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Attachment and Emotion in Middle Childhood and Adolescence

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Abstract

The purpose of this review is to summarize and evaluate the current state of the literature with regards to attachment and its relationship to emotion in middle childhood and adolescence. This is a relatively new topic of interest and one which is well grounded in theory. The attachment relationship between parents and children is a key mechanism by which children and adolescents learn emotion skills, including emotion understanding, coping strategies, and how to manage different affective experiences. The review is organized by emotion domain, including emotion understanding, affective experiences, physiological indicators of arousal and emotion, and processes for the regulation of emotion. We included studies which presented data for children and adolescents ages 6-18, and included measures of emotion and parent-child attachment. Although some areas have been investigated more than others, we found that secure attachment was related to more adaptive functioning in each of the emotion domains. Finally, we review future directions to be explored and address gaps in the current literature.

Keywords: attachment, emotion, emotion understanding, affective experiences, physiological indicators, regulation of emotion, middle childhood, adolescence

Attachment and Emotion in Middle Childhood and Adolescence

Attachment theory and research suggest that children's relationships with their caregivers are the building blocks upon which many aspects of their lives develop (Bowlby, 1969/1982, 1979). Parents and other caregivers can act as a secure base and a safe haven to their child (Ainsworth, 1989; Waters & Cummings, 2000), providing a place of safety from which to learn about and explore the world (secure base) and a place to return when the struggles of life inevitably arise (safe haven; Main, 1996). In the context of the attachment relationship, it is thought that children learn about how to cope with situations that arise from this exploration and the

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emotions that go along with them (Cassidy, 1994). Attachment relationships can therefore be understood as regulatory systems, in which parents ideally assist their children to maintain optimal levels of regulation with regards to their emotions. Thus, attachment and emotion regulation are inextricably linked. A greater capacity to manage and regulate emotions is also thought to be one reason why more securely attached children display more competent behavior with peers and are less prone to experiencing internalizing and externalizing behavior problems (Brumariu & Kerns, 2010; Contreras & Kerns, 2000; Fearon, Bakersman-Kranenburg, van Ijzendoorn, Lapsley, & Roisman, 2010).

Beginning in middle childhood and continuing into adolescence, attachments evolve in response to new developmental demands and challenges, for example an expanding social world due to school (Kerns & Brumariu, in press) and greater autonomy and independence in adolescence (Allen, 2008). A growing ability and need to self-regulate may also impact the attachment relationship such that children may alter the amount and type of assistance they require or request from attachment figures (Marvin & Britner, 1999). Kerns and Brumariu (in press) note, however, that there is not a decreased *need* for an attachment figure, but instead a shift from the importance of proximity to the availability of a caregiver (Bowlby, 1988). Thus the regulation of emotions, or responding with the appropriate emotion and emotional intensity in a given context (Coifman & Bonnano, 2009), is particularly key as children's social worlds and independence grow (Allen, 2008; Kerns & Brumariu, in press).

The goal of this paper is to review what we currently know regarding how parent-child attachment is related to children's emotional competencies. Cassidy (1994) provided an excellent review of work on attachment and emotion regulation, but to our knowledge there has not been a comprehensive review of the literature recently. In addition, at the time of Cassidy's review almost all work on attachment focused on infancy or early childhood. A growing area of attachment research is work investigating the role of attachment in middle childhood and adolescence. The present review focuses exclusively on attachment relationships in middle childhood and adolescence, as this is a time when emotion regulation skills are particularly critical given that children need to be able to regulate emotions in contexts where parents are not available (e.g., school, peers, sports teams). We begin with a brief, selective review of evidence that attachment is related to parental emotion socialization, which lays the groundwork for understanding why attachment and emotion are related. We then review empirical studies of attachment and emotion for children in middle childhood and adolescence, which is the crux of our paper. Finally, we discuss ways in which emotion processes may be an important link between attachment, well-being, and peer relationships, and discuss future directions for research.

Why are Attachment and Child Emotion Related?

Attachment relationships are thought to form the context for emotion socialization, or the manner in which children learn about and begin to understand emotional experiences and coping (Cassidy, 1994; Contreras & Kerns, 2000). The ways in which caregivers and parents respond to children not only influences the type of attachment relationship they will have, but also how children will learn to regulate their emotions. For example, a child who has experienced rejection from a parent is likely to develop an insecure, avoidant attachment, and also to regulate their emotions in such a way as to minimize future rejection (e.g., emotion suppression; Cassidy, 1994). Children likely also learn how to communicate their emotions based on how their parents communicate and encourage them to do as well (Oppenheim & Waters, 1995). It follows then, that children with secure and insecure attachments will display different emotional competencies.

