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Coping, Emotion Regulation and Psychopathology in Childhood and Adolescence: A Meta-Analysis and Narrative Review

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Abstract

In this meta-analytic and narrative review, we examine several overarching issues related to the study of coping, emotion regulation, and internalizing and externalizing symptoms of psychopathology in childhood and adolescence, including the conceptualization and measurement of these constructs. We report a quantitative meta-analysis of 212 studies (N = 80,850 participants) that measured the associations between coping and emotion regulation with symptoms of internalizing and externalizing psychopathology. Within the meta-analysis we address the association of broad *domains* of coping and emotion regulation (e.g., total coping, emotion regulation), intermediate *factors* of coping and emotion regulation (e.g., primary control coping, secondary control coping), and specific coping and emotion regulation *strategies* (e.g., emotional expression, cognitive reappraisal) with internalizing and externalizing symptoms. For cross-sectional studies, which made up the majority of studies included, we examine three potential moderators: age, measure quality, and single vs. multiple informants. Finally, we separately consider findings from longitudinal studies as these provide stronger tests of the effects. After accounting for publication bias, findings indicate that the broad domain of emotion regulation and

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adaptive coping and the factors of primary control coping and secondary control coping are related to lower symptoms of psychopathology. Further, the domain of maladaptive coping, the factor of disengagement coping, and the strategies of emotional suppression, avoidance and denial are related to higher symptoms of psychopathology. Finally, we offer a critique of the current state of the field and outline an agenda for future research.

Keywords

coping; emotion regulation; children; adolescents; psychopathology

The identification of processes of risk and resilience is crucial for understanding the etiology of internalizing and externalizing symptoms and disorders in childhood and adolescence and for the development of interventions for the prevention and treatment of these symptoms and disorders (e.g., Cicchetti & Curtis, 2007; Kraemer, Lowe, & Kupfer, 2005; Luthar, 2006; Masten, 2001, 2014; Troy & Mauss, 2011). Exposure to acute and chronic stressful events and adversity is one of the most potent risk factors for psychopathology during childhood and adolescence (e.g., Evans, Li, & Whipple, 2013; Grant et al., 2003; Kushner, 2015). Yet not all who experience stress and adversity go on to develop symptoms of psychopathology, raising the question, why are some children and adolescents adversely affected while others are resilient? The ability to *cope* with stressful events and circumstances and *regulate emotions* across situations may play a primary role in the development of resilience and reducing the risk for psychopathology during childhood and adolescence (Compas, Gruhn, & Bettis, 2017; McRae & Mauss, 2016; Zimmer-Gembeck & Skinner, 2016). Given the potential to inform our understanding of processes of risk, resilience, and intervention, research on coping and emotion regulation in children and adolescents is of considerable importance for the field of developmental psychopathology and prevention science. However, despite a large and growing body of research, there has been no quantitative meta-analysis of the association of coping and emotion regulation with symptoms of internalizing and externalizing psychopathology in children and adolescents. Therefore, an integrative, quantitative review of this research is a high priority.

Although there are many commonalities between these constructs, research on coping and emotion regulation has remained relatively separate (e.g., Compas, Jaser, & Benson, 2009; Compas et al., 2014a; Kopp, 1989; Zalewski, Lengua, Wilson, Trancik, & Bazinet, 2011; Zimmer-Gembeck et al., 2014). For example, Compas et al. (2014a) found that although both coping and emotion regulation are active areas of research, only 208 of 20,804 publications (1%) between 2003 and 2012 identified in a PsycINFO search included both of these concepts as key terms. There has been little integration of the conceptualization and measurement of these two processes. Further, confusion in defining and conceptualizing coping and emotion regulation in youth, as well as identifying clear dimensions or subtypes of these processes, has inhibited the synthesis and integration of findings (Skinner, Edge, Altman, & Sherwood, 2003). In addition, the measurement of coping and emotion regulation is characterized by a large and ever-expanding number of measures, many of which are of unknown psychometric quality. Finally, it has been 16 years since the last comprehensive review of coping and internalizing and externalizing psychopathology in children and

adolescents (Compas, Connor-Smith, Saltzman, Thomsen, & Wadsworth, 2001) and 7 years since the last review of emotion regulation and these broad domains of psychopathology in young people (Eisenberg, Spinrad, & Eggum, 2010). Notably, neither of these reviews provided quantitative meta-analyses.

To address these gaps in the field, we begin by examining several overarching issues related to the study of coping, emotion regulation, and psychopathology in children and adolescents. First, we consider several broad issues in this field including definitions and conceptualizations of coping and emotion regulation in childhood and adolescence, the status of the measurement of coping and emotion regulation, the role of exposure to acute and chronic stressors and the experience of emotions in the development of psychopathology, and previous reviews on the associations of coping and emotion regulation with symptoms of psychopathology. In the primary section of this review, we report on a quantitative meta-analysis of the associations between coping and emotion regulation and internalizing and externalizing symptoms. We also consider three possible moderators of the association of coping and emotion regulation with symptoms of psychopathology: child age, the quality of measures of coping and emotion regulation, and the use of single vs. multiple informants to measure coping and emotion regulation and symptoms of psychopathology. Finally, we offer a critique of the current state of the field and outline an agenda for research to advance our understanding of coping and emotion regulation in youth.

Coping and Emotion Regulation: Definitions and Conceptualization

Previous reviews have noted a lack of consensus in the definition and conceptualization of coping and emotion regulation in children and adolescents (e.g., Adrian, Zeman, & Veits, 2011; Compas et al., 2001; Eisenberg et al., 2010; Skinner et al., 2003). Clear consensus on the definitions of coping and emotion regulation is needed in order to identify the boundaries of what is and is not included within each of these constructs, shape the identification of the structure and subtypes of coping and emotion regulation, and guide the selection of measures for research on the association of coping and emotion regulation with psychopathology. It is encouraging, therefore, that since earlier reviews of coping and emotion regulation there have been some signs of convergence on the central features of these constructs.

Definitions of Coping and Emotion Regulation

The challenge of establishing consensus regarding definitions of coping and emotion regulation is reflected in the 212 studies included in the meta-analysis reported below. The most widely used definitions of coping and emotion regulation in childhood and adolescence are presented in Table 1. Both the Lazarus and Folkman (1984) and Compas et al. (2001) definitions of coping highlight the role of coping as a process of responding to stress. Further, both definitions emphasize coping as a controlled, effortful process; i.e., responses that require conscious, purposeful, and intentional thoughts and behaviors. However, Lazarus and Folkman (1984) emphasize cognitive appraisals of stress as precipitants of coping responses, whereas Compas et al. (2001) focus on objectively stressful events or circumstances in the environment as precipitants of coping responses. The Lazarus and

Folkman model incorporates two broad types of coping that differ based on the focus and goals of coping efforts: problem-focused coping (i.e., efforts to resolve the source of stress, including problem solving) and emotion-focused coping (i.e., efforts to palliate one's emotions, including seeking social support and escape/avoidance) (e.g., Folkman & Moskowitz, 2004). The Compas et al. (2001) definition is linked to a control-based model of coping that includes primary control coping (i.e., efforts to directly act on the source of stress or one's emotions, including problem solving and emotional expression), secondary control coping (i.e., efforts to adapt to the source of stress, including acceptance and cognitive reappraisal), and disengagement coping (i.e., efforts to orient away from the source of stress or one's emotions, including avoidance or denial) (e.g., Compas, Jaser, Dunn, & Rodriguez, 2012; Rudolph, Dennig, & Weisz, 1995; Weisz, McCabe, & Dennig, 1994). Further, the scope of the construct of coping has broadened since the earlier work of Lazarus and Folkman (1984), with a growing emphasis on coping as the regulation of a wider range of functions, including emotion, behavior, cognitions, physiology, and the environment, in response to stress (e.g., Compas et al., 2001; Eisenberg, Fabes, & Guthrie, 1997; Kopp, 1989).

The most commonly cited definition of emotion regulation emphasizes processes of monitoring, evaluation, and modification of emotional reactions. Specifically, Thompson (1994) defines emotion regulation as, "the extrinsic and intrinsic processes responsible for monitoring, evaluating, and modifying emotional reactions, especially their intensive and temporal features, to accomplish one's goals" (pp. 27–28). These regulation processes involve a series of steps that include the selection and modification of situations that give rise to emotions, the deployment of attention in response to emotion, cognitive change, and modulation of emotional responses. This process model of emotion regulation includes strategies such as problem solving, cognitive reappraisal, and emotional suppression and emphasizes the deployment of these strategies as part of the temporal process of the experience and regulation of emotions (Gross & Thompson, 2007). Similar elements can be found in the work of Eisenberg et al. (2010) who focus on the construct of emotion-related self-regulation, defined as, "processes used to manage and change if, when, and how (e.g., how intensely) one experiences emotions and emotion-related motivational and physiological states, as well as how emotions are expressed behaviorally" (p. 516). We now consider in more detail several key issues reflected in these definitions of coping and emotion regulation.

