usually indicated by an eye roll or a raised lip on one side). And unlike disgust, which can be expressed toward an object, contempt is always expressed toward another person (Ekman & Friesen, 2003). Thus, contempt displays may reflect an alternative form of subtle interpersonal aggression that is thought to be more prevalent in girls than boys, namely, relational aggression (Crick & Grotpeter, 1995).

We also examined specific emotion expressions that did not fit into the four emotion categories, including interest, pride, joy at the expense of another, and overall emotionality. Of these, interest showed a significant gender difference, favoring girls ($g = -.16$). Further, joy at another's expense (e.g., gleeful taunting of others) showed a significant small to medium effect size favoring boys ($g = .29$), which is in contrast to findings for the positive emotion expression category, with greater positive emotion expressions for girls than boys. This suggests that studies of gender differences in positive emotion expressions should differentiate between mutually positive emotion expressions and those that are expressed at the expense of another. Boys' greater tendency to show joy at another's expense may lead to risk for conduct problems, as this form of positive emotion is callous and potentially a form of aggression (e.g., Chaplin et al., 2005a; Frick, Cornell, Barry, Bodin, & Dane, 2003).

Interestingly, there was not a significant gender difference for pride expressions, although the effect size of $g = .42$ favored boys. This is consistent with Else-Quest, Higgins, Allison, and Morton's (2012) finding that, whereas reported shame and guilt experiences showed gender differences (with girls > boys), self-reported pride did not show a significant gender difference. There was also not a significant gender difference for those four studies that examined overall emotion expression. This is counter to findings in the adult literature that women are more expressive than men (Hall, 1984; Kring & Gordon, 1998) but is consistent with Else-Quest et al.'s (2006) meta-analysis, which found no significant gender differences in parent-reported "emotionality" in children. Further research on overall emotional expressivity in children that includes a larger sample of effect sizes is warranted.

Implications for Well-Being

The present findings of gender differences in emotion (particularly in certain situations) have significant implications for gender differences in children's prosocial development and in their development of psychopathology. Girls' greater tendency to express positive emotions may contribute to and be influenced by their greater prosocial behavior. For example, girls are more empathic, have better social skills, and are better able to read others' emotions and behaviors than boys (McClure, 2000; Zahn-Waxler, Shirtcliff, & Marceau, 2008). Girls' greater propensity to display positive emotion when interacting with unfamiliar adults and their greater tendency to mask negative emotions when the situation

calls for it (e.g., when receiving a disappointing gift) may contribute to and be influenced by their intention and ability to please adults and to behave in prosocial ways. At the same time, girls' (and women's) efforts to be cheery, even when this cheeriness is unfelt (as in the demand tasks), may also confer risk (Chaplin & Cole, 2005; Keenan & Hipwell, 2005; Zahn-Waxler et al., 1991). If girls attempt to appear cheerful even when they are not, they may internalize rather than express feelings of distress, which could increase their propensity for depression (Keenan & Hipwell, 2005).

Similarly, girls' greater tendency to display internalizing negative emotions, such as sadness, anxiety, and sympathy, may also contribute to their being seen as more prosocial than boys (Zahn-Waxler, 2001; Zahn-Waxler et al., 1991). Sadness and anxiety displays are consistent with being concerned for others and generating feelings of closeness with others, both of which are aspects of prosocial development (Zahn-Waxler, 2001). And, as with positive emotions, an excessive tendency to display internalizing emotions may be a risk factor for certain psychological problems. For example, if one responds to stress by experiencing and expressing high levels of fear and anxiety, this pattern may lead to risk for the development of anxiety disorders, several of which are more common for girls than boys (Ollendick & Yule, 1990). In addition, girls' greater sadness, sympathy/empathic concern, and shame expressions, if taken to an extreme, may be a risk for depression (e.g., Chaplin & Cole, 2005; Nolen-Hoeksema, Larson, & Grayson, 1999) and may contribute to girls' increases in depression in adolescence (Hankin et al., 1998). It is of interest that gender differences in internalizing emotion expressions appear most strongly in infancy and in middle childhood, prior to the increase in depression in girls. One hypothesis this generates is that gender differences in childhood internalizing emotion expressions precede (and could influence) gender differences in adolescent depression.

The tendency for boys to show more externalizing emotions than girls in early childhood and in contexts involving peers and when alone may benefit many aspects of boys' social-emotional development. Boys' modulated anger expressions may facilitate the development of assertiveness, persistence, and self-efficacy. Indeed, studies find that boys do show more assertive behavior; for example, boys use more assertive speech than girls (Leaper & Smith, 2004). It is notable that boys show greater externalizing (and general negative) emotions than girls when with peers, as this may help them to negotiate peer relationships in an assertive manner and could protect them against succumbing to peer pressure. Further research should examine this hypothesis of the positive functions of anger for boys' development. In addition to facilitating healthy development, a well-developed sense of assertiveness and self-efficacy may protect boys against depression and anxiety, contributing to boys' lower rates of these disorders.

However, there may also be risks attendant with this tendency to express externalizing emotions in young boys. If anger is expressed at a high level and is expressed to the exclusion of emotions such as fear or empathy when certain stressors are present, there could be a risk for the development of conduct problems, such as aggressive behavior and disregard for rules of conduct (Chaplin & Cole, 2005; Cole, Michel, & Teti, 1994). Boys' greater rates of externalizing emotion expressions such as anger in the toddler/preschool years may be one contributing factor to the higher rates of behavior problems in boys, a gender difference that notably appears around the toddler/preschool age (Keenan & Shaw, 1997). Consistent with this, several studies have found links between high levels of anger expression at preschool and early school age and externalizing problems, particularly in boys (Chaplin et al., 2005a; Cole, Michel, & Teti, 1994; Eisenberg, Cumberland, et al., 2001). An interesting issue for future research is the examination of whether higher rates of externalizing emotion expressions by young boys is a precursor, correlate, or consequence of early childhood behavior problems.

An unexpected but nonetheless interesting finding was that by adolescence, girls, rather than boys, had a tendency to express more externalizing emotions. For those adolescent girls who account for the gender difference in externalizing emotions expression, there may be risk. For example, alcohol and drug use, which are on the rise in adolescent girls (Amaro, Blake, Schwartz, & Flinchbaugh, 2001), have been linked to the use of anger to cope with stressors (Wills, DuHamel, & Vaccaro, 1995).

Limitations and Future Directions

The present study provided an important empirical review of gender differences in various types of observed emotion expressions from infancy through adolescence. As in all studies of gender differences, it is important to note that there is great variability not only between boys and girls but also within boys and girls (see Hyde, 2005). For example, some boys may show high levels of internalizing emotions and some girls may show very low levels of these emotions. It is important to recognize this so that researchers, clinicians, and the public do not overlook these gender-role-inconsistent children (Hyde, 2005).

It is also important to note that our review was limited to observational studies of emotion expression. Although this provided a relatively objective examination of gender differences in emotion, a review of self-reports of emotion expression (and an analysis of discrepancies between self-reported and observed emotion) would be valuable to examine in future research. As our review was limited to studies of emotion expression, it did not assess gender differences in strategies used to regulate emotion. It would be useful to understand the strategies boys and girls use to accomplish regulation and the contexts in which they do and do not differ in emotion regulation. In addition, our review included studies that measured emotion expression in a variety of ways, including the frequency, duration, and intensity of expression. It was not possible to disentangle these different measurements in the present study; however, future research could examine whether gender differences in emotion are different depending on whether one examines frequency or intensity/duration.

Another limitation of this review is the small cell sizes in some of our analyses. In particular, there were relatively few observational studies of emotion in adolescents, and there is a need for more research in this group—especially given the important changes in emotion-related neural circuitry in adolescence (Spear, 2007). There also were a number of studies that were excluded because the authors did not provide enough information to calculate effect sizes. This could have biased our results, because studies with null results sometimes leave out this information. We attempted to counter this bias by including all studies of emotion expression, not just those that examined gender differences. A

final limit is that we did not find significant gender differences for general negative emotion. This is likely because studies of general negative emotion expressions typically included both internalizing and externalizing emotions, emotions that have different associated gender roles. It is important for future studies that examine gender differences to discriminate among the different categories of negative emotions in coding and data analysis.

In addition, most of the studies in the present meta-analysis consisted of primarily Caucasian samples. This prevented us from examining differences between ethnic groups, which is important, since gender roles for emotion expression may differ in different ethnic groups (Cole & Tan, 2007). For example, among children of Asian heritage there may be socialization pressure for all children to control emotions, potentially leading both girls and boys to suppress emotion expressions, possibly attenuating the ability to detect gender differences (Cole & Tan, 2007). Future research should include greater diversity of participants to allow for investigation of how culture influences the expression of emotion for boys and girls.

Future studies may also explore links between gender differences in emotion expression and gender differences in the development of personality traits. Personality traits, such as neuroticism and extraversion, are related to individual differences in patterns of emotion experience and expression (Revelle & Scherer, 2009). Further, gender differences have been found for some traits in adulthood, with women reporting somewhat greater anxiety/neuroticism and gregariousness than men and men reporting greater assertiveness than women (Feingold, 1994). These differences parallel our findings of gender differences in internalizing, positive, and externalizing emotion expressions.