Research on attachment and parenting supports these tenets of attachment theory in showing that the ways parents discuss emotions and emotional situations are related to parent-child attachment (i.e. Laible & Thompson, 1998, 2000). For example, mothers of more securely attached children are more accepting and less psychologically controlling when discussing conflicts with their child (Kerns, Brumariu, & Seibert, 2011). In addition, secure parent-child dyads are more likely to discuss emotional topics openly and expressively (Dubois-Comtois, Cyr, & Moss, 2011) and to use strategies such as emotion coaching when discussing more difficult emotions such as anger (Chen, Lin, & Li, 2012). By contrast, insecure parent-child dyads are more likely to engage in emotion dismissing conversational strategies, experience higher levels of dysfunctional anger, and avoid solving emotional problems (Kobak, Cole, Ferenz-Gillies, & Fleming, 1993). The degree to which parents and children "match" each other emotionally (i.e., are in sync) during conversations depends on the attachment relationship, with secure dyads more likely to be emotionally in sync with one another than insecure dyads (Oppenheim, Koren-Karie, & Sagi-Schwartz, 2007).

Thus, research has demonstrated that attachment is related to parent responses to children's emotions and to children's display and regulation of emotion when they are interacting with their parents, which likely reflects the operation of the attachment system. Secure attachment is related not only to global measures of parenting (e.g., acceptance), but also to more specific emotion socialization practices. It is likely that these experiences are internalized such that children develop patterns of affect regulation that are manifested across other contexts, even in the absence of the parent.

Literature Review: Attachment and Emotion

The purpose of this review is to summarize what we know about the relations between attachment and emotion domains and competencies in middle childhood and adolescence. We conducted an extensive search using Psych Info, and initially identified 50 studies that we screened for inclusion in this review. Articles were included in the review if the children were between the ages of 6 and 18 years (although one study followed participants from the age of 14 to 21 years), and the study reported relations between attachment and emotion. Some articles assessed children at multiple ages (for example 4 years and 7 years), so to be as inclusive as possible we reported the results for the relevant age sample. We did exclude studies that included adopted, foster, or abused children as well as articles that reported a measure of attachment that combined parents and peers (the latter due to our interest in parent-child attachment).

We organize our discussion of the literature to capture distinct emotion domains that have been studied thus far: Emotion understanding, affective experiences, physiological indicators of arousal and emotion, and processes for the regulation of emotion (see Table 1 for a comprehensive overview of studies).

Emotion Understanding

Emotion understanding includes knowledge about emotion language and how to interpret verbal and nonverbal emotion communication as well as awareness of one's emotions. Attachment, emotion recognition, and knowledge of coping strategies were assessed by Colle and Del Giudice (2011) with 7 year-olds. Attachment was measured using the *Manchester Child Attachment Story Task* (MCAST; Goldwyn, Stanley, Smith, & Green, 2000; Green, Stanley, Smith, & Goldwyn, 2000). The emotion recognition task assessed emotion discrimination and emotion labeling. Knowledge of emotion regulation strategies was assessed by asking children what another person (in a picture) was feeling and what that person could do to feel differently. Strategies were classified as either engagement or diversion (i.e., attempting to refocus attention or behavior away from the emotional event), and cognitive or behavioral. Insecurely attached children (anxious and avoidant attachments) were more likely to offer behavioral rather than cognitive strategies, although behavioral diversion strategies were equally likely to be reported by secure and disorganized children. Additionally, disorganized children were less able to discriminate between emotions, although no difference in labeling was found. Overall, the results indicate that securely attached children likely have more knowledge of constructive coping behaviors, and disorganized children are less likely to be able to discriminate between and label emotions.

Steele, Steele, and Croft (2008) studied children's ability to discern different emotion faces at 6 years of age. Children were seen in the *Strange Situation*

Table 1. Summary of Reviewed Studies

<i>Authors</i>	<i>N of Study</i>	<i>Sample Age (years)</i>	<i>Attachment Measure</i>	<i>Emotion Construct Assessed</i>
Abraham & Kerns (2013)	106	8-12	Security Scale	Coping strategies Positive/negative affect
Bauminger & Kimhi-Kind (2008)	100	10-12.9	Security Scale	Coping strategies
Becker-Stoll et al. (2001)	43	16	AAI	Facial emotion expressions Checklist of ER
Borelli et al. (2010)	97	8-12	CAI	Cortisol Fear potentiated startle Positive/negative affect
Brenning & Braet (2013)	197	11-16	ECR-R	Coping ability (anger & sadness)
Brumariu et al. (2012)	87	10-12	Story Stems	Emotion recognition Coping strategies
Brumariu & Kerns (2013)	1,097	3 rd grade	Strange Situation (15 & 36 months)	Managing intense emotions
Colle & Del Giudice (2011)	122	m=7.2	MCAST	Emotion recognition Coping strategies knowledge
Contreras et al. (2000)	62	5 th grade	Security Scale ASAT	Coping Strategies
Diamond et al. (2011)	103	14	AAS	Positive/negative affect Empathic sensitivity
Gaylord-Harden et al. (2009)	393	10-16	IPPA	Coping strategies
Gilissen et al. (2008a)	170	7	ASCT	Skin conductance Heart rate variability
Gilissen et al. (2008b)	92	7	ASCT	Skin conductance DNA implicated in stress
Harold et al. (2004)	181	11-12	Security Scale	Regulating specific emotions (anger, sadness, fear)
Kerns et al. (2007)	52	9-11	Security Scale Story Stems Mother secure base	Daily mood Coping strategies