Shared features of coping and emotion regulation.—Although research on these constructs has predominately been conducted separately, there is considerable overlap in the concepts of coping and emotion regulation. A unifying feature of conceptualizations of coping and emotion regulation is the central role of *regulatory processes* (e.g., Compas et al., 2014a; Eisenberg et al., 1997; Gross & Thompson, 2007; Zimmer-Gembeck et al., 2014). Regulation involves a broad array of responses, including efforts to initiate, delay, terminate, modify the form/content, or modulate the amount or intensity of a thought, emotion, behavior, or physiological reaction (Compas et al., 2001). Coping includes the regulation of these processes that occur specifically in response to a stressor, whereas emotion regulation

occurs in response to the presence of an emotion whether or not the emotion arises in response to a stressor (Aldao, Nolen-Hoeksema, & Schweizer, 2010; Thompson, 1994).

Kopp (1989) argued that, "emotion regulation is a term used to characterize the processes and characteristics involved in *coping* with heightened levels of positive and negative emotions" (p. 343; italics added). Similarly, Skinner, Zimmer-Gembeck and colleagues (e.g., Skinner & Wellborn, 1994; Skinner & Zimmer-Gembeck, 2007; Zimmer-Gembeck & Skinner, 2011; Zimmer-Gembeck et al., 2014) define coping as action *regulation* under stress, which includes coordination, mobilization, energizing, directing and guiding behavior, emotion, and orientation when responding to stress. Thus, the terms coping and regulation are used somewhat interchangeably in definitions of coping and emotion regulation.

In addition, the process model of emotion regulation by Gross, Thompson and colleagues includes responses that are directed toward other processes in addition to emotions (e.g., Gross, 2015; Gross & Thompson, 2007; Thompson, 1991, 1994; Thompson & Calkins, 1996; Thompson & Goodman, 2010). As noted above, this conceptual model includes efforts directed at the context in which emotions occur, the cognitive processes that may shape and influence emotions, and modulation of behavioral responses. Similarly, Eisenberg, Hofer, and Vaughan (2007) include emotions, emotion-related motivational and physiological states, and the behavioral expression of emotions within the realm of emotion regulation. In this way, emotion regulation encompasses the broad array of processes (i.e., emotion, cognition, behavior, context) that are also included within the concept of coping. Further, as discussed in more detail below, there is significant overlap in the strategies that are included as subtypes of both coping and emotion regulation. For example, problem solving, cognitive reappraisal, acceptance, emotional expression, and avoidance have all been included as strategies in both coping and emotion regulation research (Aldao et al., 2010; Skinner et al., 2003).

Conceptualizations of coping and emotion regulation also share a distinction between automatic and controlled processes (e.g., Mauss, Bunge, & Gross, 2007). A fundamental contrast throughout psychological science is made between dual-processes that are characterized as automatic vs. controlled, including distinctions between processes that are labeled as regulation vs. reactivity, intentional vs. incidental, conscious vs. non-conscious, and voluntary vs. involuntary (e.g., Bargh & Williams, 2007; Connor-Smith et al., 2000; Eisenberg et al. 2007, 2010; Gross & Thompson, 2007). Automatic, incidental, involuntary processes are rooted in temperamental differences in reactivity to the environment that emerge early in development; further, some responses are acquired through processes of associative conditioning that do not involve conscious control (e.g., Compas, Connor-Smith, & Jaser, 2004). In contrast, controlled, intentional, voluntary responses often involve higher-order, complex cognitive processes that are thought to develop more fully in middle and late childhood (Zimmer-Gembeck & Skinner, 2016).

There are several reasons to focus on controlled as opposed to automatic processes in examining the relations of coping and emotion regulation with symptoms of psychopathology. Controlled processes reflect both covert cognitive and overt behavioral

strategies that children and adolescents purposefully use to cope with stress and regulate their emotions. These responses occur in both stressful and emotionally arousing situations and may be more accessible to conscious awareness than non-conscious processes (Rabiner, Lenhart, & Lochman, 1990). Consequently, controlled processes, or at least those within conscious awareness, may be more amenable to self-reports and reports by other informants of these efforts (e.g., Compas et al., 2014a). In addition, controlled processes are less likely than automatic processes to be confounded with symptoms of internalizing and externalizing psychopathology. For example, an automatic anger response may be highly correlated with symptoms of externalizing psychopathology in part because anger is included as an externalizing symptom (e.g., Achenbach & Rescorla, 2001). Lastly, controlled processes can be more readily changed than automatic processes through interventions that are designed to enhance resilience by teaching skills for coping with stress and regulating emotions. A growing body of evidence suggests that interventions targeting coping and emotion regulation skills are efficacious in the prevention and treatment of psychopathology in children and adolescents (e.g., Compas et al., 2010; Lochman & Wells, 2004; Tein, Sandler, Ayers, & Wolchik, 2006; Tein, Sandler, MacKinnon, & Wolchik 2004). Thus, the focus of the current meta-analysis will be on controlled processes of coping and emotion regulation in childhood and adolescence.

In spite of the relative importance of focusing on controlled processes of coping and emotion regulation, some examples of these processes present significant challenges, as they may reflect both automatic and controlled processes. Rather than a simple dichotomy, automatic and controlled processes lie on a continuum (Gross & Thompson, 2007; Hopp, Troy, & Mauss, 2011). Some processes that are initially automatic may be brought under purposeful control, and processes that require effort may become automatized with repeated practice (e.g., Evers et al., 2014; Hankin, Badanes, Smolen, & Young, 2015; Mauss et al., 2007). However, the distinction between controlled and automatic processes remains central to understanding both coping and emotion regulation. One noteworthy example of this comes from research on rumination (e.g., Nolen-Hoeksema, Wisco, & Lyubomirksy, 2008). Rumination can occur in the form of uncontrollable, intrusive thoughts or as purposefully dwelling on thoughts about one's emotions, as in the case of depressive rumination. Because rumination is conceptualized and measured as both an automatic and controlled process and because previous meta-analyses have established that rumination has a large positive correlation with symptoms of psychopathology (Aldao et al., 2010), rumination and other constructs that may reflect both automatic and controlled processes were excluded from the current review.

Unique features of coping and emotion regulation.—These shared features notwithstanding, a primary distinction between models of coping and emotion regulation centers on the precipitants for these two processes. As noted above, coping refers to processes that are generated specifically in response to stressful events or circumstances. This encompasses efforts to regulate responses (including emotions) to acute life events, chronic stressors, daily hassles, and conditions of chronic adversity, all of which have been shown to be significant risk factors for symptoms of psychopathology (Harkness & Monroe, 2016). In contrast, emotion regulation includes responses aimed at the generation and

modulation of emotions. Emotions arise in response to stress and adversity but also occur as a part of ongoing, normative experiences of daily life that do not involve stressful events or circumstances (e.g., an emotionally moving film or book). This contrast suggests that coping is both a narrower and broader construct than emotion regulation. Coping is a narrower construct in that it is limited to responses in the context of stressors while emotion regulation occurs in response to both stressful and non-stressful circumstances. However, coping is also a broader construct in that it encompasses the regulation of a wider range of processes that includes not only emotions, but also cognition, behavior, physiology, and sources of stress in the environment. These differences notwithstanding, given the increasing recognition of common elements between coping and emotion regulation, a review of the ways that both of these processes relate to internalizing and externalizing psychopathology in childhood and adolescence is timely and needed.

Structure and Subtypes of Coping and Emotion Regulation

A quantitative analysis of the association of coping and emotion regulation with symptoms of psychopathology requires the clear delineation of subtypes of these constructs; however, as noted above there has been relatively little agreement regarding the structure of coping and emotion regulation. For example, in a seminal review of the structure of coping, Skinner et al. (2003) identified over 400 different subtypes that have appeared in research across childhood, adolescence, and adulthood. These include widely studied coping and emotion regulation strategies such as problem solving, cognitive reappraisal, cognitive avoidance, emotional expression, and acceptance, as well as less frequently examined strategies such as physical exercise, stoicism, and thought stopping.

The lack of consensus about the structure of coping and emotion regulation has slowed progress in the field (Compas et al., 2001, 2014a; Skinner et al., 2003). The most obvious problem is the difficulty in comparing and accumulating results from different investigations. Measures differ in the items that are included within dimensions of coping and emotion regulation, making it difficult to aggregate findings relevant to the same stressor or precipitant or to compare results across different stressors or precipitants. Compas et al. (2001) concluded that “There has been little consistency in the application of these various subtypes of coping across different measures and studies … leading to considerable difficulty developing a cohesive picture of the structure of coping in childhood and adolescence” (p. 92). Notably, relatively little progress has been made to address this problem in the last 16 years.