Summary

This investigation constituted a much-needed comprehensive empirical review of gender differences in child and adolescent emotion expression. Our findings suggest that there are small but significant gender differences in emotion expressions, with larger gender differences emerging at certain ages and in certain contexts. Girls showed greater positive emotion expressions than boys, and this gender difference became increasingly evident as the age of the research participants increased into adolescence and in situations with an unfamiliar adult and in which there was social pressure to mask negative emotions by appearing cheery. Girls also expressed more internalizing emotions (e.g., sadness, fear, sympathy, shame) than boys, particularly in negative situations and when with an unfamiliar adult. Girls' patterns of emotion expression may contribute to their greater prosociality than boys. However, this pattern could also confer risk that increases girls' likelihood of developing symptoms of depression and anxiety.

Boys, in contrast, showed greater externalizing emotion expressions, particularly anger expressions, in the toddler/preschool and middle childhood periods, in negative situations, and when with peers or alone, which could contribute to boys' greater risk for conduct problems. Unexpectedly, by adolescence, girls expressed more externalizing emotions than boys, an interesting shift in emotion expression patterns. Overall, our findings underscore the importance of examining contextual factors influencing gender differences in emotion expressions across child and adolescent development. We hope that future work incorporates this framework into the delineation of gender-related patterns of emotion expressions and their implications for gender differences in healthy development and the development of psychopathology.

References

References marked with an asterisk indicate studies included in the meta-analysis.

Aldao, A. (in press). The future of emotion regulation research: Capturing context. *Perspectives on Psychological Science*.

Aldao, A., Nolen-Hoeksema, S., & Schweizer, S. (2010). Emotion regulation strategies across psychopathology: A meta-analytic review, *Clinical Psychology Review, 30,* 217–237. doi:10.1016/j.cpr.2009.11.004

*Alessandri, S. M., & Lewis, M. (1996). Differences in pride and shame in maltreated and nonmaltreated preschoolers. *Child Development, 67,* 1857–1869. doi:10.2307/1131736

Amaro, H., Blake, S. M., Schwartz, P. M., & Flinchbaugh, L. J. (2001). Developing theory-based substance abuse prevention programs for young adolescent girls. *Journal of Early Adolescence, 21,* 256–293. doi:10.1177/0272431601021003002

Augustine, A. A., & Hemenover, S. H. (2009). On the relative effectiveness of affect regulation strategies: A meta-analysis. *Cognition & Emotion, 23,* 1181–1220. doi:10.1080/02699930802396556

*Baker, J. K., Haltigan, J. D., Brewster, R., Jaccard, J., & Messinger, D. (2010). Non-expert ratings of infant and parent emotion: Concordance with expert coding and relevance to early autism risk. *International Journal of Behavioral Development, 34,* 88–95. doi:10.1177/0165025409350365

Bandura, A. (1969). *Principles of behavior modification*. New York, NY: Holt, Rinehart & Winston.

Barrett, K. C., & Campos, J. J. (1987). Perspectives on emotional development II: A functionalist approach to emotions. In J. Osofsky (Ed.), *Handbook of infant development* (pp. 555–578). New York, NY: Wiley.

*Barry, R. A., & Kochanska, G. (2010). A longitudinal investigation of the affective environment in families with young children: From infancy to early school age. *Emotion, 10,* 237–249. doi:10.1037/a0018485

*Becker-Stoll, F., Delius, A., & Scheitenberger, S. (2001). Adolescents' nonverbal emotional expressions during negotiation of a disagreement with their mothers: An attachment approach. *International Journal of Behavioral Development, 25,* 344–353. doi:10.1080/01650250143000102

Begg, C. B., & Mazumdar, M. (1994). Operating characteristics of a rank correlation test for publication bias. *Biometrics, 50,* 1088–1101. doi:10.2307/2533446

*Bennett, D. S., Bendersky, M., & Lewis, M. (2002). Facial expressivity at 4 months: A context by expression analysis. *Infancy, 3,* 97–113. doi:10.1207/15250000252828262

*Bennett, D. S., Bendersky, M., & Lewis, M. (2005). Does the organization of emotional expression change over time? Facial expressivity from 4 to 12 months. *Infancy, 8,* 167–187. doi:10.1207/s15327078in0802_4

*Berlin, L. J., & Cassidy, J. (2003). Mothers' self-reported control of their preschool children's emotional expressiveness: A longitudinal study of associations with infant–mother attachment and children's emotion regulation. *Social Development, 12,* 477–495. doi:10.1111/1467-9507.00244

*Berman, P. W., & Smith, V. L. (1984). Gender and situational differences in children's smiles, touch, and proxemics. *Sex Roles, 10,* 347–356. doi:10.1007/BF00287552

*Bertin, E., & Striano, T. (2006). The still-face response in newborn, 1.5-, and 3-month-old infants. *Infant Behavior & Development, 29,* 294–297. doi:10.1016/j.infbeh.2005.12.003

*Bigelow, A. E., & Walden, L. M. (2009). Infants' response to maternal mirroring in the still face and replay tasks. *Infancy, 14,* 526–549. doi:10.1080/15250000903144181

*Biringen, Z., Emde, R. N., Campos, J. J., & Appelbaum, M. I. (1995). Affective reorganization in the infant, the mother, and the dyad: The role of upright locomotion and its timing. *Child Development, 66,* 499–514. doi:10.2307/1131593

*Birnbaum, D. W., & Croll, W. L. (1984). The etiology of children's stereotypes about sex differences in emotionality. *Sex Roles, 10,* 677–691. doi:10.1007/BF00287379

*Bohnert, A. M., Crnic, K. A., & Lim, K. G. (2003). Emotional competence and aggressive behavior in school-age children. *Journal of Abnormal Child Psychology, 31,* 79–91. doi:10.1023/A:1021725400321

Bonanno, G. A., Papa, A., Lalande, K., Westphal, M., & Coifman, K. (2004). The importance of being flexible: The ability to both enhance and suppress emotional expression predicts long-term adjustment. *Psychological Science, 15,* 482–487. doi:10.1111/j.0956-7976.2004.00705.x

Brody, L. R. (1999). *Gender, emotion, and the family*. Cambridge, MA: Harvard University Press.

Brody, L. R. (2000). The socialization of gender differences in emotional expression: Display rules, infant temperament, and differentiation. In A. H. Fischer (Ed.), *Gender and emotion: Social psychological perspectives* (pp. 24–47). Cambridge, England: Cambridge University Press.

Brody, L. R., & Hall, J. A. (2008). Gender and emotion in context. In M. Lewis, J. M. Haviland-Jones, & L. F. Barrett (Eds.), *Handbook of emotions* (3rd ed., pp. 395–408). New York, NY: Guilford Press.

*Brooker, R. J., & Buss, K. A. (2010). Dynamic measures of RSA predict distress and regulation in toddlers. *Developmental Psychobiology, 52,* 372–382. doi:10.1002/dev.20432

*Brooker, R. J., Kiel, E., & Buss, K. (2012). *Episode and attachment-related differences in emotion expression and regulation: Relations to adjustment in toddlers.* Manuscript in preparation.

Brown, L. M. (1999). *Raising their voices: The politics of girls' anger*. Cambridge, MA: Harvard University Press.

Buck, R. (1977). Nonverbal communication of affect in preschool children: Relationships with personality and skin conductance. *Journal of Personality and Social Psychology, 35,* 225–236. doi:10.1037/0022-3514.35.4.225

Buck, R. (1984). *The communication of emotion*. New York, NY: Guilford Press.

*Buss, K. A. (2011). Which fearful toddlers should we worry about? Context, fear regulation and anxiety risk. *Developmental Psychology, 47,* 804–819. doi:10.1037/a0023227

*Buss, K. A., & Kiel, E. J. (2004). Comparison of sadness, anger, and fear facial expressions when toddlers look at their mothers. *Child Development, 75,* 1761–1773. doi:10.1111/j.1467-8624.2004.00815.x

*Camras, L. A., Oster, H., Campos, J., Campos, R., Ujiie, T., Miyake, K., . . . Meng, Z. (1998). Production of emotional facial expressions in European American, Japanese, and Chinese infants. *Developmental Psychology, 34,* 616–628. doi:10.1037/0012-1649.34.4.616

Camras, L. A., & Shutter, J. M. (2010). Emotional facial expressions in infancy. *Emotion Review, 2,* 120–130. doi:10.1177/1754073909352529

*Carlson, S. M., & Wang, T. S. (2007). Inhibitory control and emotion regulation in preschool children. *Cognitive Development, 22,* 489–510. doi:10.1016/j.cogdev.2007.08.002

*Chapell, M. S. (1997). Frequency of public smiling across the life span. *Perceptual and Motor Skills, 85, 1326*. doi:10.2466/pms.1997.85.3f.1326

Chaplin, T. M., Casey, J., Sinha, R., & Mayes, L. C. (2010). Gender differences in caregiver emotion socialization of low-income toddlers. *New Directions for Child and Adolescent Development, 2010,* 11–27. doi:10.1002/cd.266

Chaplin, T. M., & Cole, P. M. (2005). The role of emotion regulation in the development of psychopathology. In B. L. Hankin & J. R. Z. Abela (Eds.), *Development of psychopathology: A vulnerability-stress perspective* (pp. 49–74). Thousand Oaks, CA: Sage.