Table 1. – *Continued*

<i>Authors</i>	<i>N of Study</i>	<i>Sample Age (years)</i>	<i>Attachment Measure</i>	<i>Emotion Construct Assessed</i>
Kim & Page (2013)	74	m=9.11	Security Scale	Checklist of ER
Kim et al. (2014)	228	12-17	Security Scale	Positive/negative emotions
Kobak et al. (2009)	224	13, 15, 17	AAI	Anger/disgust/contempt
Kullik & Petermann (2013)	248	12-17	IPPA	Regulation of Emo. Q
Liu & Huang (2012)	613	m=13.2	RRQ-A	Coping, negative emotion
Schwarz et al. (2012)	180	m=10.61	Security Scale	Coping strategies (anger)
Seiffge-Krenke & Beyers (2005)	112	14, 15, 16, 17, 21	AAI	Coping strategies
Spangler et al. (1999)	35	16	AAI	Emotion valence/arousal Frowns and smiles
Spangler & Zimmermann (2014)	96	12 mos, 12	Strange Situation	Facial emotion expression Self-reported emotions Adrenocortical stress
Steele et al. (2008)	112	12 mos, 6	Strange Situation	Emotion recognition
Zimmermann (1999)	43	16	AAI	Adaptive emotion regulation composite related to social rejection scenarios
Zimmermann et al. (2001)	41	16-17	AAI	Emotional self-perception Facial emotion expression

Note: ECR-R=Experiences in Close Relationships-Revised; MCAST=Manchester Child Attachment Story Task; ASAT=Automated Separation Anxiety Task; AAS=Adolescent Attachment Scale; IPPA=Inventory of Parent and Peer Attachment; ASCT=Attachment Story Completion Task; FAI=Family Attachment Interview; RRQ-A=Revised Relationship Questionnaire-Adolescent.

procedure (Ainsworth, Blehar, Waters, & Wall, 1978) at 12 months. Emotion face line drawings were used to assess emotion discrimination of 6 discrete emotions (fear, anger, sadness, disgust, happiness, and surprise), 2 complex emotions (mischief and disappointment) and a neutral face at age six. Mother-child security was related to children's ability to accurately judge the facial emotions of anger, happiness and sadness at age six. Six year olds who were insecurely attached had more difficulty discerning faces, although disorganized children were not different from secure children in their ability to discern emotion faces.

In a study of 10-12 year old children, Brumariu, Kerns, and Seibert (2012) related attachment (assessed with a story stem interview; Kerns et al., 2011) to questionnaire measures of monitoring and awareness of emotions. They found that children who were more securely attached reported greater awareness and understanding of their emotional states.

The findings related to emotion understanding suggest that securely attached children have an advantage over insecurely attached children in their ability to recognize and label emotions, to discriminate among emotion faces, and in their knowledge of coping strategies. To date, few studies have examined attachment and emotion understanding, or shown clear differences in relation to specific insecure attachment patterns, and thus this is an important area for further research.

Affective Experiences: Emotions Experienced and Expressed

The domain of affective experiences primarily refers to the valence of emotions. There were three main types of studies in this domain, including negative and positive daily mood, affective experiences and expressed affect with parents, and studies of emotion during a stressful task.

Four studies have examined how attachment is related to the everyday experience of emotion. In a sample of 9 to 11 year-olds, Kerns, Abraham, Schlegelmilch, and Morgan (2007) collected ratings of daily mood, and found that children who were more securely attached were more likely to report positive daily mood. Disorganized and ambivalently attached children had significantly more negative daily mood ratings than did children classified as secure or avoidant, who were not different from each other. Another study (Abraham & Kerns, 2013) examined attachment in girls ages 8-12 years and experiences of positive and negative emotions during a two week period. Attachment was measured using the Security Scale (Kerns, Aspelmeier, Gentzlet, & Contreras, 2001). More securely attached girls reported experiencing more positive and less negative emotion. Positive and negative emotions and their relationship to attachment was examined by Kim, Sharp, and Carbone (2014) in a sample of adolescents ages 12-17 with Borderline Personality Disorder. They assessed attachment using the *Security Scale* (Kerns et al., 2001), and found that attachment security was related to reports of higher positive affect but not negative affect. Kobak, Zajac, and Smith (2009)

assessed the relationship between attachment, using the AAI (George, Kaplan, & Main, 1996) and hostile emotions (a combination of disgust, anger and contempt). Adolescents were assessed at ages 13, 15, and 17 via interviews and questionnaires, and the sample was primarily from low socioeconomic, African American families. Preoccupied adolescents showed consistently higher levels of hostile emotions across all three time points.