The identification of the structure of coping and emotion regulation has been approached using either bottom-up models (i.e., derived through exploratory factor analysis [EFA] or through rational grouping of strategies) or top-down models (i.e., theory-driven and tested using confirmatory factor analysis [CFA]) systems). Problems identified with bottom-up approaches include lack of clarity, limited comprehensiveness of categories, inability to determine hierarchical structures, and difficulty determining whether categories are distinct (Skinner et al., 2003). In contrast, Skinner et al. (2003) highlight the merits of three top-down coping structures that have been supported using CFA with reference to children and adolescents (Ayers, Sandler, & Twohey, 1998; Connor-Smith et al., 2000; Walker, Smith,

Garber, & Van Slyke, 1997). The strengths of these and other top-down approaches include tests of clear conceptual models of the structure of coping and emotion regulation, the development of measures that reflect these models, use detailed and complex data analytic approaches, and cross-validation with multiple large samples (Skinner et al., 2003). Further, Skinner et al. (2003) note that although these models are not without problems they "represent guideposts for empirical efforts to search for the structure of coping" (p. 232).

We consider these models of coping in more detail in the measurement section that follows. Further, we include those measures based on top-down theory-driven systems with factor structures that have been tested using CFA as an indicator of measurement quality in the moderator analyses presented as a part of the meta-analysis below. It is noteworthy that no similar efforts to catalogue and examine the structure of emotion regulation have appeared in the literature; however, some emotion regulation measures were derived using a top-down approach (e.g., Children's Emotion Management Scales; Zeman, Cassano, Suveg, & Shipman, 2010; Zeman, Shipman, & Penza-Clyve, 2001) and construct validity has been established for these measures with CFA.

Summary

In spite of some distinctions in their conceptualization, we believe that coping and emotion regulation have many more similarities than differences and that it is timely and advantageous to collectively examine research on these processes in children and adolescents. Driven in part by these similarities, the current meta-analysis is the first to examine *both* coping and emotion regulation in relation to internalizing and externalizing symptoms of psychopathology in children and adolescents.

Measurement of Coping and Emotion Regulation

To test the association of coping and emotion regulation with symptoms of internalizing and externalizing psychopathology, measures must meet accepted standards of reliability and validity. As research on these constructs has grown, this growth would ideally be reflected in increasing consensus and rigor in research designs and methods of measurement. It is a concern, therefore, that the number of measures of coping and emotion regulation in children and adolescents is large and still increasing. Further, the continued proliferation of measures is partly a reflection of the lack of consensus regarding the structure of coping and emotion regulation. The over 400 subtypes of coping identified by Skinner et al. (2003) were drawn from more than 100 different measures of coping, and over a decade later, new measures continue to be developed (e.g., Maxwell & Cole, 2012; Sveinbjornsdottir & Thorsteinsson, 2014). The field of emotion regulation is somewhat newer and still emerging. Nonetheless, Adrian et al. (2011) reported on 100 measures of emotion regulation used in studies from 1975 through 2010, and new emotion regulation measures continue to be developed. In this section, we review the measures used to study the association of coping and emotion regulation with symptoms of psychopathology in children and adolescents, with a focus on self-report and other informant (e.g., parents, teachers) measures used most frequently in the meta-analysis that follows.

The measurement of coping and emotion regulation has been primarily characterized by four approaches: questionnaires completed by children and adolescents or other informants, interviews, direct observations of behavior, and measures of physiological processes (e.g., Adrian et al., 2011; Blount et al., 2008; Compas et al., 2001; Eisenberg et al., 2010; Skinner et al., 2003). Research on emotion regulation in particular has employed experimental designs to examine the processes of regulation in the laboratory, including the use if observational and physiological measures. Examples of this include paradigms that elicit negative emotions and instruct participants to use specific emotion regulation strategies to regulate the experience of negative emotion (e.g., Gross & John, 2003; Morris et al., 2011; Nolen-Hoeksema et al., 2008; Webb, Schweiger, Miles, Gollwitzer, & Sheeran, 2012). Although direct observations of behavior (e.g., displays of emotion) and measurement of physiological processes (e.g., heart rate) provide important information on how people respond to stress, these methods do not allow for the direct measurement of controlled, often covert, cognitive strategies that children and adolescents use to cope with stress and regulate their emotions. There is evidence that both self-reports and reports from other informants can provide reliable measurement of children's coping and emotion regulation strategies, including covert cognitive strategies, as evidenced by studies demonstrating significant cross-informant correlations, such as secondary control coping (e.g., Compas et al., 2006a, 2014b; Connor-Smith et al., 2000). The focus of the current review, therefore, is on self- or other-report measures of coping and emotion regulation and internalizing and externalizing symptoms.

Quality of Questionnaire Measures of Coping and Emotion Regulation

Several features of questionnaire measures of coping and emotion regulation are important to consider: (a) the sources of stress and specific emotions that are the precipitant(s) of the regulatory responses assessed by the measure, (b) the source of information/informant, and (c) types of coping and emotion regulation that are captured by these measures. The studies included in the meta-analysis that follows were selected in part based on the criteria that they employed measures designed to assess coping or emotion regulation and that, at minimum, reliability data had been reported in the literature. In the 212 studies included, 87 distinct measures were used. Of these measures, thirteen were modified versions of existing measures; these modifications included using a single subscale from an established measure or adding or omitting items from an established measure.

In Table 2, we highlight the 16 coping and emotion regulation measures that were used in at least three studies included in the meta-analysis. The most commonly used coping measures were the Responses to Stress Questionnaire (RSQ; Connor-Smith et al., 2000) and the Children's Coping Strategies Checklist (CCSC; Ayers, Sandler, West, & Roosa, 1996). The most commonly used measures of emotion regulation were the Emotion Regulation Checklist (ERC; Molina et al., 2014; Shields & Cicchetti, 1997) and the Cognitive Emotion Regulation Questionnaire (CERQ; Garnefski, Kraaij, & Spinhoven, 2001).

Coping and emotion regulation: Domains, factors, and strategies.—Given the large number of measures and labels used across the studies included in the current meta-analysis, we employed an organizational framework to combine data. Studies of coping and

emotion regulation in children and adolescents have examined these constructs on at least three levels: *domains, factors*, and *strategies* (see Methods and Appendix). These three levels reflect current, albeit somewhat overlapping approaches to the measurement of coping and emotion regulation in children and adolescents.

At the broadest level, *domains* of coping and emotion regulation are grouped into relatively undifferentiated categories including total coping, emotion regulation, emotion dysregulation, adaptive coping, and maladaptive coping. These broad domains include varied and heterogeneous coping and emotion regulation strategies. For example, examination of the association between total coping and symptoms of psychopathology ostensibly addresses the question of whether it is "better or worse" to engage in more vs. less coping, with no consideration of the strategies used to cope. The only distinction that has been made at the broadest level of domains is between those strategies that are distinguished as adaptive vs. maladaptive (or as regulation vs. dysregulation) on an *a priori* basis. However, the basis for this distinction is often not clear, as these categories remain very heterogeneous with regard to the strategies that they encompass. Further, labeling types of coping and emotion regulation as adaptive or maladaptive on an *a priori* basis can result in circular tests of the association between these processes and symptoms of psychopathology. That is, a positive association between maladaptive coping and symptoms is interpreted as evidence that this domain of coping is indeed maladaptive, which was already assumed at the outset.

Studies included in the current meta-analysis that measured the domain of total coping used a wide range of measures that capture a diverse array of strategies (e.g., Adolescent Coping Scale, ACS; Frydenberg & Lewis, 1993; CCSC; Ayers et al., 1996; CEMS; Zeman et al., 2010; Kidcope; Spirito, Stark, & Williams, 1988). Total coping captures *any* efforts to cope with or regulate emotions in response to stress, and therefore total coping is typically the sum or total score of all coping items on a measure. Because these scores do not differentiate among types of coping efforts, they provide little information regarding types of coping that may be more or less beneficial than others under specific stressful circumstances. Similarly, studies measuring adaptive coping in the current review used a variety of measures (e.g., A-COPE; Patterson & McCubbin, 1991; ACS; Frydenberg & Lewis, 1993; Kidcope; Spirito et al., 1988). The domain of maladaptive coping, however, was predominantly measured using the non-productive coping scale of the ACS (Frydenberg & Lewis, 1993). This scale includes items that assess the degree to which children and adolescents use strategies such as self-blame, withdrawal, wishful thinking, and avoidance to cope with stress.