*Chaplin, T. M., Cole, P. M., & Zahn-Waxler, C. (2005a). Parental socialization of emotion expression: Gender differences and relations to child adjustment. *Emotion, 5,* 80–88. doi:10.1037/1528-3542.5.1.80

*Chaplin, T. M., Cole, P. M., & Zahn-Waxler, C. (2005b). [Happiness and anger expressions by preschoolers and early school age children in family interaction task]. Unpublished raw data.

*Chaplin, T. M., Fahy, T., Sinha, R., & Mayes, L. C. (2009). Emotional arousal and regulation in cocaine exposed toddlers: Implications for behavior problems across a three-year follow-up. *Neurotoxicology and Teratology, 31,* 275–282. doi:10.1016/j.ntt.2009.05.002

Cicchetti, D., Ackerman, B. P., & Izard, C. E. (1995). Emotions and emotion regulation in developmental psychopathology. *Development and Psychopathology, 7,* 1–10. doi:10.1017/S0954579400006301

*Cohn, J. F., & Tronick, E. Z. (1983). Three-month-old infants' reaction to simulated maternal depression. *Child Development, 54,* 185–193. doi:10.2307/1129876

*Cole, P. M. (1986). Children's spontaneous control of facial expression. *Child Development, 57,* 1309–1321. doi:10.2307/1130411

Cole, P. M., Martin, S. E., & Dennis, T. A. (2004). Emotion regulation as a scientific construct: Methodological challenges and directions for child development research. *Child Development, 75,* 317–333. doi:10.1111/j.1467-8624.2004.00673.x

Cole, P. M., Michel, M. K., & Teti, L. O. (1994). The development of emotion regulation and dysregulation: A clinical perspective. *Monographs of the Society for Research in Child Development, 59,* 73–100, 250–283. doi:10.2307/1166139

Cole, P. M., & Tan, P. Z. (2007). Emotion socialization from a cultural perspective. In J. Grusec & P. Hastings (Eds.), *Handbook of socialization* (pp. 516–542). New York, NY: Guilford Press.

*Cole, P. M., Teti, L. O., & Zahn-Waxler, C. (2003). Mutual emotion regulation and the stability of conduct problems between preschool and early school age. *Development and Psychopathology, 15,* 1–18. doi:10.1017/S0954579403000014

*Cole, P. M., Zahn-Waxler, C., Fox, N., Usher, B. A., & Welsh, J. D. (1996). Individual differences in emotion regulation and behavior problems in preschool children. *Journal of Abnormal Psychology, 105,* 518–529. doi:10.1037/0021-843X.105.4.518

*Cole, P. M., Zahn-Waxler, C., & Smith, D. (1994). Expressive control during a disappointment: Variations related to preschoolers' behavior problems. *Developmental Psychology, 30,* 835–846. doi:10.1037/0012-1649.30.6.835

*Conradt, E., & Ablow, J. (2010). Infant psychological response to the still-face paradigm: Contributions of maternal sensitivity and infants' early regulatory behavior. *Infant Behavior & Development, 33,* 251–265. doi:10.1016/j.infbeh.2010.01.001

*Cossette, L., Pomerleau, A., Malcuit, G., & Kaczorowski, J. (1996). Emotional expressions of female and male infants in a social and nonsocial context. *Sex Roles, 35,* 693–709. doi:10.1007/BF01544087

Cox, D. L., Stabb, S. D., & Hulgus, J. F. (2000). Anger and depression in girls and boys: A study of gender differences. *Psychology of Women Quarterly, 24,* 110–112. doi:10.1111/j.1471-6402.2000.tb01027.x

Crick, N. R., & Grotpeter, J. K. (1995). Relational aggression, gender, and social-psychological adjustment. *Child Development, 66,* 710–722. doi:10.2307/1131945

*Crockenberg, S. C., & Leerkes, E. M. (2004). Infant and maternal behaviors regulate infant reactivity to novelty at 6 months. *Developmental Psychology, 40,* 1123–1132. doi:10.1037/0012-1649.40.6.1123

*Crossman, A. M., Sullivan, M. W., Hitchcock, D. M., & Lewis, M. (2009). When frustration is repeated: Behavioral and emotion responses during extinction over time. *Emotion, 9,* 92–100. doi:10.1037/a0014614

*Davis, B., Sheeber, L., Hops, H., & Tildesley, E. (2000). Adolescent responses to depressive parental behaviors in problem-solving interactions: Implications for depressive symptoms. *Journal of Abnormal Child Psychology, 28,* 451–465. doi:10.1023/A:1005183622729

*Davis, T. (1995). Gender differences in masking negative emotions: Ability or motivation? *Developmental Psychology, 31,* 660–667. doi:10.1037/0012-1649.31.4.660

Deaux, K., & Major, B. (1987). Putting gender into context: An interactive model of gender-related behavior. *Psychological Review, 94,* 369–389. doi:10.1037/0033-295X.94.3.369

De Bellis, M. D., Keshavan, M. S., Beers, S. R., Hall, J., Frustaci, K., Masalehdan, A., . . . Boring, A. M. (2001). Sex differences in brain maturation during childhood and adolescence. *Cerebral Cortex, 11,* 552–557. doi:10.1093/cercor/11.6.552

Denham, S. A. (2007). Dealing with feelings: How children negotiate the worlds of emotions and social relationships. *Cognitie, Creier, Comportament, 11,* 1–48.

*Dennis, T. (2006). Emotional self-regulation in preschoolers: The interplay of child approach reactivity, parenting, and control capacities. *Developmental Psychology, 42,* 84–97. doi:10.1037/0012-1649.42.1.84

*Dennis, T. A., Cole, P. M., Wiggins, C. N., Cohen, L. H., & Zalewski, M. (2009a). The functional organization of preschool-age children's emotion expressions and actions in challenging situations. *Emotion, 9,* 520–530. doi:10.1037/a0016514

*Dennis, T., Cole, P., Wiggins, C., Cohen, L., & Zalewski, M. (2009b). [Observed fear/anxiety expressions in preschoolers during challenging tasks]. Unpublished raw data.

*Dennis, T. A., Cole, P., Zahn-Waxler, C., & Mizuta, I. (2002). Self in context: Autonomy and relatedness in Japanese and U.S. mother–preschooler dyads. *Child Development, 73,* 1803–1817. doi:10.1111/1467-8624.00507

*Dennis, T. A., Hong, M., & Solomon, B. (2010). Do the associations between exuberance and emotion regulation depend on effortful control? *International Journal of Behavioral Development, 34,* 462–472. doi:10.1177/0165025409355514

*DeSantis, M., Mohan, P. J., & Steinhorst, K. (2005). Smiling in photographs: Childhood similarities between sexes become differences constant in adulthood. *Psychological Reports, 97,* 651–665. doi:10.2466/pr0.97.2.651-665

*Dodd, D. K., Russell, B., & Jenkins, C. (1999). Smiling in school yearbook photos: Gender differences from kindergarten to adulthood. *Psychological Record, 49,* 543–554.

*Durbin, C. E. (2010). Validity of young children's self-reports of their emotion in response to structured laboratory tasks. *Emotion, 10,* 519–535. doi:10.1037/a0019008

Eisenberg, N., Cumberland, A., & Spinrad, T. L. (1998). Parental socialization of emotion. *Psychological Inquiry, 9,* 241–273. doi:10.1207/s15327965pli0904_1

*Eisenberg, N., Cumberland, A., Spinrad, T. L., Fabes, R. A., Shepard, S. A., Reiser, M., . . . Gurthrie, I. K. (2001). The relations of regulation and emotionality to children's externalizing and internalizing problem behavior. *Child Development, 72,* 1112–1134. doi:10.1111/1467-8624.00337

*Eisenberg, N., & Fabes, R. (1995). The relation of young children's vicarious emotional responding to social competence, regulation, and emotionality. *Cognition & Emotion, 9,* 203–228. doi:10.1080/02699939508409009

*Eisenberg, N., Fabes, R. A., Carlo, G., Speer, A. L., Switzer, G., Karbon, M., & Troyer, D. (1993). The relations of empathy-related emotions and maternal practices to children's comforting behavior. *Journal of Experimental Child Psychology, 55,* 131–150. doi:10.1006/jecp.1993.1007

*Eisenberg, N., Fabes, R. A., Carlo, G., Troyer, D., Speer, A. L., Karbon, M., & Switzer, G. (1992). The relations of maternal practices and characteristics to children's vicarious emotional responsiveness. *Child Development, 63,* 583–602. doi:10.2307/1131348

*Eisenberg, N., Fabes, R. A., Guthrie, I. K., Murphy, B. C., Maszk, P., Holmgren, R., & Suh, K. (1996). The relations of regulation and emotionality to problem behavior in elementary school children. *Development and Psychopathology, 8,* 141–162. doi:10.1017/S095457940000701X

*Eisenberg, N., Fabes, R., Miller, P. A., Shell, R., Shea, C., & May-Plumlee, T. (1990). Preschoolers' vicarious emotional responding and their situational and dispositional prosocial behavior. *Merrill-Palmer Quarterly, 36,* 507–529.