Several studies focused on how attachment is related to adolescents' affective experiences when interacting with parents. In a sample of Taiwanese adolescents (Liu & Huang, 2012), attachment was measured with the *Revised Relationship Questionnaire-Adolescents* (RRQ-A; Lin, 2002), and negative affect was measured using six affect terms to describe emotional reactions to a mother-child conflict situation in the past. Negative affect ratings were related to preoccupied, dismissive and fearful attachment, but not to secure attachment. In another study, embarrassment and dysregulated affect (i.e. tearfulness or dramatic statements) were examined in relation to attachment security in a sample of girls ($M=13.5$ years) during a conversation with their mothers about reciprocal affection (Hershenberg et al., 2011). The conversations were coded for affect, and attachment was assessed with the *Family Attachment Interview* (Bartholomew, 1998; Bartholomew & Horowitz, 1991). Girls who were less securely attached were more likely to exhibit dysregulated emotions during the conversation as well as higher levels of embarrassment. Becker-Stoll, Delius, and Scheitenberger (2001) studied facial expressions in 16-year-old adolescents while they participated in a task which required mothers and adolescents to discuss topics of contention (i.e. dating, money). They used the AAI (George et al., 1996) to assess attachment and coded affect expressions. They found that adolescents who had higher attachment security were more likely to express joy and to smile more during conversations with their mothers, adolescents who were dismissive were more likely to express sadness, and preoccupied adolescents were more likely to express anger. Harold, Shelton, Goeke-Morey, and Cummings (2004) examined attachment and affective reactions in 11-12 year old children. They measured attachment with the *Security Scale* (Kerns et al., 2001). To assess emotion, children watched a conflict scene between adults, and then rated their feelings about the scene. More securely attached children reported they would feel more angry, sad and scared than did insecure children. Adolescents' (14 years old) positive and negative affect during a conflict discussion with their mothers were examined by Diamond, Fagundes, and Butterworth (2011). They assessed anxious and avoidant attachment, measured with the *Adolescent Attachment Scale* (Miller & Hoicowitz, 2004). Participants rated their own and their mothers' affect during a conflict discussion task with their parent. No results were found for anxiously attached adolescents. Avoidantly attached adolescents however, reported experiencing lower positive affect and higher negative affect during the task, and they also believed their mothers experienced less positive and more negative affect during the conflict discussion.

A final set of studies examined the affective responses of securely and insecurely attached children when presented with a challenging task. Borelli et al. (2010) investigated positive and negative emotion in a fear-startle paradigm with children ages 8-12 years. The fear-startle paradigm consisted of having children watch pictures and listen to audio on a computer. The presence of a certain picture on the screen indicated they would receive a puff of air to the neck (aversive stimulus). The attachment measure was the *Child Attachment Interview* (CAI; Shmueli-Goetz, Target, Fonagy, & Datta, 2008), which was scored for narrative coherence. They found that narrative coherence from the attachment interview was related to greater overall positive emotion, but not to overall negative emotion, although more securely attached children did report a steeper decline in negative affect from pre to post fear-induced startle.

Spangler and Zimmermann (2014) studied fear and anger's relationship to attachment in a sample of 12-year-olds. Attachment was assessed when participants were 12 months old in the *Strange Situation* (Ainsworth et al., 1978). The children participated in two tasks, a computer game designed to crash part way through the game (anger elicitation) and a "talk show" paradigm, where the child's mother had to interview the child about personal topics in front of a supposed audience (fear elicitation). Facial and verbal expressions were coded, children reported on their own emotions, and mothers reported what they perceived their child's emotions to be. Children who had been secure in infancy were more likely than insecure children to report feeling angry following the anger elicitation task, but reported less fear in the fear elicitation task. Secure children and their mothers were more concordant in their ratings of the child's anger and fear than were insecure dyads.

Emotion states, facial emotional expression, and attachment were examined by Zimmermann, Maier, Winter, and Grossmann (2001) in another longitudinal study with attachment measured both by the *Strange Situation paradigm* (Ainsworth et al., 1978) at 12 or 18 months and the AAI (George et al., 1996) at ages 16-17 (The sample for Zimmerman et al. was the same sample as Becker-Stoll et al., 2001). Adolescents rated 13 emotion states (i.e. anger, confusion, calmness) on 7-point Likert scales at various points during their engagement in a stress-inducing task, and specific emotional expressions exhibited by participants were coded. Adolescents with high attachment security had higher coherence between facial emotional expression and self-perceived emotions for anger and sadness than did insecure adolescents. There were no differences between secure and insecure adolescents for joy or social smiles, although secure infant-mother attachment was related to adolescent coherency of joy. The lack of coherence for insecurely attached adolescents suggests they are less emotionally aware of both positive and negative emotions. The same sample was utilized at age 16 to explore subjective judgments of perceived emotional valence and arousal as well as frown vs. smile muscles during a series of film clips (Spangler & Zimmermann, 1999). The clips were either positive or negatively valenced and topics included separation,

reunion/proximity, quarrel, comfort and tenderness. Results of the study revealed that secure adolescents were more likely to facially mimic frowns or smiles consistent with the type of film clip being shown. Secure adolescents also had coherent facial and subjective reports of their emotional experiences during the clips. Dismissing adolescents were more likely to have positive subjective reports of emotion, regardless of the clip shown, a lack of frowning during negative clips and both dismissing and preoccupied adolescents demonstrated lower coherence between subjective reports and facial expressions.