Some measures of the broad domain of emotion regulation may capture more trait-like aspects of cognition and behavior rather than specific strategies used to regulate one's emotions (e.g., ERC; Shields & Cicchetti, 1997). Emotion dysregulation has been measured primarily with the Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004). Items on the DERS capture the inability to use or the ineffective use of strategies to regulate emotions. A concern with the DERS and other measures of emotion dysregulation is the considerable overlap with measures of psychopathology, particularly internalizing symptoms.

At the intermediate level, coping and emotion regulation are grouped into empirically derived or theoretically derived *factors* that include problem-focused coping, emotion-focused coping, engagement/approach coping, disengagement coping, primary control coping, secondary control coping, and social support coping. The most common approach to identifying coping factors has been the use of bottom-up approaches (EFA) that do not involve testing a priori models. Relatively fewer studies have used top-town approaches (CFA) to test theory-driven models of coping and emotion regulation (Skinner et al., 2003). Although these mid-level factors also include a wide range of specific strategies, they are more homogeneous with regard to the strategies that they encompass.

Presently, the most stringent tests and, therefore the strongest evidence for the structure of coping and emotion regulation come from measures that are designed to assess the factors of coping and emotion regulation. In addition to the three models of coping using CFA highlighted by Skinner et al. (2003) noted above (Ayers et al., 1996; Connor-Smith et al., 2000; Walker et al., 1997), two additional models of coping have been tested using CFA (Frydenberg & Lewis, 1993; Seiffge-Krenke, 1995). The most extensive support for the structure of coping has been generated using the RSQ (Connor-Smith et al., 2000), which has been tested using CFA in samples of children and adolescents. A total of six studies reporting on seven independent samples faced with a wide range of different stressors across a number of countries and ethnic groups using CFA have confirmed the three-factor structure of the RSQ: primary control coping (problem-solving, emotional expression, emotional modulation), secondary control coping (acceptance, cognitive reappraisal, positive thinking, distraction), and disengagement coping (avoidance, denial, wishful thinking) (Benson et al., 2011; Compas et al., 2006b; Connor-Smith & Calvete, 2004; Connor-Smith et al., 2000; Wadsworth, Rieckmann, Benson, & Compas, 2004; Xiao et al., 2010). The three factors in the RSQ parallel factors included in two other coping measures: the Pain Response Inventory (PRI; active, accommodative, passive coping; Walker et al., 1997) and the Children's Coping Strategies Checklist (CCSC; active coping, avoidance, distraction; Ayers et al., 1996). It is noteworthy that, although several of the emotion regulation measures have established construct validity using CFA, no emotion regulation measures include scales at the factor level.

The third level includes specific *strategies* of coping and emotion regulation, including emotional expression, emotional suppression, problem solving, cognitive reappraisal, distraction, acceptance, avoidance, wishful thinking, denial, emotional modulation, unregulated release of emotions, and humor. Although Skinner et al. (2003) identified over 400 coping strategies, we grouped individual strategies into these 12 categories to create a manageable number for the current meta-analysis and because these were the most commonly used categories among the included studies (see Appendix). These categories provide a fine-grained analysis of specific strategies that children and adolescents use to cope with stress and regulate their emotions. However, measures at this level reflect only a relatively small sample of the larger set of coping and emotion regulation strategies that children and adolescents may enact when faced with a stressor or emotion, and there is relatively less data on the psychometric properties of measures used to assess specific strategies.

Potential Moderators of Associations of Coping and Emotion Regulation with Psychopathology

Given the absence of a comprehensive quantitative review of the association of coping and emotion regulation with symptoms of psychopathology in children and adolescents, the primary focus of the current review is on the direct associations between these constructs. However, we recognize the importance of taking initial steps to examine constructs that may moderate these associations. Therefore, in addition to the direct association of coping and emotion regulation with internalizing and externalizing psychopathology in children and adolescents, we also examine age, measure quality, and informant as potential moderators of these associations in the meta-analysis that follows.

Age and Development

Processes of biological, cognitive, social, and emotional development during childhood and adolescence have implications for the development of coping and emotion regulation skills and their association with symptoms of psychopathology. Several reviews have outlined possible developmental patterns in coping and emotion regulation that would suggest increasing efficacy and flexibility in the use of specific strategies with age (Skinner & Zimmer-Gembeck, 2007, 2010; Thompson & Goodman, 2010; Zimmer-Gembeck & Skinner, 2011, 2016). Although these constructs have been analyzed relatively independently in developmentally focused research, several parallel themes in the development of coping and emotion regulation have emerged from these reviews. These include developmental shifts in the use of social partners in coping and regulating emotions vs. self-reliance to enact these processes, an increased ability to utilize cognitively complex processes (e.g., cognitive reappraisal), changes in the use of overt behavioral strategies (e.g., avoidance, distraction), and an increased capacity to use a wider range of strategies flexibly in response to stress or emotions (Skinner & Zimmer-Gembeck, 2007, 2010; Thompson & Goodman, 2010; Zimmer-Gembeck & Skinner, 2011).

Although important developmental changes in the coping and emotion regulation may occur in infancy and toddlerhood (Thompson & Goodman, 2010), we focus here on early and middle childhood and adolescence because these are the developmental periods encompassed by the studies included in the current meta-analytic review. During early childhood, children's increased understanding of emotions enables parents to shift from directly controlling children's emotional reactions to coaching them in the development of emotion regulation strategies. In middle childhood, children begin to use strategies that are more cognitive in nature (e.g., cognitive reappraisal or distraction) as well as relaxation strategies to reduce physiological arousal (e.g., deep breathing) (Goodman & Thompson, 2010). From middle childhood into adolescence, peer relationships gain importance and serve as a source of support as well as further learning about emotional experiences, norms for expression, and emotion regulation strategies. During middle and late adolescence, increased ability to think about one's own and others' emotions allows for more independent management of emotions. Additionally, the development of executive function skills allows adolescents to enlist additional cognitive emotion regulation strategies and to be more controlled in their expression of emotions (Thompson & Goodman, 2010).

In contrast, there is less clarity regarding the development of coping. This is due in part to inconsistencies in the measurement of coping across ages and studies, and in part because research has not been designed for the specific purpose of examining coping development (Skinner & Zimmer-Gembeck, 2007; Zimmer-Gembeck & Skinner, 2011). However, the aforementioned reviews provide evidence for developmental changes, many of which parallel changes in the development of emotion regulation. In early childhood (i.e., the 5 to 7-year-old-shift) social support begins to incorporate peers in addition to a continued reliance on caregivers, and children use problem solving and behavioral distraction with increasing frequency. Further, as noted above, in middle childhood, cognitive strategies develop, support seeking becomes more complex, and the ability to take others' perspectives and understand that different situations may require different coping responses begins to form. With increased reliance on cognitive strategies, declines in the use of behavioral strategies such as escape and avoidance are observed (Skinner & Zimmer-Gembeck, 2007; Zimmer-Gembeck & Skinner, 2011). In adolescence, coping repertoires expand and coping efforts become more self-reliant. The importance of peers increases during adolescence, and adolescents continue to seek social support as a means of coping with stress; however, the majority of coping efforts are at the individual level with social partners in the role of a "back up system" if independent efforts fail (Skinner & Zimmer-Gembeck, 2010, p. 19). Additionally, adolescents are more effective at selecting different sources of social support depending on the type of stressor (Skinner & Zimmer-Gembeck, 2007). Furthermore, with the development of meta-cognitive skills, adolescents achieve greater flexibility and sophistication in their coping, and coping strategies continue to become more cognitive in nature (Skinner & Zimmer-Gembeck, 2010).

Especially relevant for the current study, the connections of coping and emotion regulation with psychopathology may become stronger as children develop and move into adolescence. As the implementation of coping and emotion regulation efforts increase in complexity, the stressful events and circumstances children and adolescents encounter likely also increase in complexity (Grant et al., 2006). Further, there is a significant increase in the incidence and prevalence of some forms of psychopathology in adolescence, including increased rates of anxiety, depression, eating disorders, and conduct problems (e.g., Copeland, Shanahan, Costello, & Angold, 2011). Notably, little research has been devoted to examining the developmental trajectory of both coping and emotion regulation and symptoms of psychopathology in tandem.

In order to further explore developmental variations in associations among coping and emotion regulation and psychopathology, we examined age as a moderator by testing these associations in studies with child samples as compared to adolescent samples. As noted above, this distinction captures a critical developmental transition, including increasing self-reliance in coping, the use of peers as social resources, and the growth of meta-cognitive and executive function skills that may provide a foundation for the use of more complex cognitive coping and emotion regulation strategies (Skinner & Zimmer-Gembeck, 2010; Thompson & Goodman, 2010).