*Eisenberg, N., Fabes, R. A., Nyman, M., Bernzweig, J., & Pinuelas, A. (1994). The relations of emotionality and regulation to children's anger-related reactions. *Child Development, 65,* 109–128. doi:10.2307/1131369

*Eisenberg, N., Fabes, R. A., Schaller, M., Carlo, G., & Miller, P. A. (1991). The relations of parental characteristics and practices to children's vicarious emotional responding. *Child Development, 62,* 1393–1408. doi:10.2307/1130814

*Eisenberg, N., Fabes, R. A., Shepard, S. A., Murphy, B. C., Jones, S., & Guthrie, I. K. (1998). Contemporaneous and longitudinal prediction of children's sympathy from dispositional regulation and emotionality. *Developmental Psychology, 34,* 910–924. doi:10.1037/0012-1649.34.5.910

*Eisenberg, N., Hofer, C., Spinrad, T. L., Gershoff, E. T., Valiente, C., Losoya, S., . . . Maxon, E. (2008). Understanding mother–adolescent conflict discussions: Concurrent and across-time prediction from youths' dispositions and parenting. *Monographs of the Society for Research in Child Development, 73,* 1–160. doi:10.1111/j.1540-5834.2008.00470.x

*Eisenberg, N., Losoya, S., Fabes, R. A., Guthrie, I. K., Reiser, M., Murphy, B., . . . Padgett, S. J. (2001). Parental socialization of children's dysregulated expression of emotion and externalizing problems. *Journal of Family Psychology, 15,* 183–205. doi:10.1037/0893-3200.15.2.183

Ekman, P., & Friesen, W. V. (1978). *Facial Action Coding System (FACS): A technique for the measurement of facial action*. Palo Alto, CA: Consulting Psychologists Press.

Ekman, P., & Friesen, W. V. (2003). *Unmasking the face: A guide to recognizing emotions from facial expressions*. Cambridge, MA: Malor Books.

Else-Quest, N. M., Higgins, A., Allison, C., & Morton, L. C. (2012). Gender differences in self-conscious emotional experience: A meta-analysis. *Psychological Bulletin, 138,* 947–981. doi:10.1037/a0027930

Else-Quest, N. M., Hyde, J. S., Goldsmith, H. H., & Van Hulle, C. A. (2006). Gender differences in temperament: A meta-analysis. *Psychological Bulletin, 132,* 33–72. doi:10.1037/0033-2909.132.1.33

*El-Sheikh, M. (1994). Children's emotional and physiological responses to interadult angry behavior: The role of history of interparental hostility. *Journal of Abnormal Child Psychology, 22,* 661–678. doi:10.1007/BF02171994

*El-Sheikh, M. (2005). The role of emotional responses and physiological reactivity in the marital conflict–child functioning link. *Journal of Child Psychology and Psychiatry, 46,* 1191–1199. doi:10.1111/j.1469-7610.2005.00418.x

*Fabes, R. A., & Eisenberg, N. (1992). Young children's coping with interpersonal anger. *Child Development, 63,* 116–128. doi:10.2307/1130906

*Fabes, R. A., Eisenberg, N., & Eisenbud, L. (1993). Behavioral and physiological correlates of children's reactions to others in distress. *Developmental Psychology, 29,* 655–663. doi:10.1037/0012-1649.29.4.655

*Fabes, R. A., Eisenberg, N., Jones, S., Smith, M., Guthrie, I., Poulin, R., . . . Friedman, J. (1999). Regulation, emotionality, and preschoolers' socially competent peer interactions. *Child Development, 70,* 432–442. doi:10.1111/1467-8624.00031

*Fabes, R. A., Eisenberg, N., Karbon, M., Troyer, D., & Switzer, G. (1994). The relations of children's emotion regulation to their vicarious emotional responses and comforting behaviors. *Child Development, 65,* 1678–1693. doi:10.2307/1131287

*Fabes, R. A., Eisenberg, N., & Miller, P. A. (1990). Maternal correlates of children's vicarious emotional responsiveness. *Developmental Psychology, 26,* 639–648. doi:10.1037/0012-1649.26.4.639

*Fabes, R. A., Hanish, L. D., Martin, C. L., & Eisenberg, N. (2002). Young children's negative emotionality and social isolation: A latent growth curve analysis. *Merrill-Palmer Quarterly, 48,* 284–307. doi:10.1353/mpq.2002.0012

*Farris, M. R. (2000). Smiling of male and female infants to mother vs. stranger at 2 and 3 months of age. *Psychological Reports, 87,* 723–728. doi:10.2466/pr0.87.7.723-728

Feingold, A. (1994). Gender differences in personality: A meta-analysis. *Psychological Bulletin, 116,* 429–456. doi:10.1037/0033-2909.116.3.429

Ferguson, T. J., & Eyre, H. L. (2000). Engendering gender differences in shame and guilt: Stereotypes, socialization, and situational pressures. In A. H. Fischer (Ed.), *Gender and emotion: Social psychological perspectives* (pp. 254–276). Cambridge, England: Cambridge University Press.

*Fiamenghi, G. A. (2007). Emotional expression in infants' interactions with their mirror images: An exploratory study. *Journal of Reproductive and Infant Psychology, 25,* 152–160. doi:10.1080/02646830701292365

Field, A. P. (2003). The problems in using fixed-effects models of meta-analysis on real-world data. *Understanding Statistics, 2,* 105–124. doi:10.1207/S15328031US0202_02

Fivush, R., & Buckner, J. P. (2000). Gender, sadness, and depression: The development of emotional focus through gendered discourse. In A. H. Fischer (Ed.), *Gender and emotion: Social psychological perspectives* (pp. 232–253). Cambridge, England: Cambridge University Press.

*Flannery, D. J., Montemayor, R., Eberly, M., & Torquati, J. (1993). Unraveling the ties that bind: Affective expression and perceived conflict in parent–adolescent interactions. *Journal of Social and Personal Relationships, 10,* 495–509. doi:10.1177/0265407593104002

Frick, P. J., Cornell, A. H., Barry, C. T., Bodin, S. D., & Dane, H. E. (2003). Callous–unemotional traits and conduct problems in the prediction of conduct problem severity, aggression, and self-report of delinquency. *Journal of Abnormal Child Psychology, 31,* 457–470. doi:10.1023/A:1023899703866

*Gaertner, B. M., Spinrad, T. L., & Eisenberg, N. (2008). Focused attention in toddlers: Measurement, stability, and relations to negative emotion parenting. *Infant and Child Development, 17,* 339–363. doi:10.1002/icd.580

*Garner, P. W., & Power, T. G. (1996). Preschoolers' emotional control in the disappointment paradigm and its relation to temperament, emotional knowledge, and family expressiveness. *Child Development, 67,* 1406–1419. doi:10.2307/1131708

*Garrett-Peters, P. T., & Fox, N. A. (2007). Cross-cultural differences in children's emotional reactions to a disappointing situation. *International Journal of Behavioral Development, 31,* 161–169. doi:10.1177/0165025407074627

*Gazelle, H., & Druhen, M. J. (2009). Anxious solitude and peer exclusion predict social helplessness, upset affect, and vagal regulation in response to behavioral rejection by a friend. *Developmental Psychology, 45,* 1077–1096. doi:10.1037/a0016165

*Ghera, M. M., Marshall, P. J., Fox, N. A., Zeanah, C. H., Nelson, C. A., Smyke, A. T., & Guthrie, D. (2009). The effects of foster care intervention on socially deprived institutionalized children's attention and positive affect: Results from the BEIP study. *Journal of Child Psychology and Psychiatry, 50,* 246–253. doi:10.1111/j.1469-7610.2008.01954.x

*Gralinski, J. H., Safyer, A. W., Hauser, S. T., & Allen, J. P. (1995). Self-cognitions and expressed negative emotions during midadolescence: Contributions to young adult psychological adjustment. *Development and Psychopathology, 7,* 193–216. doi:10.1017/S0954579400006428

*Graziano, P. A., Calkins, S. D., & Keane, S. P. (2010). Toddler self-regulation skills predict risk for pediatric obesity. *International Journal of Obesity, 34,* 633–641. doi:10.1038/ijo.2009.288

Gross, J. J. (1999). Emotion regulation: Past, present and future. *Cognition & Emotion, 13,* 551–573. doi:10.1080/026999399379186

Gross, J. J., & John, O. P. (2003). Individual differences in two emotion regulation processes: Implications for affect, relationships, and well-being. *Journal of Personality and Social Psychology, 85,* 348–362. doi:10.1037/0022-3514.85.2.348

*Gurthrie, I. K., Eisenberg, N., Fabes, R. A., Murphy, B. C., Holmgren, R., Mazsk, P., & Suh, K. (1997). The relations of regulation and emotionality to children's situational empathy-related responding. *Motivation and Emotion, 21,* 87–108. doi:10.1023/A:1024478415317

Halberstadt, A. G., Denham, S. A., & Dunsmore, J. C. (2001). Affective social competence. *Social Development, 10,* 79–119. doi:10.1111/1467-9507.00150

*Haley, D. W., Handmaker, N. S., & Lowe, J. (2006). Infant stress reactivity and prenatal alcohol exposure. *Alcoholism: Clinical and Experimental Research, 30,* 2055–2064. doi:10.1111/j.1530-0277.2006.00251.x

Hall, J. A. (1984). *Nonverbal sex differences: Communication accuracy and expressive style*. Baltimore, MD: Johns Hopkins University Press.