The studies of affective experiences and expressed emotions revealed further differences between secure and insecurely attached children and adolescents. Securely attached children appear to experience higher positive and lower negative mood than do insecurely attached children, as reflected both in their reports of emotion and facial expressions of emotion. There may be a cyclical relation between mood and attachment, where the experience of more positive mood states and fewer negative mood states creates more positive parent-child interactions and greater security, and the closeness and comfort of a secure attachment relationship produces greater feelings of joy and happiness and less negative mood states. Securely attached children also showed more positive affect and/or less negative affect in response to a threat situation (the fear-startle paradigm) and during conflict conversations with their mothers. There is also evidence that in certain situations, securely attached children experience more negative emotion (e.g. anger), which may reflect that negative emotion is an adaptive response in certain situations. Finally, securely attached adolescents displayed higher coherence between facial emotional expression and self-perceived emotions, which is consistent with the evidence described earlier that securely attached children may be more aware and accepting of their own emotions.

Physiological Indicators of Emotion

Physiological indicators of emotion are a means of shedding light on emotion processes which are often implicit or difficult to report on, particularly for children (Zisner & Beauchaine, in press). Some of these indicators include cortisol, vagal tone, heart rate variability and skin conductance.

Borelli et al. (2010) investigated cortisol differences between securely and insecurely attached children in their fear-startle paradigm. They hypothesized that insecurely attached children would have a higher startle reaction and a more difficult time calming, or regulating themselves, after the threat cue was introduced. Children were between the ages of 8 and 12 years and assessed twice, one week apart. Cortisol and fear-potentiated startle were both physiological indicators of emotion regulation used in this study. Cortisol findings were inconclusive, suggesting that the relationship between cortisol and attachment security may depend on the experimental task and the task's resulting stress. Fear-potentiated

startle was unrelated to attachment security, although analyzing the data from time 1 to time 2 suggested that more securely attached children, as measured by higher narrative coherence, had a faster decrease in startle magnitude at the one week follow-up visit.

Adrenocortical stress and its relationship to attachment disorganization were examined by Spangler & Zimmermann (2014) in a sample of 12-year-old children. Children were assessed using the Strange Situation procedure (Ainsworth et al., 1978) in infancy, and then participated in anger and fear eliciting tasks at age 12. Before the emotion elicitation situations, disorganized children did not differ from others in their cortisol values, although following the tasks, their cortisol levels remained at significantly higher levels, suggesting that they had a more difficult time lowering their stress levels following the tasks. The disorganized group also experienced the most intense adrenocortical response when experiencing high levels of fear during the tasks.

Skin conductance and heart rate variability (HRV) were physiological indicators used to explore the relationship between emotion regulation and attachment in 7-year-olds (Gilissen, Bakermans-Kranenburg, van IJzendoorn, & van der Veer, 2008a). Attachment was assessed using the *Attachment Story Completion Task* (ASCT; Verschueren & Marcoen, 1994; based on Bretherton, Ridgeway, & Cassidy, 1990; Cassidy, 1988), and physiological measures were taken as children watched a fear-inducing film clip. The interaction between attachment and temperamental fearfulness predicted skin conductance reflected that more temperamentally fearful children reacted to fearful stimuli based on their attachment to a much greater degree than did non-fearful children. Specifically, children who were temperamentally fearful and securely attached had the lowest levels of skin conductance, while children who were temperamentally fearful and insecurely attached had the highest skin conductance levels. These findings suggested that attachment security acted as a buffer against poor regulatory abilities.

A second study examined attachment security and DNA genotyping as predictors of children's electrodermal activity (SCL) during a modified version of the *Trier Social Stress Task* (Gilissen, Bakermans-Kranenburg, van IJzendoorn, & Linting, 2008b). Attachment was assessed in this sample of 7 year-olds using the *Attachment Story Completion Task* (Verschueren & Marcoen, 1994; based on Bretherton et al., 1990; Cassidy, 1988) and DNA was collected using oral swabs and primer sequences were created; specifically, the authors were interested in the 5-HTT allele, either short or long, which they noted has been implicated in connection with depression and stress). Children with more secure attachment representations were less reactive to stress during the *Trier Stress Task*. In addition, children who had 2 long 5-HTT alleles and a secure attachment representation had the lowest levels of SCL activity during the stress task.

Physiological data adds important knowledge to our understanding of emotion regulation and attachment. The findings thus far are that secure attachment acts as a protective factor against fear and physiological dysregulation in stressful contexts. This finding is more critical because attachment was found to be particularly important for children who naturally are inclined to be more fearful. Genetics may also play a role, in conjunction with secure attachment, as a buffering factor against stress. Disorganized children likely have a difficult time regulating levels of stress and fear. Additional research on attachment and physiological indicators of emotion is needed given the dearth of studies and some inconclusive findings (e.g., cortisol). It is also likely that physiological measures are simultaneously influenced by factors other than experienced emotion, which may additionally complicate findings.