Measure Quality

The present review includes measures of coping and emotion regulation that meet at least the most basic psychometric criterion; i.e., the availability of data on internal consistency. More stringent criteria for evidence-based methods of assessment include test-retest reliability and construct and criterion validity (e.g., Blount et al., 2008); however, these standards are rarely met in measures of coping and emotion regulation. Only three coping measures (CCSC, Ayers et al. 1996; RSQ, Connor-Smith et al., 2000; PRI, Walker et al. 1997) meet the criteria for top-down, theory-based measures of coping laid out by Skinner et al. (2003). These criteria include the use of CFA to test the fit of items into lower order coping categories and empirically examine hierarchical systems that also test the fit of multiple lower order ways of coping into higher order categories. Further, only three emotion regulation measures (DERS, Gratz & Roemer, 2004; ERQ, Gross & John, 2003; CEMS, Zeman et al., 2010) report on convergent and/or discriminant validity with other measures of emotion regulation or coping. Notably, the majority of validity data reported is from EFA or principal components analysis. These tests have typically not been replicated and therefore are not viewed as strong as tests of theoretically derived models that have been tested using CFA (Skinner et al., 2003).

Validity has also been examined infrequently through multi-informant reports of coping and emotion regulation (i.e., report from child and their caregiver). For example, the ways in which children cope with chronic pain as reported by parents and children have been shown to predict cross-informant reports of anxiety and depression in latent variable analyses (Compas et al., 2006b). Further, self-report coping questionnaires have been validated through associations with physiological measures, including glycemic control in children with diabetes (e.g., Jaser et al., 2012) and heart rate reactivity to laboratory stressors (Connor-Smith et al., 2000; Dufton, Dunn, Slosky, & Compas, 2011). Overall, the introduction of some psychometrically strong measures since the previous narrative analyses (e.g., Compas et al., 2001) suggests that more recent studies may reflect improvement in measurement quality.

Because of enduring concerns about the ability of questionnaires to adequately capture processes of coping and emotion regulation, we have included measurement quality as a potential moderator of effects in the meta-analysis that follows. To code measure quality, we used the criterion of the presence of data on the internal consistency of measures of domains, factors and strategies (see Rueger, Malecki, Pyun, Aycock, & Coyle, 2016; Skinner et al., 2003).

Informant

The assessment of child and adolescent psychopathology has a long tradition of obtaining reports of internalizing and externalizing symptoms from children’s and adolescents’ self-reports and reports from other informants including parents, teachers, mental health professionals, and trained observers (e.g., Achenbach, McConaughy, & Howell, 1987; De Los Reyes et al., 2015; Podsakoff, MacKenzie, & Podsakoff, 2012; Rescorla et al., 2013). By comparison, the measurement of coping and emotion regulation in young people has relied predominantly on self-report measures. The majority of the coping and emotion

regulation measures included in the current meta-analysis were designed only for self-report and a much smaller number were designed to only obtain reports from other informants (typically parents). As a consequence, much of the literature is characterized by studies that have relied on single informant report of both coping and emotion regulation and internalizing and externalizing symptoms. The use of the same informant for both constructs may artificially inflate the magnitude of these associations due to problems of shared method variance in the measures of coping and emotion regulation with measures of psychopathology (see LeGrange & Cole, 2008). As such, we have included the use of a single informant to assess both coping and emotion regulation and psychopathology vs. the use of different informants to assess these constructs (i.e., multi-informant) as a possible moderator of the magnitude of these associations.

Cross-Sectional and Longitudinal Research Designs

Studies of the association of coping and emotion regulation with internalizing and externalizing symptoms have varied with regard to the use of cross-sectional vs. longitudinal designs. Cross-sectional designs cannot test the temporal sequence of the association between coping and emotion regulation and internalizing and externalizing symptoms (Podsakoff et al., 2012). Although longitudinal designs cannot provide evidence for causal relations, these designs are a more rigorous test of the degree to which coping and emotion regulation account for variance in symptoms across time. Therefore, studies that include longitudinal data provide important tests of the association between coping and emotion regulation and symptoms of psychopathology over time. In the meta-analytic review below, we present findings for cross-sectional and longitudinal studies separately.

Stress, Emotions and Psychopathology in Children and Adolescents

The backdrop to research on coping and emotion regulation in children and adolescents lies in current conceptualizations of psychopathology, the role of exposure to stressful events and circumstances as a source of risk, and relations between stress and emotions. As summarized in a series of reviews by Grant and colleagues (Grant et al., 2003, 2006; Grant, Compas, Thurm, McMahon, & Gipson, 2004; Grant, McMahon, Duffy, Taylor, & Compas, 2011; McMahon, Grant, Compas, Thurm, & Ey, 2003), exposure to psychosocial stressors and conditions of chronic adversity is well established as a major risk factor for internalizing and externalizing psychopathology during childhood and adolescence. Grant et al. (2004) identified over 50 prospective longitudinal studies that provided evidence that exposure to stressful events and chronic adversity predicts increases in both internalizing and externalizing symptoms over time. Consistent with the heuristic model of Nolen-Hoeksema and Watkins (2011), exposure to stressful life events appears to function as a distal risk factor whose association with internalizing and externalizing symptoms is both mediated and moderated by more proximal factors, including the ways children and adolescents cope with stressful events and regulate their emotions (Grant et al., 2003, 2006). Further, McMahon et al. (2003) found evidence that exposure to stressful events and chronic adversity is a nonspecific risk factor that places children and adolescents at risk for the full range of internalizing and externalizing forms of psychopathology.

Exposure to *stressors* (i.e., environmental events or chronic conditions that objectively threaten the physical and/or psychological health of individuals) is distinct from the concept of *psychological stress*, which is defined as an internal state experienced by the individual rather than the occurrence of stressors in the environment (Grant et al., 2003). Psychological stress as a concept has been criticized as overly vague and has been supplanted by a focus on *specific emotions* (Gross, 1999, 2001; Lazarus, 1999, 2006). Further, research has moved toward an increasing emphasis on physiological aspects of the stress response system including reactivity in the hypothalamic-pituitary-adrenal axis (e.g., Doom & Gunnar, 2013; Han, Miller, Cole, Zahn-Waxler, & Hasting, 2016) and cardiac vagal tone (e.g., McLaughlin, Alves, & Sheridan, 2014). With the shift in focus from psychological stress to specific emotions, research on emotion regulation has emphasized the importance of identifying and regulating discrete emotions including sadness, anger, and anxiety (e.g., Zeman, Cassano, Suveg, & Shipman, 2010; Zeman, Shipman, & Suveg, 2002). Further, in the process model of emotion regulation (e.g., Gross, 2001; Gross & Jazaieri, 2014; Gross, Sheppes, & Urry, 2011), efforts are distinguished in the context of the phases of the emotion-generative process. The phases during which specific emotions are regulated include both antecedent-focused strategies, which influence an emotion before it is fully formed, and response-focused strategies, which influence an emotion once it has been fully developed. Antecedent-focused strategies include situation selection (e.g., avoidance of emotionally arousing situations), situation modification (e.g., problem solving), attentional deployment (e.g., distraction), and cognitive change (e.g., cognitive reappraisal), and response-focused strategies include response modulation (e.g., emotional suppression).

Together, this research suggests that it is important to consider both how children and adolescents *cope with the occurrence of stressors* in the form of stressful events and conditions of chronic adversity in the environment and *regulate specific emotions* as they arise in ongoing transactions with the environment. We return to these issues in the Discussion after presenting the findings of the current meta-analysis.

Dimensional and Categorical Features of Internalizing and Externalizing Psychopathology

Examination of the association of coping and emotion regulation with psychopathology also requires careful consideration of the nature of internalizing and externalizing symptoms and disorders, as this shaped the selection of relevant studies for inclusion in this meta-analysis. After a longstanding debate regarding the structure of psychopathology, a significant shift has occurred in the conceptualization of psychopathology, with recognition that symptoms of disorder occur both on continua as well as in discrete categories (Hyman, 2010; Rutter et al., 2011). Further, the National Institute of Mental Health Research Domain Criteria (RDoC; Casey, Oliveri, & Insel, 2014; Insel, 2010; Insel & Cuthbert, 2015) represents a dimensional framework that conceptualizes mechanisms underlying psychopathology in five domains (negative valence systems, positive valence systems, cognitive systems, systems for social processes, and arousal and regulatory systems) that can be assessed across multiple levels of analysis.

The preponderance of research on coping and emotion regulation in children and adolescents has focused on dimensional approaches to psychopathology, reflected in both broad and

narrowband syndromes of psychopathology. Evidence for the broad factors of internalizing and externalizing symptoms of psychopathology and narrow subtypes within these broad categories initially described by Achenbach (1966) provides strong support for dimensional models (e.g., Krueger & Markon, 2006; Lahey, Van Hulle, Singh, Waldman, & Rathouz, 2011; Seeley, Kosty, Farmer, & Lewinsohn, 2011). These dimensions have been identified in studies of children, adolescents, and adults and across a wide range of cultures and countries (e.g., Ivanova et al., 2007a; Ivanova et al., 2007b; Rescorla et al., 2012). In addition, Kraemer, Noda and O'Hara (2004) note that although both categorical and dimensional approaches are fundamentally equivalent, dimensional approaches are advantageous for hypothesis testing because of the loss of power associated with the use of categorical variables. Given the strong evidence for the broad dimensions of internalizing and externalizing symptoms (Achenbach & Rescorla, 2001), these are the focus of the current review.