Hall, J. A., & Halberstadt, A. G. (1986). Smiling and gazing. In J. S. Hyde & M. C. Linn (Eds.), *The psychology of gender: Advances through meta-analysis* (pp. 136–158). Baltimore, MD: John Hopkins University Press.

Hallion, L. S., & Ruscio, A. M. (2011). A meta-analysis of the effect of cognitive bias modification on anxiety and depression. *Psychological Bulletin, 137,* 940–958. doi:10.1037/a0024355

*Hanish, L. D., Eisenberg, N., Fabes, R. A., Spinrad, T. L., Ryan, P., & Schmidt, S. (2004). The expression and regulation of negative emotions: Risk factors for young children's peer victimization. *Development and Psychopathology, 16,* 335–353. doi:10.1017/S0954579404044542

Hankin, B. L., Abramson, L. Y., Moffitt, T. E., Silva, P. A., McGee, R., & Angell, K. (1998). Development of depression from preadolescence to young adulthood: Emerging gender differences in a 10-year longitudinal study. *Journal of Abnormal Psychology, 107,* 128–140. doi:10.1037/0021-843X.107.1.128

*Hayden, E. P., Klein, D. N., Durbin, C. E., & Olino, T. M. (2006). Positive emotionality at age 3 predicts cognitive styles in 7-year-old children. *Development and Psychopathology, 18,* 409–423. doi:10.1017/S0954579406060226

*Hayden, E. P., Klein, D. N., Sheikh, H. I., Olino, T. M., Dougherty, L. A., Dyson, M. W., . . . Singh, S. M. (2010). The serotonin transporter promoter polymorphism and childhood positive and negative emotionality. *Emotion, 10,* 696–702. doi:10.1037/a0019527

*He, J., Degnan, K. A., McDermott, J. M., Henderson, H. A., Hane, A. H., & Fox, N. A. (2010). Anger and approach motivation in infancy: Relations to early childhood inhibitory control and behavior problems. *Infancy, 15,* 246–269. doi:10.1111/j.1532-7078.2009.00017.x

*He, J., Xu, Q., & Degnan, K. A. (2011). Anger expression and persistence in young children. *Social Development, 11,* 343–353. doi:10.1111/j.1467-9507.2011.00622.x

Hedges, L. V., & Olkin, I. (1985). *Statistical methods for meta-analysis*. Orlando, FL: Academic Press.

Hedges, L. V., & Vevea, J. L. (1998). Fixed- and random-effects models in meta-analysis. *Psychological Methods, 3,* 486–504. doi:10.1037/1082-989X.3.4.486

*Hestenes, L. L., Kontos, S., & Bryan, Y. (1993). Children's emotional expression in child care centers varying in quality. *Early Childhood Research Quarterly, 8,* 295–307. doi:10.1016/S0885-2006(05)80069-9

Hill, J. P., & Lynch, M. E. (1983). The intensification of gender-related

role expectations during early adolescence. In J. Brooks-Gunn & A. C. Petersen (Eds.), *Girls at puberty: Biological and psychosocial perspectives* (pp. 201–228). New York, NY: Plenum Press.

Hochschild, A. (1983). *The managed heart: Commercialization of human feeling*. Berkeley: University of California Press.

*Holodynski, M. (2004). A miniaturization of expression in the development of emotional self-regulation. *Developmental Psychology, 40,* 16–28. doi:10.1037/0012-1649.40.1.16

*Hubbard, J. A. (2001). Emotion expression processes in children's peer interaction: The role of peer rejection, aggression and gender. *Child Development, 72,* 1426–1438. doi:10.1111/1467-8624.00357

*Hubbard, J. A., Smithmyer, C. M., Ramsden, S. R., Parker, E. H., Flanagan, K. D., Dearing, K. F., . . . Simons, R. F. (2002). Observational, physiological, and self-report measures of children's anger: Relations to reactive versus proactive aggression. *Child Development, 73,* 1101–1118. doi:10.1111/1467-8624.00460

Hunter, J. E., & Schmidt, F. L. (1990). *Methods of meta-analysis: Correcting error and bias in research findings*. Newbury Park, CA: Sage.

Hyde, J. S. (2005). The gender similarities hypothesis. *American Psychologist, 60,* 581–592. doi:10.1037/0003-066X.60.6.581

Izard, C. E. (1977). *Human emotions*. New York, NY: Plenum Press.

Izard, C. E. (1979). *The maximally discriminative facial movement coding system (Max)*. Newark: University of Delaware Information Technologies and University Media Services.

*Izard, C. E., & Abe, J. A. (2004). Developmental changes in facial expressions of emotions in the strange situation during the second year of life. *Emotion, 4,* 251–265. doi:10.1037/1528-3542.4.3.251

Izard, C. E., & Ackerman, B. P. (2000). Motivational, organizational and regulatory functions of discrete emotions. In M. Lewis & J. M. Haviland (Eds.), *Handbook of emotions* (2nd ed., pp. 253–264). New York, NY: Guilford Press.

Izard, C. E., & Bartlett, E. S. (1972). *Patterns of emotions: A new analysis of anxiety and depression*. Oxford, England: Academic Press.

*Izard, C. E., Fantauzzo, C. A., Castle, J. M., Haynes, O. M., Rayias, M. F., & Putnam, P. H. (1995). The ontogeny and significance of infants' facial expressions in the first 9 months of life. *Developmental Psychology, 31,* 997–1013. doi:10.1037/0012-1649.31.6.997

*Izard, C. E., King, K. A., Trentacosta, C. J., Morgan, J. K., Laurenceau, J. P., Krauthamer-Ewing, E. S., & Finlon, K. J. (2008). Accelerating the development of emotion competence in Head Start children: Effects on adaptive and maladaptive behavior. *Development and Psychopathology, 20,* 369–397. doi:10.1017/S0954579408000175

Izard, C. E., & Malatesta, C. Z. (1987). Perspectives on emotional development: I. Differential emotions theory of early emotional development. In J. D. Osofsky (Ed.), *Handbook of infant development* (2nd ed., pp. 494–554). Oxford, England: Wiley.

Izard, C. E., Woodburn, E. M., & Finlon, K. J. (2010). Extending emotion science to the study of discrete emotions in infants. *Emotion Review, 2,* 134–136. doi:10.1177/1754073909355003

*Jenkins, J. M. (2000). Marital conflict and children's emotions: The development of an anger organization. *Journal of Marriage and the Family, 62,* 723–736. doi:10.1111/j.1741-3737.2000.00723.x

*Jones, S., Eisenberg, N., Fabes, R. A., & MacKinnon, D. P. (2002). Parents' reactions to elementary school children's negative emotions: Relations to social and emotional functioning at school. *Merrill-Palmer Quarterly, 48,* 133–159. doi:10.1353/mpq.2002.0007

*Kawakami, K., Takai-Kawakami, K., Kawakami, T., Tomonaga, M., Suzuki, M., & Shimizu, Y. (2008). Roots of smile: A preterm neonates' study. *Infant Behavior & Development, 31,* 518–522. doi:10.1016/j.infbeh.2008.03.002

*Kawakami, K., Takai-Kawakami, K., Tomonaga, M., Suzuki, J., Kusaka, T., & Okai, T. (2006). Origins of smile and laughter: A preliminary study. *Early Human Development, 82,* 61–66. doi:10.1016/j.earlhumdev.2005.07.011

Keenan, K. (2000). Emotion dysregulation as a risk factor for child psychopathology, *Clinical Psychology: Science and Practice, 7,* 418–434. doi:10.1093/clipsy.7.4.418

Keenan, K., & Hipwell, A. E. (2005). Preadolescent clues to understanding depression in girls. *Clinical Child and Family Psychology Review, 8,* 89–105. doi:10.1007/s10567-005-4750-3

Keenan, K., & Shaw, D. (1997). Developmental and social influences on young girls' early problem behaviors. *Psychological Bulletin, 121,* 95–113. doi:10.1037/0033-2909.121.1.95

*Kieras, J. E., Tobin, R. M., Graziano, W. G., & Rothbart, M. K. (2005). You can't always get what you want: Effortful control and children's responses to undesirable gifts. *Psychological Science, 16,* 391–396. doi:10.1111/j.0956-7976.2005.01546.x

*Knafo, A., Zahn-Waxler, C., Hulle, C. V., Robinson, J. L., & Rhee, S. H. (2008). The developmental origins of a disposition toward empathy: Genetic and environmental contributions. *Emotion, 8,* 737–752. doi:10.1037/a0014179

*Kochanska, G. (2001). Emotional development in children with different attachment histories: The first three years. *Child Development, 72,* 474–490. doi:10.1111/1467-8624.00291

*Kochanska, G., & Coy, K. C. (2002). Child emotionality and maternal responsiveness as predictors of reunion behaviors in the strange situation: Links mediated and unmediated by separation distress. *Child Development, 73,* 228–240. doi:10.1111/1467-8624.00402

Kopp, C. B. (1982). Antecedents of self-regulation: A developmental perspective. *Developmental Psychology, 18,* 199–214. doi:10.1037/0012-1649.18.2.199

Kring, A. M., & Gordon, A. H. (1998). Sex differences in emotion: Expression, experience, and physiology. *Journal of Personality and Social Psychology, 74,* 686–703. doi:10.1037/0022-3514.74.3.686

Kuebli, J., & Fivush, R. (1992). Gender differences in parent–child conversations about past emotions. *Sex Roles, 27,* 683–698. doi:10.1007/BF02651097

LaFrance, M., Hecht, M. A., & Levy Paluck, E. L. (2003). The contingent smile: A meta-analysis of sex differences in smiling. *Psychological Bulletin, 129,* 305–334. doi:10.1037/0033-2909.129.2.305

Leaper, C., & Smith, T. E. (2004). A meta-analytic review of gender variations in children's language use: Talkativeness, affiliative speech, and assertive speech. *Developmental Psychology, 40,* 993–1027. doi:10.1037/0012-1649.40.6.993

Lewis, H. B. (1971). *Shame and guilt in neurosis*. New York, NY: International Universities Press.