Processes for the Regulation of Emotion

The final emotion competency domain in this review includes a broad set of processes involved in modulating the experience and expression of emotion. Four studies examined whether attachment is related to global measures of emotion regulation, using instruments that include broad questions regarding emotionality, ability to cope with emotions, and emotion personality. Kim and Page (2013) assessed parent-child attachment and emotion regulation in a sample of elementary school truancy children ($M=9.7$ years). They assessed attachment using the *Security Scale* (Kerns et al., 2001), and did not find a significant relationship between attachment and emotion regulation. In a sample of 12-17 year-olds, Kullik and Petermann (2013) measured attachment with the *Inventory of Parent and Peer Attachment* (IPPA; Armsden & Greenberg, 1997; Nada Raja, McGee, & Stanton, 1992), and found that securely attached children were more likely to use functional coping strategies such as planning or seeking support from someone rather than dysfunctional ones such as punishing one's self or shouting and arguing. Zimmermann (1999) also examined a global measure of emotion regulation in a sample of 16-year-old adolescents. Attachment was assessed using the AAI (George et al., 1996). Adolescents were presented with hypothetical peer rejection situations and asked how they would feel during and react to that situation, and the adolescents who evidenced more adaptive emotion regulation skills (i.e. adaptive feelings and responses to peer rejection) were also more securely attached adolescents. The management of intense emotions has also been studied in relation to attachment (Brumariu & Kerns, 2013). Children's attachments were assessed at 12 and 36 months, and mothers reported how children managed intense emotions when children were in third grade. Children who had a history of secure attachment were rated by their parents as more capable of managing intense emotions. Fathers, but not mothers, rated disorganized children as having a poorer ability to manage intense emotions.

Several studies examined children's coping styles. In a sample of 5th graders, Contreras, Kerns, Weimar, Gentzler, and Tomich (2000) used the *Security Scale* (Kerns et al., 2001) and the *Automated Separation Anxiety Test* (ASAT; Kerns et al., 2000) to assess attachment. The ASAT was designed to measure implicit beliefs about attachment, while the *Security Scale* is an explicit self-report questionnaire; scores from the two measures were combined to create an index of attachment security. Mothers' reports of coping were scored for constructive coping (defined as high scores on support seeking and problem solving and low scores on avoidant or aggressive coping strategies), and secure children were found to use constructive coping strategies. In a second study, Kerns et al. (2007) investigated attachment security and coping strategies in a sample of 9-11 year old children. Attachment was assessed using the *Security Scale* (Kerns et al., 2001), and the *Attachment Doll Story Completion Task* (Granot & Maysel, 2001). Although specific attachment classifications were not related to coping strategies, the continuous measures of attachment security were related to coping, in that children who were more secure used more constructive coping strategies. In another study, Bauminger and Kimhi-Kind (2008) assessed attachment using the *Security Scale* (Kerns et al., 2001) and assessed coping strategies with a composite measure including cognitive, emotional and behavioral regulation skills. They examined these associations for children with and without learning disabilities between the ages of 10-12.9 years, and found for both groups that children who were more securely attached had better coping skills.

Several other studies examined whether attachment is related to the use of specific coping strategies (e.g., seeking support, problem-solving). In a sample of girls ages 8-12 years, Abraham and Kerns (2013) assessed attachment with the *Security Scale* (Kerns et al., 2001), and found that more securely attached girls were more likely to use problem-solving coping (although this finding was only marginally significant) and social-support coping. Brumariu et al. (2012) used the same coping measure to examine attachment and coping in a sample of 10-12 year old children. They assessed attachment with *Story Stem Interviews* (Kerns et al., 2011), and rating the degree to which stories reflected the secure, avoidant, ambivalent, and disorganized attachment patterns. They did not find a relationship between coping strategies and ratings of security, ambivalence, or avoidance. They did find, however, that children who were rated as more disorganized used fewer active coping strategies, engaged in less problem-solving, and reported catastrophizing more (e.g., viewing the situation as dire when things go wrong). Finding that secure attachment was not related to coping was surprising, as it has been demonstrated previously (the authors suggest this may be due to a difference in assessing attachment; e.g., questionnaire vs. story stem).

Gaylord-Harden, Taylor, Campbell, Kesselring, and Grant (2009) examined attachment and coping in a sample of low-income urban youth, ages 10-16 years, expecting that the combination of low-income and urban setting would lead to the

experience of more stressful life events than average. Attachment was measured with the IPPA (Armsden & Greenberg, 1997; Nada Raja et al., 1992) and several coping strategies were assessed: active coping, support-seeking coping, avoidant coping, and distraction coping. Data were collected at two time points, one year apart. Path analyses showed that higher attachment security was related to greater use of all four types of coping strategies. While previous research has demonstrated a link between attachment security and coping strategies, such as active coping and support-seeking, the links between attachment security and avoidant and distraction coping are inconsistent with previous literature. The authors noted that, in their specific sample, avoidant and distraction coping are coping strategies that are likely to be quite adaptive for their environment.