Evidence of the co-occurrence of symptoms and diagnostic comorbidity (Rhee, Lahey, & Waldman, 2015) both within and across internalizing and externalizing symptoms of psychopathology has led to research on sources of risk and resilience that are either specific to or common across multiple symptom dimensions and disorders. As reflected in the 212 studies included in the current meta-analytic review, processes of coping and emotion regulation are prime candidates for transdiagnostic sources of risk and/or resilience in children and adolescents (Compas, Watson, Reising, & Dunbar, 2013).

Previous Reviews of the Association of Coping and Emotion Regulation with Psychopathology

Several reviews have examined the associations between coping and emotion regulation and symptoms of psychopathology in adults (e.g., Aldao et al., 2010; Nolen-Hoeksema, 2012; Webb et al., 2012). In one of the most comprehensive meta-analyses to date, Aldao et al. (2010) estimated associations for dispositional measures of six emotion regulation strategies with four types of symptoms of psychopathology from 114 studies (108 studies with adults and 6 studies with children). This meta-analysis found medium to large positive associations for rumination with symptoms of anxiety, depression, disordered eating, and substance use, and small to medium positive associations for avoidance and suppression with symptoms of anxiety, depression, and disordered eating. In addition, they found small to medium negative associations for problem solving with anxiety, depression, and disordered eating, and a small negative association for reappraisal with symptoms of depression. No significant associations were found for acceptance. It is noteworthy that the emotion regulation strategies included in this review have also been commonly studied as examples of coping strategies (Aldao et al., 2010). The current review builds on this important meta-analysis by focusing exclusively on coping and emotion regulation in children and adolescents and using an inclusive framework for what is considered coping and emotion regulation.

In addition, several narrative reviews have examined the relations between coping and emotion regulation and internalizing and externalizing symptoms. Eisenberg et al. (2010) described the association of children's emotion regulation with internalizing and

externalizing problems. They reported a general pattern of negative associations between emotion regulation and internalizing and externalizing problems in samples ranging from infancy through childhood and adolescence. More narrowly focused reviews have examined coping and emotion regulation with specific samples or subgroups and specific outcomes. Examples include adolescents coping with social stressors (Clarke, 2006), adolescents coping with relationship stressors (Seiffge-Krenke, 2011), children coping with the chronic stress associated with poverty (Evans & Kim, 2013), and children and adolescents coping with chronic illness (Aldridge & Roesch, 2007; Blount et al., 2008; Compas et al., 2012). We extend these narrative reviews by conducting a meta-analysis to estimate the associations of a broad range of domains, factors, and strategies of coping and emotion regulation in response to a wide range of stressors and emotions with symptoms of internalizing and externalizing symptoms in children and adolescents.

In one of the only previous meta-analyses of coping and emotion regulation in childhood and adolescence, Clarke (2006) examined the relations between active coping and psychosocial health among youth in 40 studies of coping with interpersonal stress. Four areas of psychosocial functioning were examined: externalizing and internalizing behavior problems, social competence, and academic performance. The association between active coping and psychosocial functioning across the four areas examined was small, with correlations ranging from .02 to .12 (Clarke, 2006). In a second meta-analysis of 26 studies including children and adolescents, Aldridge and Roesch (2007) examined how children cope with cancer-related stress based on two coping taxonomies: approach vs. avoidance coping and problem-focused vs. emotion-focused coping. In this analysis, approach, avoidance, and emotion-focused coping were unrelated to overall adjustment. A small positive association was found between problem-focused coping and adjustment, indicating use of problem-focused coping was associated with poorer adjustment. Most recently Schäfer, Naumann, Holmes, Tuschen-Caffier, and Samson (2017) conducted a meta-analysis of the association between emotion regulation strategies and symptoms of depression and anxiety in adolescence. Results from this review of 35 studies indicated that emotion regulation strategies considered to be adaptive (cognitive reappraisal, problem solving, and acceptance) were significantly negatively related to symptoms of anxiety and depression and those considered to be maladaptive (avoidance, suppression, and rumination) were significantly positively related to symptoms of depression and anxiety. The present meta-analysis builds on these reviews by integrating a larger and more inclusive set of studies of coping and emotion regulation in response to a wider range of stressors and emotions and including studies of both internalizing and externalizing symptoms.

The most recent comprehensive review of coping and internalizing and externalizing psychopathology in childhood and adolescence appeared 16 years ago (Compas et al., 2001). This review provided a summary of findings from 63 published studies that reported on analyses of coping and internalizing and externalizing symptoms of psychopathology in children and adolescents. The authors conducted a narrative review as a function of two broad dimensions of coping: engagement vs. disengagement coping and problem-focused vs. emotion-focused coping. The general pattern of findings suggested that forms of engagement coping and problem-focused coping were associated with lower internalizing and externalizing symptoms. In contrast, disengagement coping and emotion-focused coping

were generally associated with higher levels of internalizing and externalizing symptoms. However, this review did not provide quantitative analyses of these patterns of findings.

In spite of these contributions from recent reviews, several key issues have not yet been examined. First, none of these reviews have explicitly included processes of both coping and emotion regulation in children and adolescents. Second, measures of coping and emotion regulation have not been evaluated with regard to their psychometric quality. Third, there has been no quantitative meta-analysis of the associations of coping *and* emotion regulation with internalizing and externalizing symptoms in children and adolescents.

The Present Study: Meta-Analysis

To determine the association of coping and emotion regulation with symptoms of internalizing and externalizing psychopathology in children and adolescents, we examine studies from 2001 through 2012 in which these constructs were measured. Our goal is to estimate effect sizes for broad *domains*, intermediate *factors*, and specific *strategies* of coping and emotion regulation. We examine effects for internalizing symptoms and externalizing symptoms of psychopathology.

We address three central questions: (1) Are broad *domains* of coping and emotion regulation associated with internalizing and externalizing symptoms of psychopathology in children and adolescents? (2) Are intermediate *factors* of coping and emotion regulation associated with internalizing and externalizing symptoms? (3) Are specific coping and emotion regulation *strategies* associated with total internalizing and externalizing symptoms? We also examine three potential moderators of these associations: age, measure quality, and informant (i.e., single informant vs. multiple informant). We also examine findings separately for cross-sectional and longitudinal studies. We consider the implications of the answers to these questions for the conceptualization of coping and emotion regulation, the measurement of these constructs, and directions for future research.

Method

Literature Search

We searched for empirical reports published from January 2001 to December 2012 to identify articles that examined coping or emotion regulation in relation to internalizing and externalizing symptoms of psychopathology in children and adolescents. The start date of 2001 covers articles since the last comprehensive review of coping and internalizing and externalizing symptoms in children and adolescents (Compas et al., 2001). We selected the date of this earlier review as the starting point for the current meta-analysis because this marked a significant shift in the measures that were most frequently used to measure coping and emotion regulation. Our systematic literature search was conducted using the PsycINFO database, with the specific search terms *coping* OR *emotion regulation* AND *child* (for child or children)* OR *adolesc*(for adolescents or adolescence)* across all fields (i.e., title, abstract, keywords). We further limited the search to peer-reviewed, English language journal articles. The initial search process yielded 7,085 articles (see Figure 1 for a PRISMA flow diagram). In addition, we supplemented our search by reviewing the reference sections

of published review articles on coping and emotion regulation, yielding an additional 24 articles. A brief review of the titles and abstracts resulted in 1,107 articles that appeared to report an association between coping or emotion regulation and psychopathology in children or adolescents. Based on inclusion criteria outlined below, 212 studies were included in the quantitative meta-analysis. Book chapters, non-peer reviewed journal articles, review articles, and dissertations were not included, consistent with recent meta-analytic reviews of coping and emotion regulation (e.g., Aldao et al., 2010). We believed that restricting our search to published peer-reviewed articles would yield higher quality studies. Further, we reduced the concern for file-drawer effects by including all reported effects of coping or emotion regulation in each study, including non-significant effects.