Lewis, M. (2000). Self-conscious emotions: Embarrassment, pride, shame, and guilt. In M. Lewis & J. M. Haviland-Jones (Eds.), *Handbook of emotions* (pp. 623–636). New York, NY: Guilford Press.

*Lewis, M., Alessandri, S. M., & Sullivan, M. W. (1992). Differences in shame and pride as a function of children's gender and task difficulty. *Child Development, 63,* 630–638. doi:10.2307/1131351

*Lewis, M., & Ramsay, D. (2002). Cortisol response to embarrassment and shame. *Child Development, 73,* 1034–1045. doi:10.1111/1467-8624.00455

*Lewis, M., Stanger, C., Sullivan, M. W., & Barone, P. (1991). Changes in embarrassment as a function of age, sex, and situation. *British Journal of Developmental Psychology, 9,* 485–492. doi:10.1111/j.2044-835X.1991.tb00891.x

*Lewis, M., Sullivan, M. W., Stanger, C., & Weiss, M. (1989). Self-development and self-conscious emotions. *Child Development, 60,* 146–156. doi:10.2307/1131080

Liben, L. S., & Bigler, R. S. (2002). The developmental course of gender differentiation: Conceptualizing, measuring, and evaluating constructs and pathways. *Monographs of the Society for Research in Child Development, 67,* 1–147.

*Liew, J., Eisenberg, N., & Reiser, M. (2004). Preschoolers' effortful control and negative emotionality, immediate reactions to disappoint-

ment, and quality of social functioning. *Journal of Experimental Child Psychology, 89,* 298–319. doi:10.1016/j.jecp.2004.06.004

Lipsey, M. W., & Wilson, D. B. (2001). *Practical meta-analysis*. Thousand Oaks, CA: Sage.

*Litter, J., & Walker, E. (1993). Interpersonal behavior of preschizophrenic children: A study of home-movies. *Child Psychiatry and Human Development, 23,* 283–295. doi:10.1007/BF00707681

*Locke, R. L., Davidson, R. J., Kalin, N. H., & Goldsmith, H. H. (2009). Children's context inappropriate anger and salivary cortisol. *Developmental Psychology, 45,* 1284–1297. doi:10.1037/a0015975

*Losonczy-Marshall, M. E. (2008). Gender differences in latency and duration of emotional expression in 7- through 13-month-old infants. *Social Behavior and Personality, 36,* 267–274. doi:10.2224/sbp.2008.36.2.267

*Luby, J. L., Essex, M. J., Armstrong, J., Klein, M. H., Zahn-Waxler, C., Sullivan, J. P., & Goldsmith, H. H. (2009). Gender differences in emotional reactivity of depressed and at-risk preschoolers: Implications for gender specific manifestations of preschool depression. *Journal of Clinical Child & Adolescent Psychology, 38,* 525–537. doi:10.1080/15374410902976312

Maccoby, E. E. (1990). Gender and relationships: A developmental account. *American Psychologist, 45,* 513–520. doi:10.1037/0003-066X.45.4.513

Maccoby, E. E., & Jacklin, C. N. (1974). *The psychology of sex differences*. Stanford, CA: Stanford University Press.

*Malatesta, C. Z., Culver, C., Tesman, J. R., & Shepard, B. (1989). The development of emotion expression during the first two years of life. *Monographs of the Society for Research in Child Development, 54,* 1–104. doi:10.2307/1166153

*Malatesta, C. Z., Grigoryev, P., Lamb, C., Albin, M., & Culver, C. (1986). Emotion socialization and expressive development in preterm and full-term infants. *Child Development, 57,* 316–330. doi:10.2307/1130587

*Malatesta, C. Z., & Haviland, J. M. (1982). Learning display rules: The socialization of emotion expression in infancy. *Child Development, 53,* 991–1003. doi:10.2307/1129139

Malatesta, C. Z., & Wilson, A. (1988). Emotion cognition interaction in personality development: A discrete emotions functionalist analysis. *British Journal of Social Psychology, 27,* 91–112. doi:10.1111/j.2044-8309.1988.tb00807.x

*Malatesta-Magai, C., Leak, S., Tesman, J., Shepard, B., Culver, C., & Smaggia, B. (1994). Profiles of emotional development: Individual differences in facial and vocal expression of emotion during the second and third years of life. *International Journal of Behavioral Development, 17,* 239–269.

*Marcus, R. F., Roke, E. J., & Bruner, C. (1985). Verbal and nonverbal empathy and prediction of social behavior of young children. *Perceptual and Motor Skills, 60,* 299–309. doi:10.2466/pms.1985.60.1.299

Martin, C. L., & Halverson, C. F. (1981). A schematic processing model of sex typing and stereotyping in children. *Child Development, 52,* 1119–1134. doi:10.2307/1129498

*Martin, S. E., Clements, M. L., & Crnic, K. A. (2002). Maternal emotions during mother–toddler interaction: Parenting in affective context. *Parenting: Science and Practice, 2,* 105–126. doi:10.1207/S15327922PAR0202_02

*Matias, R., & Cohn, J. F. (1993). Are max-specified infant facial expressions during face-to-face interaction consistent with differential emotions theory? *Developmental Psychology, 29,* 524–531. doi:10.1037/0012-1649.29.3.524

McClure, E. B. (2000). A meta-analytic review of sex differences in facial expression processing and their development in infants, children, and adolescents. *Psychological Bulletin, 126,* 424–453. doi:10.1037/0033-2909.126.3.424

*McShane, K. E., & Hastings, P. D. (2009). The New Friends Vignettes: Measuring parental psychological control that confers risk for anxious adjustment in preschoolers. *International Journal of Behavioral Development, 33,* 481–495. doi:10.1177/0165025409103874

*Messinger, D. S., Fogel, A., & Dickson, D. L. (2001). All smiles are positive, but some smiles are more positive than others. *Developmental Psychology, 37,* 642–653. doi:10.1037/0012-1649.37.5.642

*Miller, A. L., Fine, S. E., Gouley, K. K., Seifer, R., Dickstein, S., & Shields, A. (2006). Showing and telling about emotions: Interrelations between facets of emotional competence and associations with classroom adjustment in Head Start preschoolers. *Cognition & Emotion, 20,* 1170–1192. doi:10.1080/02699930500405691

*Miller, A. L., McDonough, S. C., Rosenblum, K. L., & Sameroff, A. J. (2002). Emotion regulation in context: Situational effects on infant and caregiver behavior. *Infancy, 3,* 403–433. doi:10.1207/S15327078IN0304_01

*Miller, A. L., Seifer, R., Stroud, L., Sheinkopf, S. J., & Dickstein, S. (2006). [Observed emotion expressions in preschoolers]. Unpublished raw data.

*Mills, R. S. L., Arbeau, K. A., Lall, D. I. K., & De Jaeger, A. E. (2010). Parenting and child characteristics in the prediction of shame in early and middle childhood. *Merrill-Palmer Quarterly, 56,* 500–528. doi:10.1353/mpq.2010.0001

*Mills, R. S. L., Imm, G. P., Walling, B. R., & Weiler, H. A. (2008). Cortisol reactivity and regulation associated with shame responding in early childhood. *Developmental Psychology, 44,* 1369–1380. doi:10.1037/a0013150

*Mirabile, S. P., Scaramella, L. V., Sohr-Preston, S. L., & Robinson, S. D. (2009). Mothers' socialization of emotion regulation: The moderating role of children's negative emotional reactivity. *Child & Youth Care Forum, 38,* 19–37. doi:10.1007/s10566-008-9063-5

*Moore, G. A. (2009). Infants' and mothers' vagal reactivity in response to anger. *Journal of Child Psychology and Psychiatry, 50,* 1392–1400. doi:10.1111/j.1469-7610.2009.02171.x

*Moore, G. A., & Calkins, S. D. (2004). Infants' vagal regulation in the still-face paradigm is related to dyadic coordination of mother–infant interaction. *Developmental Psychology, 40,* 1068–1080. doi:10.1037/0012-1649.40.6.1068

*Moore, G. A., Cohn, J. F., & Campbell, S. B. (2001). Infant affective responses to mother's still face at 6 months differentially predict externalizing and internalizing behaviors at 18 months. *Developmental Psychology, 37,* 706–714. doi:10.1037/0012-1649.37.5.706

*Moore, G. A., Hill-Soderlund, A. L., Propper, C. B., Calkins, S. D., Mills-Koonce, W. R., & Cox, M. J. (2009). Mother–infant regulation in the face-to-face still-face paradigm is moderated by maternal sensitivity. *Child Development, 80,* 209–223. doi:0009-3920/2009/8001-0017