In a sample of Taiwanese adolescents ($M=13.2$ years), Liu and Huang (2012) examined attachment (*Revised Relationship Questionnaire-Adolescents*, RRQ-A; Lin, 2002) in relation to four coping styles: rational problem solving, resigned distancing, support seeking and ventilation, and passive wishful thinking. They also assessed adolescents' perceptions of threat during conflicts with their mothers. They found that adolescents with fearful or preoccupied attachment were more likely to view conflictual conversations with their mothers as threatening. Adolescents who were classified as secure, dismissive, or preoccupied were more likely to use approach coping strategies, whereas fearful adolescents were less likely use this strategy. In addition, secure and dismissing adolescents engaged in more distancing coping. Although these results are somewhat inconsistent with previous research, particularly for securely attached adolescents, it is critical to consider cultural differences, as in the Gaylord-Harden et al. (2009) study. For example, Liu and Huang (2012) note that securely attached Taiwanese adolescents may use avoidance as a coping strategy to maintain traditions of respect.

Several studies also examined the link between attachment and coping strategies related to specific emotions, such as anger, sadness and fear. Coping strategies specifically related to anger and attachment to mothers were studied by Schwarz, Stutz, and Ledermann (2012) in children ($M=10.6$ years). They assessed attachment using the *Security Scale*, and anger coping using the FEEL-KJ (Grob & Smolenski, 2005). They found that higher attachment security was related to a more constructive ability to cope with anger. Brenning and Braet (2013) examined coping with anger and sadness in a sample of adolescents (11-16 years), and like Brumariu et al. (2012), they examined coping in relation to insecure attachment patterns. They assessed anxious and avoidant attachment using the *Experiences in Close Relationships-Scale Revised* (ECR-R; Fraley, Waller, & Brennan, 2000), and measured coping as dysregulation and suppression of sadness and anger. Anxious and avoidant attachment were positively related to anger dysregulation, but not anger suppression. Anxious attachment was related to sadness dysregulation, whereas avoidant attachment was related to suppression of sadness.

The studies described so far examined concurrent associations between attachment and emotion regulation processes. One of the next steps is to understand the development and change of coping processes. Seiffge-Krenke and Beyers (2005) explored coping trajectories from adolescence (14 years) to early adulthood (21 years), for three coping factors: active coping, internal coping, and withdrawal. The AAI (George et al., 1996) was used to evaluate attachment, although this was only assessed when participants were 21, and coping was assessed when participants were 14, 15, 16, and 17-years-old. Securely attached individuals had higher levels of active coping and more growth in the use of active coping strategies over time. Both secure and dismissing participants evidenced increases in internal coping over time, although preoccupied participants did not. Insecurely attached children also were more likely to use withdrawal as a coping strategy and evidenced higher, more stable levels of withdrawal over time.

In summary, results from studies of attachment and processes for the regulation of emotion lead to several conclusions. First, more securely attached children and adolescents are better equipped to use constructive and functional coping strategies, such as problem-solving and social support seeking. They also seem better able to cope with specific negative emotions, such as sadness, anger and fear, especially when these emotions are more intense. When attachment and coping are both assessed with child questionnaires, as was done in some studies, it is possible that social desirability or other reporting biases may inflate associations. In some diverse samples, securely attached children and adolescents engage in a variety of coping strategies, including strategies such as avoidance that are viewed as less constructive in low stress environments. Most studies examined security rather than specific insecure attachment patterns, although there was some evidence of higher levels of catastrophizing and more difficulty managing intense emotions in disorganized children, greater use of avoidant coping strategies and dysregulation of sadness in anxiously attached children, and more suppression of sadness in avoidantly attached children.

Pathways Linking Attachment and Emotion to Other Domains

Parent-child attachment is related not only to emotion processes, but to other domains of social functioning (e.g., peer relationships). A few studies have looked at emotion processes as mechanisms through which attachment influences other developmental domains. In this section, we briefly review studies examining emotion processes as potential mediators that can explain associations between attachment and either well-being or peer relationships.

Well-Being

In one study, Brumariu et al. (2012) looked at whether emotion regulation processes explain the relationship between mother-child attachment and anxiety in

middle childhood. Emotional awareness mediated the relation between mother-child attachment security and children's anxiety symptoms, and catastrophizing mediated the relation between disorganization and children's anxiety symptoms. Brumariu and Kerns (2013) found that the ability to manage intense emotions explained why children securely attached in the first 3 years experienced less anxiety in preadolescence. Kim et al. (2014) tested if positive and negative emotion regulation strategies mediated the relation between parental attachment security and borderline personality disorder (BPD) features. They found that decreased use of positive emotion regulation strategies mediated the link between attachment insecurity and BPD features.

Other studies focused on the mediating role of emotion processes in explaining the relation between attachment and depressive symptoms. Kullik and Petermann (2013) found different effects for boys and girls. For girls, internal dysfunctional (e.g., rejection of emotions) emotion regulation strategies mediated between attachment to parents and depressive symptoms. For boys, internal dysfunctional and external dysfunctional emotion regulation partially mediated the relation of attachment to parents and depressive symptoms. Gaylord-Harden et al. (2009) examined multiple coping strategies (active coping, support seeking coping, avoidant coping, distraction coping), and only active coping mediated the relation between attachment and depressive symptoms. Finally, a study by Brenning and Braet (2013) tested the mediational role of sadness dysregulation strategies in associations between attachment anxiety and avoidant attachment and internalizing (depressive) symptoms. They found that sadness dysregulation mediated the relation between attachment anxiety and depressive symptoms, but not the relation between avoidant attachment and depressive symptoms.