Inclusion Criteria

The following criteria determined the selection of studies included in the meta-analysis:

1. Studies were included if they assessed children or adolescents between the ages of 5 to 19-years-old. We excluded studies that included younger children (infants or preschool age) because the methodologies used to study coping and emotion regulation in children under age 5 differ substantially from those used with school-aged children (e.g., observation of behavior to draw inferences about regulatory strategies). Further, research on the development of coping and emotion regulation indicates that infants and preschool age children have not yet fully developed the cognitive skills needed to employ many of the more complex cognitive strategies (e.g., cognitive reappraisal, problem solving) that are the focus of this review (Zimmer-Gembeck & Skinner, 2016). We excluded older adolescents (i.e., age 20) to avoid confounding our results with college age samples.
2. Studies were included if they used a measure of coping and/or emotion regulation that reported reliability data in the study sample or if reliability data for that measure was reported elsewhere in the literature (e.g., Cronbach's alpha). Further, because reliability cannot be calculated with two items or less, coping or emotion regulation scales with fewer than three items were excluded from analyses.
3. Studies were included if they measured reports of coping and/or emotion regulation in response to emotions or actual stressors or events. Measures that elicited responses to hypothetical scenarios, or asked participants how they *would* cope or regulate their emotions in a given situation, were excluded.
4. Studies were included if measures of coping and/or emotion regulation assessed controlled processes. Coping and/or emotion regulation scales that may reflect more automatic or involuntary responses to stress (e.g., catastrophizing, rumination, emotional or physiological reactivity) were excluded from analyses.
5. Studies were included if they used at least one reliable measure of internalizing or externalizing symptoms of psychopathology. The measures that were included in these studies are widely used in research on child and adolescent psychopathology (see Table 3 for a list of the measures used in the included

studies). Similar to the criteria for coping and emotion regulation measures, we did not include psychopathology measures that consisted of only one or two items (e.g., alcohol use in past week).

6. Studies were included if they reported a test of the relationship between coping and/or emotion regulation and internalizing and/or externalizing symptoms, and if the study reported adequate statistics to calculate effect sizes. Thus, qualitative studies were not included.

7. Studies were excluded if they involved experimental manipulation of coping and/or emotion regulation (e.g., intervention studies). However, if pre-intervention tests of the association between coping and/or emotion regulation with symptoms of internalizing or externalizing psychopathology were reported, these were included in the meta-analysis.

Data Coding Procedure

A standard procedure was used to structure the coding process. Each study was coded for the measure of coping and/or emotion regulation, the measure of internalizing and/or externalizing psychopathology, including scale reliabilities, sample size, and the statistics describing the relationship between coping or emotion regulation and psychopathology. We also recorded descriptive information, including year of publication and the country where the study was conducted. Studies using modified versions of validated measures were noted. Each study was independently coded by two of the study authors, and coding discrepancies were resolved through discussion between the authors of the meta-analysis.

As noted above, coping and emotion regulation scales were coded into three levels: domains, factors, and strategies (see Appendix). Each coping and emotion regulation domain, factor, and strategy was independently coded by two of the study authors (89.1% inter-rater reliability), and discrepancies were resolved through discussion. The broad *domains* of coping and emotion regulation included (1) total coping (e.g., self-coping, unitary coping), (2) emotion regulation (e.g., adaptive affect regulation, sadness regulation, anger management, palliative emotion regulation), (3) emotion dysregulation (e.g., abreacting, dysregulation), (4) adaptive coping (e.g., adaptive coping, positive coping, productive coping), and (5) maladaptive coping (e.g., dysfunctional coping, helpless coping, negative coping, nonproductive coping).

Second, we identified intermediate *factors* of coping and emotion regulation that included (1) problem-focused (e.g., problem-directed coping, task-oriented coping), (2) emotion-focused (e.g., emotional engagement, internal coping, emotion-oriented coping), (3) engagement/approach (e.g., active coping, approach coping, behavioral coping), (4) disengagement (e.g., behavioral disengagement, passive coping, detached coping), (5) primary control coping (e.g., primary control coping), (6) secondary control coping (e.g., accommodative coping), and (7) social support coping (e.g., asking for help, developing social support, seeking guidance, support coping).

Finally, specific coping and emotion regulation *strategies* were categorized into (1) problem solving (e.g., cognitive problem solving, decision making, planning), (2) emotional

expression (e.g., expressing feelings, verbal sharing), (3) emotional suppression (e.g., anger inhibition, expressive reluctance, repression), (4) cognitive reappraisal (e.g., minimization, positive reappraisal, rationalization), (5) distraction (e.g., behavioral distraction, entertainment, seeking diversions), (6) acceptance (e.g., rational acceptance, resignation), (7) avoidance (e.g., avoidant activities, cognitive distancing, withdrawal), (8) denial (e.g., blaming others, defensive coping), and (9) wishful thinking (e.g., fantasizing, imagining), (10) emotional modulation (e.g., anger control, relaxation, tension reduction), (11) unregulated release of emotions (e.g., emotional discharge, externalizing negative coping, vent coping), and (12) humor (e.g., humor).

Similarly, the psychopathology measures were coded into categories of dependent variables. Based on the well-validated measures of Achenbach System of Empirically Based Assessment (ASEBA) of behavioral and emotional problems (Achenbach & Rescorla, 2001), the broadband categories of internalizing and externalizing symptoms were used. Internalizing symptoms included measures of depression, anxiety, and somatic complaints, and externalizing symptoms included measures of aggression, conduct problems, and substance use.

All analyses were conducted with the Comprehensive Meta-Analysis program (Borenstein, Hedges, Higgins, & Rothstein, 2005), using random effects models, as the studies varied in methodology and design, using study as the unit of analysis and the mean of the selected outcomes. The mean effect size for each study (r) was used as the level of analysis; therefore, if a single study tested associations between multiple coping strategies or symptoms within the same category, the mean effect size was calculated. Similarly, when authors published different studies using the same sample or a smaller subset of the same sample, a mean effect size was used in analysis. When studies selectively reported only significant associations (e.g., “All other correlations were non-significant”), missing tests were conservatively coded as $r = .00$. As such, 54 effect sizes were estimated as .00. Excluding these non-significant effect sizes would have biased the meta-analysis, potentially overestimating the mean effect size for the association between coping and emotion regulation and symptoms. We utilized Cohen’s (1988) guidelines to interpret the magnitude of the effect size for significant correlations (i.e., $r = .10$ as small, .30 as medium, and above .50 as large).

In analyses, we used correlations or mean differences where reported. In line with other recent meta-analyses (e.g., Robles, Slatcher, Trombello, & McGinn, 2014), if the only statistic reported was from a multivariate analysis (standardized β), we converted the β to r using the formula ($r = \beta + .05\lambda$, where λ equals 0 when the β is negative and λ equals 1 when the β is nonnegative) recommended by Peterson and Brown (2005). Effect sizes in meta-analyses based on very small number of studies are subject to problem in data synthesis (Davey, Turner, Clarke, & Higgins, 2011); therefore, we set a threshold of a minimum of five studies ($k = 5$) to estimate effect sizes for the cross-sectional studies. However, because there were relatively few longitudinal studies ($k = 17$), we set the threshold at a minimum of three studies ($k = 3$) to estimate effects for longitudinal analyses.

For each coping and emotion regulation domain, factor, and strategy with internalizing and externalizing psychopathology, weighted mean effect sizes (*r*), 95% confidence intervals, and estimated a heterogeneity statistic (*Q*) were calculated using the procedures outlined by Hedges and Olking (1985). The 95% confidence intervals on the effect sizes represent the range in which the mean effect size falls in 95% of cases; the calculation for confidence intervals (lower limit and upper limit) is as follows:

$$LL_{CI} = M^* - Z\sqrt{V_{M^*}}$$

$$UL_{CI} = M^* - Z\sqrt{V_{M^*}}$$

where M^* is the mean effect size in the sample, Z is the critical *z* value representing the confidence level, and V_{M^*} is the variance of M^* (Borenstein et al., 2005). A mean effect is considered significant when the confidence interval does not include zero. The number of studies (*k*), total sample size (*N*), mean effect size (*r*) and significance value of the effect, 95% confidence interval (95% CI) for the mean effect size, and *Q* statistic and its significance value are reported for cross-sectional analyses in Table 4 and for longitudinal analyses in the text below.

Moderation.—For cross-sectional analyses, categorical moderator analyses were conducted to determine whether age, measure quality, or informant significantly moderated the associations between coping and emotion regulation and symptoms of psychopathology. A significant *Q* statistic indicates that there is significant heterogeneity within the studies contributing to the overall effect size, and suggests that there may be moderating variables to consider (Borenstein et al., 2009). As such, for any cross-sectional effect size with a significant *Q* statistic, we ran analyses to determine whether age, measure quality, or informant significantly moderated associations between coping and emotion regulation and symptoms of psychopathology. Consistent with previous meta-analyses, a minimum of three studies ($k = 3$) per level of the moderator was required for moderator analyses (e.g., Slaget et al., 2016).