*Morris, A. S., Kithakye, M., Silk, J. S., Steinberg, L., & Terranova, A. M. (2010). Concurrent and longitudinal links between children's externalizing behavior in school and observed anger regulation in the mother–child dyad. *Journal of Psychopathology and Behavioral Assessment, 32,* 48–56. doi doi:10.1007/s10862-009-9166-9

*Mumme, D. L., Fernald, A., & Herrera, C. (1996). Infants' responses to facial and vocal emotional signals in a social referencing paradigm. *Child Development, 67,* 3219–3237. doi:10.2307/1131775

Nolen-Hoeksema, S., Larson, J., & Grayson, C. (1999). Explaining the gender difference in depressive symptoms. *Journal of Personality and Social Psychology, 77,* 1061–1072. doi:10.1037/0022-3514.77.5.1061

Ollendick, T. H., & Yule, W. (1990). Depression in British and American children and its relation to anxiety and fear. *Journal of Consulting and Clinical Psychology, 58,* 126–129. doi:10.1037/0022-006X.58.1.126

Orwin, R. G. (1983). A fail-safe *N* for effect size in meta-analysis. *Journal of Educational Statistics, 8,* 157–159. doi:10.2307/1164923

Oster, H. (1978). Facial expression and affect development. In M. Lewis & L. Rosenblum (Eds.), *The development of affect* (pp. 43–75). New York, NY: Plenum Press.

*Otta, E. (1998). Sex differences over age groups in self-posed smiling in photographs. *Psychological Reports, 83,* 907–913. doi:10.2466/PR0.83.7.907-913

*Oveis, C., Keltner, D., Stamper, J. L., Gruber, J., & Boyce, W. T. (2009). Smile intensity and warm touch as thin slices of child and family affective style. *Emotion, 9,* 544–548. doi:10.1037/a0016300

*Parlade, M. V., Messinger, D. S., Delgado, C. E. F., Kaiser, M. Y., Van Hecke, A. V., & Mundyd, P. C. (2009). Anticipatory smiling: Linking early affective communication and social outcome. *Infant Behavior & Development, 32,* 33–43. doi:10.1016/j.infbeh.2008.09.007

*Pauli-Pott, U., & Mertesacker, B. (2009). Affect expression in mother–infant interaction and subsequent attachment development. *Infant Behavior & Development, 32,* 208–215. doi:10.1016/j.infbeh.2008.12.010

*Quas, J. A., Hong, M., Alkon, A., & Boyce, W. T. (2000). Dissociations between psychobiologic reactivity and emotional expression in children. *Developmental Psychobiology, 37,* 153–175. doi:10.1002/1098-2302(200011)37:3<153::AID-DEV4>3.0.CO;2-Y

*Radke-Yarrow, M., Nottelmann, E., Belmont, B., & Welsh, J. D. (1993). Affective interactions of depressed and nondepressed mothers and their children. *Journal of Abnormal Child Psychology, 21,* 683–695. doi:10.1007/BF00916450

Reimer, M. S. (1996). "Sinking into the ground": The development and consequences of shame in adolescence. *Developmental Review, 16,* 321–363. doi:10.1006/drev.1996.0015

*Reissland, N., & Shepard, J. (2002). Gaze direction and maternal pitch in surprise-eliciting situations. *Infant Behavior & Development, 24,* 408–417. doi:10.1016/S0163-6383(02)00085-1

Revelle, W., & Scherer, K. R. (2009). Personality and emotion. In D. Sander & K. R. Scherer (Eds.), *Oxford companion to emotion and the affective sciences* (pp. 303–305). Oxford, England: Oxford University Press.

Richardson, M., Abraham, C., & Bond, R. (2012). Psychological correlates of university students' academic performance: A systematic review and meta-analysis. *Psychological Bulletin, 138,* 353–387. doi:10.1037/a0026838

*Rockhill, C. M., Fan, M., Katon, W. J., McCauley, E., Crick, N. R., & Pleck, J. H. (2007). Friendship interactions in children with and without depressive symptoms: Observation of emotion during game-playing interactions and post-game evaluations. *Journal of Abnormal Child Psychology, 35,* 429–441. doi:10.1007/s10802-007-9101-z

Rose, A. J., & Rudolph, K. D. (2006). A review of sex differences in peer relationship processes: Potential trade-offs for the emotional and behavioral development of girls and boys. *Psychological Bulletin, 132,* 98–131. doi:10.1037/0033-2909.132.1.98

Rosenthal, R. (1979). The "file drawer problem" and tolerance for null results. *Psychological Bulletin, 86,* 638–641. doi:10.1037/0033-2909.86.3.638

Rosenthal, R., & DiMatteo, M. R. (2001). Meta-analysis: Recent developments in quantitative methods for literature reviews. *Annual Review of Psychology, 52,* 59–82. doi:10.1146/annurev.psych.52.1.59

*Ross, C. N., & Karraker, K. H. (1999). Effects of fatigue on infant emotional reactivity and regulation. *Infant Mental Health Journal, 20,* 410–428. doi:10.1002/(SICI)1097-0355(199924)20:4<410::AID-IMHJ4>3.0.CO;2-4

Rothstein, H. R. (2008). Publication bias as a threat to the validity of meta-analytic results. *Journal of Experimental Criminology, 4,* 61–81. doi:10.1007/s11292-007-9046-9

Rubin, R. M., & Hubbard, J. A. (2003). Children's verbalizations and cheating behavior during game playing: The role of sociometric status, aggression, and gender. *Journal of Abnormal Child Psychology, 31,* 65–78. doi:10.1023/A:1021773316251

*Rudolph, K. D., Flynn, M., & Gordon, W. T. (2009). Relational victimization predicts children's social-cognitive and self-regulatory responses in challenging peer context. *Developmental Psychology, 45,* 1444–1454. doi:10.1037/a0014858

*Saarni, C. (1984). An observational study of children's attempts to monitor their expressive behavior. *Child Development, 55,* 1504–1513. doi:10.2307/1130020

Saarni, C. (1999). *The development of emotional competence*. New York, NY: Guilford Press.

*Safyer, A. W., & Hauser, S. T. (1994). A microanalytic method for exploring adolescent emotional expression. *Journal of Adolescent Research, 9,* 50–66. doi:10.1177/074355489491005

*Sallquist, J., Eisenberg, N., Spinrad, T. L., Eggum, N. D., & Gaertner, B. M. (2009). Assessment of preschoolers' positive empathy: Concurrent and longitudinal relations with positive emotion, social competence, and sympathy. *Journal of Positive Psychology, 4,* 223–233. doi:10.1080/17439760902819444

*Sallquist, J., Eisenberg, N., Spinrad, T. L., Gaertner, B. M., Eggum, N. D., & Zhou, N. (2010). Mothers' and children's positive emotions: Relations and trajectories across four years. *Social Development, 19,* 799–821. doi:10.1111/j.1467-9507.2009.00565.x

*Sarra, S., & Otta, E. (2001). Different types of smiles and laughter in preschool children. *Psychological Reports, 89,* 547–558. doi:10.2466/PR0.89.7.547-558

*Sheeber, L. B., Allen, N. B., Leve, C., Davis, B., Shortt, J. W., & Katz, L. F. (2009). Dynamics of affective experience and behavior in depressed adolescents. *Journal of Child Psychology and Psychiatry, 50,* 1419–1427. doi:10.1111/j.1469-7610.2009.02148.x

*Sheeber, L. B., Davis, B., Leve, C., Hops, H., & Tildesley, E. (2007). [Adolescent affect expressions in parent–adolescent problem-solving discussions]. Unpublished raw data.

*Sheeber, L., Hops, H., Alpert, A., Davis, B., & Andrews, J. (1997). Family support and conflict: Prospect relations to adolescent depression. *Journal of Abnormal Child Psychology, 25,* 333–344. doi:10.1023/A:1025768504415

*Sheeber, L., & Sorensen, E. (1998). Family relationships of depressed adolescents: A multimethod assessment. *Journal of Clinical Child Psychology, 27,* 268–277. doi:10.1207/s15374424jccp2703_4

Shields, S. A. (2002). *Speaking from the heart: Gender and the social meaning of emotion*. Cambridge, England: Cambridge University Press.

*Snyder, J., Stoolmiller, M., Wilson, M., & Yamamoto, M. (2003). Child anger regulation, parental responses to children's anger displays, and early child antisocial behavior. *Social Development, 12,* 335–360. doi:10.1111/1467-9507.00237

*Soussignan, R., & Schaal, B. (1996). Children's facial responsiveness to odors: Influences of hedonic valence of odor, gender, age, and social presence. *Developmental Psychology, 32,* 367–379. doi:10.1037/0012-1649.32.2.367

Spear, L. (2007). The developing brain and adolescent-typical behavior patterns. In D. Romer & E. F. Walker (Eds.), *Adolescent psychopathology and the developing brain: Integrating brain and prevention science* (pp. 9–30). New York, NY: Oxford University Press.