The studies looking at emotion regulation as mediators between attachment and well-being suggest that attachment insecurity is a risk factor for symptoms of anxiety, depression, and borderline personality in middle childhood in part because children who are insecurely attached are more prone to regulate emotion in ways that are less adaptive. Difficulties in regulating emotional experiences may increase the likelihood of expressing the state of arousal in a variety of maladaptive ways (Penza-Clyve & Zeman, 2002).

Peer Relationships

Three studies examined emotion processes as mediators between attachment and peer relationships. Abraham and Kerns (2013) explored whether the relationship between mother-child attachment and successful peer relationships is mediated by the child's experience of positive and negative emotion and/or coping strategies (including social support coping and problem solving coping). Positive mood, social support seeking, and problem solving coping partially mediated the associations between children's perceptions of security and peer competence.

Contreras et al. (2000) found that constructive coping (support seeking and problem solving) partially mediates between mother-child attachment and peer competence. Schwartz et al. (2012) assessed the mediating role of attachment security and emotion regulation in accounting for the link between perceived parental conflict and adolescents' friendship. Attachment was linked positively to emotion regulation, which in turn was positively related with friendship quality, suggesting evidence of mediation.

These studies indicate that securely attached children are more competent in their peer relationships in part because they have learned in their emotional experiences with parents, how to effectively regulate their emotions. The findings are consistent with Thompson's (1990) conclusion that it is mainly through the parent-child relationship that children learn which of the several emotional responses will be effective in attaining immediate goals and conforming to social demands.

Conclusions

The existing literature provides evidence that attachment is related to all four domains of emotion: Emotion understanding, affective experiences, physiological indicators of emotion, and emotion regulation processes. There is substantial research on emotion regulation, although most studies assessed emotion regulation only through questionnaires completed by the child or the child's parent. There are also several studies looking at attachment and the experience and expression of affect. The studies show that securely attached children both experience and express more positive emotion and less negative emotion. Interestingly, few studies have captured variability or change in emotion as they occur in real time, in response to events (see Borelli et al., 2010, for an exception). And few studies have considered how attachment is related to children's knowledge about emotion, or to physiological processes that may reflect emotion. Despite the lack of research in these areas however, the current research suggests that securely attached children have significant advantages in each emotion domain over children who are insecurely attached. As a next step, it will be important to formally examine effects sizes (e.g, with meta-analysis) to determine how strongly attachment is related to each emotion domain, and whether the strength of the association depends on how attachment and emotion are measured.

Our review also identified several areas for future research. It is important to move towards a more streamlined approach in attachment research (e.g., similar or same measures for constructs) to improve the likelihood that the construct being measured across studies is the same (Allen, 2008). Consistency in the use of emotion measures would also be beneficial. More longitudinal and bidirectional research is needed to better understand how attachment and emotion may be

interrelated over time. The literature also points to the importance of coping and the growing importance of peer relationships in middle childhood (see for example Contreras et al., 2000; Kerns et al., 2007); thus, better understanding coping trajectories during the transition from middle childhood to adolescence is a critical next step in this area. Diversity of samples is also important for future research. Gaylord-Harden et al. (2009) and Liu and Huang's (2012) studies suggest that the cultural and economic context may moderate associations between attachment and emotion regulation. There is also currently a dearth of research that jointly examines attachment and genetic influences in relation to emotion, and their potential interaction, which will be important to explore in future research. In addition, future research should test whether associations between attachment and emotion can be accounted for by genetic influence. Finally, although there has been speculation that children with specific forms of insecure attachment may manifest specific types of difficulties in emotion (Cassidy, 1994), few studies have examined whether avoidant, ambivalent, and disorganized children show specificity in their emotion difficulties.

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Apego y emociones en la niñez media y adolescencia

Resumen

El propósito de este análisis es resumir y evaluar es estado actual de la literatura con respecto al apego y su relación con emociones en la niñez media y adolescencia. Este es un tema de interés relativamente nuevo y con buenos conocimientos teóricos. La relación de apego entre los padres y los hijos es el mecanismo clave a través del cual los hijos y adolescentes aprenden destrezas emocionales, incluido entendimiento emocional, estrategias de afrontamiento y cómo manejar diferentes experiencias afectivas. El análisis es organizado según las competencias emocionales, incluido entendimiento emocional, experiencias afectivas, indicadores fisiológicos de excitación y emociones, y procesos para la regulación de emociones. Hemos incluido estudios que presentan datos para niños y adolescentes de entre 6 y 18 años, y también medidas de emociones y apego padres-hijos. Aunque algunos campos fueron investigados mejor que otros, nosotros hemos comprobado que el apego seguro está relacionado con el funcionamiento más adaptado en cada uno de dominios emocionales. Finalmente, analizamos las direcciones futuras que están por explorar y abordamos los huecos en la literatura presente.

Palabras claves: apego, emociones, entendimiento emocional, experiencias afectivas, indicadores fisiológicos, regulación de emociones, niñez media, adolescencia

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