*Spinrad, T. L., Eisenberg, N., Granger, D. A., Eggum, N. D., Sallquist, J., Haugen, R. G., . . . Hofer, C. (2009). Individual differences in preschoolers' salivary cortisol and alpha-amylase reactivity: Relations to temperament and maladjustment. *Hormones and Behavior, 56,* 133–139. doi:10.1016/j.yhbeh.2009.03.020

*Stifter, C. A., & Spinrad, T. L. (2002). The effect of excessive crying on the development of emotional regulation. *Infancy, 3,* 133–152. doi:10.1207/S15327078IN0302_2

*Sullivan, C., Nuselovici, J. N., & Hastings, P. (2012). *Plays well with others: Maternal and paternal play with preschoolers predicts social adjustment at preschool*. Manuscript submitted for publication.

*Sullivan, M. W., & Lewis, M. (2003a). Contextual determinants of anger and other negative expressions in young infants. *Developmental Psychology, 39,* 693–705. doi:10.1037/0012-1649.39.4.693

Sullivan, M. W., & Lewis, M. (2003b). Emotional expressions of young infants and children: A practitioner's primer. *Infants and Young Children, 16,* 120–142. doi:10.1097/00001163-200304000-00005

Tangney, J. P. (1993). Shame and guilt. In C. G. Costello (Ed.), *Symptoms of depression* (pp. 161–180). Oxford, England: Wiley.

Tangney, J. P., Wagner, P., & Gramzow, R. (1992). Proneness to shame, proneness to guilt, and psychopathology. *Journal of Abnormal Psychology, 101,* 469–478. doi:10.1037/0021-843X.101.3.469

Thomas, J. J., Vartanian, L. R., & Brownell, K. D. (2009). The relationship between eating disorder not otherwise specified (EDNOS) and officially recognized eating disorders: Meta-analysis and implications for *DSM*. *Psychological Bulletin, 135,* 407–433. doi:10.1037/a0015326

Tompkins, S. S. (1962). *Affect, imagery, consciousness: Vol. I. The positive affects*. New York, NY: Springer.

Tompkins, S. S. (1963). *Affect, imagery, consciousness: Vol. II. The negative affects*. New York, NY: Springer.

*Trommsdorff, G., Friedlmeier, W., & Mayer, B. (2007). Sympathy, distress, and prosocial behavior of preschool children in four cultures. *International Journal of Behavioral Development, 31,* 284–293. doi:10.1177/0165025407076441

*Underwood, M. K., Hurley, J. C., Johanson, C. A., & Mosley, J. E. (1999). An experimental, observational, investigation, of children's responses to peer provocation: Developmental and gender differences in middle childhood. *Child Development, 70,* 1428–1446. doi:10.1111/1467-8624.00104

*Vaish, A., Carpenter, M., & Tomasello, M. (2009). Sympathy through affective perspective taking and its relation to prosocial behavior in toddlers. *Developmental Psychology, 45,* 534–543. doi:10.1037/a0014322

*Valiente, C., Eisenberg, N., Shepard, S. A., Fabes, R. A., Cumberland, A. J., Losoya, S. A., & Spinrad, T. L. (2004). The relations of mothers' negative expressivity to children's experience and expression of negative emotion. *Journal of Applied Developmental Psychology, 25,* 215–235. doi:10.1016/j.appdev.2004.02.006

*Van Beek, Y., Van Dolderen, M., & Demon Dubas, J. J. S. (2006). Gender-specific development of nonverbal behaviours and mild depression in adolescence. *Journal of Child Psychology and Psychiatry, 47,* 1272–1283. doi:10.1111/j.1469-7610.2006.01663.x

*Venezia, M., Messinger, D. S., Thorp, D., & Mundy, P. (2004). The development of anticipatory smiling. *Infancy, 6,* 397–406. doi:10.1207/s15327078in0603_5

*Volbrecht, M. M., Lemery-Chalfant, K., Aksan, N., Zahn-Waxler, C., & Goldsmith, H. H. (2007). Examining the familial link between positive affect and empathy development in the second year. *Journal of Genetic Psychology, 168,* 105–129. doi:10.3200/GNTP.168.2.105-130

*Walker, E. F., Grimes, K. E., Davis, D. M., & Smith, A. J. (1993). Childhood precursors of schizophrenia facial expressions of emotion. *American Journal of Psychiatry, 150,* 1654–1660.

*Weinberg, M. K., Beeghly, M., Olson, K. L., & Tronick, E. (2008). Effects of maternal depression and panic disorder on mother–infant interactive behavior in the face-to-face still-face paradigm. *Infant Mental Health Journal, 29,* 472–491. doi:10.1002/imhj.20193

*Weinberg, M. K., Olson, K. L., Beeghly, M., & Tronick, E. Z. (2006). Making up is hard to do, especially for mothers with high levels of depressive symptoms and their infant sons. *Journal of Child Psychology and Psychiatry, 47,* 670–683. doi:10.1111/j.1469-7610.2005.01545.x

*Weinberg, M. K., Tronick, E. Z., Cohn, J. F., & Olson, K. L. (1999). Gender differences in emotional expressivity and self-regulation during early infancy. *Developmental Psychology, 35,* 175–188. doi:10.1037/0012-1649.35.1.175

West, C., & Zimmerman, D. H. (1987). Doing gender. *Gender & Society, 1,* 125–151. doi:10.1177/0891243287000100202

Westphal, M., Seivert, N. H., & Bonanno, G. A. (2010). Expressive flexibility. *Emotion, 10,* 92–100. doi:10.1037/a0018420

*Whittle, S., Yap, M., Yücel, M., Fornito, A., Simmons, J. G., Barrett, A., . . . Allen, N. B. (2008). Prefrontal and amygdala volumes are related to adolescents' affective behaviors during parent–adolescent interactions. *Proceedings of the National Academy of Sciences, USA, 105,* 3652–3657. doi:10.1073/pnas.0709815105

Wills, T. A., DuHamel, K., & Vaccaro, D. (1995). Activity and mood temperament as predictors of adolescent substance use: Test of a self-regulation mediational model. *Journal of Personality and Social Psychology, 68,* 901–916. doi:10.1037/0022-3514.68.5.901

Zahn-Waxler, C. (2001). The development of empathy, guilt, and internalization of distress: Implications for gender differences in internalizing and externalizing problems. In R. Davidson (Ed.), *Anxiety, depression, and emotion: Wisconsin Symposium on Emotion, Vol. I* (pp. 222–265). New York, NY: Oxford Press.

Zahn-Waxler, C., Cole, P. M., & Barrett, K. C. (1991). Guilt and empathy: Sex differences and implications for the development of depression. In J. Garber & K. A. Dodge (Eds.), *The development of emotion regulation and dysregulation* (pp. 243–272). Cambridge, England: Cambridge University Press.

*Zahn-Waxler, C., Cole, P. M., Richardson, D. T., Friedman, R. J., Michel, M. K., & Belouad, F. (1994). Social problem solving in disruptive preschool children: Reactions to hypothetical situations of conflict and distress. *Merrill-Palmer Quarterly, 40,* 98–119.

*Zahn-Waxler, C., Cole, P. M., Welsh, J. D., & Fox, N. A. (1995). Psychophysiological correlates of empathy and prosocial behaviors in preschool children with behavior problems. *Development and Psychopathology, 7,* 27–48. doi:10.1017/S0954579400006325

*Zahn-Waxler, C., Park, J., Usher, B., Belouad, F., Cole, P., & Gruber, R. (2008). Young children's representations of conflict and distress: A longitudinal study of boys and girls with disruptive behavior problems. *Development and Psychopathology, 20,* 99–119. doi:10.1017/S0954579408000059

Zahn-Waxler, C., & Robinson, J. (1995). Empathy and guilt: Early origins of feelings of responsibility. In J. P. Tangney & K. W. Fischer (Eds.), *Self-conscious emotions: The psychology of shame, guilt, embarrassment, and pride* (pp. 143–173). New York, NY: Guilford Press.

*Zahn-Waxler, C., Robinson, J. L., & Emde, R. N. (1992). The development of empathy in twins. *Developmental Psychology, 28,* 1038–1047. doi:10.1037/0012-1649.28.6.1038

*Zahn-Waxler, C., Schmitz, S., Fulker, D., Robinson, J., & Emde, R. (1996). Behavior problems in 5-year-old monozygotic and dizygotic twins: Genetic and environmental influences, patterns of regulation, and internalization of control. *Development and Psychopathology, 8,* 103–122. doi:10.1017/S0954579400006994

Zahn-Waxler, C., Shirtcliff, E. A., & Marceau, K. (2008). Disorders of childhood and adolescence: Gender and psychopathology. *Annual Review of Clinical Psychology, 4,* 11.1–11.29. doi:10.1146/annurev.clinpsy.3.022806.091358

Zeman, J., & Garber, J. (1996). Display rules for anger, sadness, and pain: It depends on who is watching. *Child Development, 67,* 957–973. doi:10.2307/1131873

*Zimmermann, P., Maier, M. A., Winter, M., & Grossmann, K. (2001). Attachment and adolescents' emotion regulation during a joint problem-solving task with a friend. *International Journal of Behavioral Development, 25,* 331–343. doi:10.1080/01650250143000157

*Zimmermann, P., Mohr, C., & Spangler, G. (2009). Genetic and attachment influences on adolescents' regulation of autonomy and aggressiveness. *Journal of Child Psychology and Psychiatry, 50,* 1339–1347. doi:10.1111/j.1469-7610.2009.02158.x

Received March 18, 2011
Revision received August 8, 2012
Accepted September 19, 2012 ■