First, we coded the study sample as “child” (mean age 5–10) or “adolescent” (mean age 11–19), using the mean age of each sample. Second, measures were coded as “high quality” if they were based on a conceptual model of coping or emotion regulation and if reliability and convergent or discriminant validity data were reported. Studies were coded as “adequate quality” if the measure used reported only reliability data or minimal information on validity, following criteria for measurement quality described in previous reviews and meta-analyses (e.g., Rueger, Malecki, Pyun, Aycock, & Coyle, 2016; Skinner et al., 2003). Finally, we coded studies as “single informant” if the same respondent completed the measure of coping and emotion regulation and psychopathology. Studies were coded as “multi-informant” if one informant reported on the child’s coping and emotion regulation and another informant reported on child’s symptoms.

In the Comprehensive Meta-Analysis program, associations within studies were treated as non-independent. As such, when a study reported associations for both levels of a moderator variable (e.g., reported effects for the same category of coping/emotion regulation and symptoms for both children and adolescent samples), the effect sizes from the study were not included in the analysis. For both levels of the moderating variable, the number of studies (*k*), total sample size (*N*), mean effect size (*r*), and 95% confidence interval (95% CI) for the mean effect size are reported, in addition to the mixed effects total between groups factor (Q_b) and its significance level.

Publication bias.—Several steps were taken to investigate the possibility of publication bias, which occurs as a result of selective publication of research findings based on the direction and size of the results. It is important for meta-analytic studies to assess its presence and impact, because this systematic bias can lead to an inflated effect size estimates and inaccurate conclusions. First, we visually examined the funnel plot for each significant effect size. The funnel plot for an effect size is a plot of the standard error of each study contributing to the overall effect size (a reflection of sample size) on the y-axis with the study's effect estimate on the x-axis. The effect estimate should be more precise with increasing sample size. As such, in the absence of publication bias, effect estimates from studies with smaller sample sizes should be scattered symmetrically at the bottom of the plot and center more closely around the mean effect estimate at the top of the plot as the sample size increases, which creates a funnel shape. In the presence of publication bias, the plot will appear asymmetrical, suggesting that small samples reporting small to non-significant effect sizes were less likely to be published.

Second, we calculated Egger's tests to assist in the interpretation of the funnel plots, which is a statistical test used to detect funnel plot asymmetry (Egger et al., 1997). Of note, the Egger's test has been reported to have lower power when used for associations with fewer than 10 studies (Higgins & Green, 2011).

Third, we conducted trim and fill analyses (Duval & Tweedie, 2000) to determine how many studies would need to be included above or below the meta-analytic mean to make the funnel plot symmetrical. A higher number of studies denotes greater publication bias. Trim and fill analyses also impute the missing studies and calculate adjusted meta-analytic effect sizes that account for publication bias.

Results

Based on the inclusion criteria, a total of 212 studies with 80,850 participants were included in the analyses (see Table 3 for study details). Of the included studies, 24 studies conducted different analyses using the same sample or variants of the same sample. Several studies reported associations separately for subsamples (e.g., boys vs. girls), and some studies reported more than one measure of coping and emotion regulation or psychopathology. The number of associations ranged from 1 to 55 per article, with most articles reporting multiple effect sizes, providing a total of 1,649 effects coded for the meta-analysis. Forty-two studies used measures of emotion regulation, 169 studies used measures of coping, and one study referred to "emotion regulation coping." Forty-six studies included a child sample, 163

studies included an adolescent sample, and three studies included both child and adolescent samples. Seventy-four studies used measures classified as “high quality”, and 138 studies used measures classified as “adequate quality”. One hundred and fifty-eight studies used reports from single informants, 30 studies used reports from multiple informants, and 24 studies reported both single and multiple informant reports. There were not a sufficient number of studies to calculate cross-sectional (k = 5 or more) or longitudinal (k = 3 or more) effect sizes for emotion modulation, unregulated release of emotions, and humor with internalizing or externalizing symptoms. Therefore, these three strategies are not included in Table 4 and are not presented in the results.

Cross-Sectional Effect Sizes

Effect sizes for the cross-sectional studies of the coping and emotion regulation domains, factors, and strategies and both internalizing and externalizing symptoms are presented in Table 4 and summarized below.

Domains.—Maladaptive coping was significantly positively associated with internalizing symptoms, indicating greater use of maladaptive coping was associated with higher levels of symptoms. A negative effect size was found for adaptive coping and externalizing symptoms, indicating greater use of adaptive coping was associated with lower symptoms. Emotion regulation was significantly negatively associated with both internalizing and externalizing symptoms, such that greater use of emotion regulation was associated with lower levels of symptoms. All other effect sizes for domains of coping and emotion regulation were non-significant or could not be calculated due to too few studies (k < 5) examining that particular domain (see Table 4).

Factors.—Engagement/approach coping was significantly negatively associated with internalizing symptoms, such that greater use of engagement/approach coping was associated with lower symptoms. A significant negative effect size was found for problem-focused coping and externalizing symptoms, indicating greater use of problem-focused coping was associated with lower symptoms. Disengagement coping was significantly positively associated with both internalizing and externalizing symptoms, such that greater use of disengagement coping was related to higher levels of symptoms. Both primary control coping and secondary control coping were significantly negatively associated with symptoms. Thus, greater use of these coping factors was related to lower internalizing and externalizing symptoms. All other effect sizes for factors of coping and emotion regulation were non-significant (see Table 4).

Strategies.—Emotional suppression and denial were significantly positively associated with internalizing symptoms, and avoidance was significantly positively associated with both internalizing and externalizing symptoms. That is, greater use of emotional suppression, denial and avoidance was associated with higher levels of symptoms. All other effect sizes for coping and emotion regulation strategies were non-significant or could not be calculated due to too few studies (k < 5) examining that particular strategy (see Table 4).

Heterogeneity of effect sizes.—For all calculated cross-sectional effects, with the exception of two effect sizes, there was a significant *Q* statistic (see Table 4). For all cross-sectional associations with a significant *Q* statistic, we analyzed age, measure quality, and informant as potential moderators. The *Q* statistic for maladaptive coping and internalizing symptoms and for emotional suppression and externalizing symptoms was not significant, and therefore moderator analyses were not conducted for these associations.

Moderator Analyses

Moderation analyses for the cross-sectional studies of the coping and emotion regulation domains, factors, and strategies are presented in Table 5 and the text below.

Age.—At the domain level, there were no significant moderating effects of age for the domains of adaptive coping or emotion regulation (see Table 5).

Among factors of coping and emotion regulation, age was a significant moderator for the association between engagement/approach coping and internalizing symptoms. Specifically, there was a significant negative association between engagement/approach coping and internalizing symptoms for adolescents, but not children. However, age was not a significant moderator of the relationship between engagement/approach coping and externalizing symptoms. All other effect sizes that could be estimated at the factor level of coping and emotion regulation with age as a moderator were non-significant (see Table 5).

For strategies of coping and emotion regulation, age was a significant moderator of the association between cognitive reappraisal and internalizing symptoms such that the association was larger for adolescents than for children. A significant moderating effect for age was also found for emotional suppression and internalizing symptoms, indicating this association was significant for adolescent samples but not child samples. All other effects of coping and emotion regulation strategies that could be estimated with age as a moderator were non-significant (see Table 5).

Measure quality.—There were no significant moderating effects of measure quality for domains, factors or strategies of coping and emotion regulation (see Table 5).

Informant.—For domains, factors, and strategies of coping and emotion regulation, informant for measures of coping and symptoms yielded no significant moderator effects (see Table 5).

Longitudinal Effect Sizes

As noted above, given the small number of longitudinal studies ($k = 17$; sample sizes ranged from $n = 68$ to 1,444) in the current meta-analysis, we calculated effects for any domain, factor, or strategy that had three or more studies contributing to the effect size.

Domains.—At the domain level, only one effect size could be calculated. Emotion regulation was not significantly associated with internalizing symptoms ($k = 3$, $r = -.08$, $p = .52$, 95% CI [−. −.37, .22]).

Factors.—Seven effect sizes could be calculated for factors of coping and emotion regulation, and two were significant. Disengagement coping ($k = 4$, $r = .18$, $p = .01$, 95% CI [.04, .31]) and social support coping ($k = 4$, $r = .12$, $p < .001$, 95% CI [.05, .18]) were significantly positively associated with internalizing symptoms. That is, greater use of disengagement coping and social support coping was associated with higher levels of internalizing symptoms. However, social support coping was not significantly associated with externalizing symptoms ($k = 4$, $r = -.02$, $p = .72$, 95% CI [−.12, .09]). Primary control coping ($k = 3$, $r = -.07$, $p = .58$, CI [−.29, .16]) and secondary control coping ($k = 5$, $r = -.00$, $p = .90$, CI [−.07, .07]) were not significantly associated with internalizing symptoms. Further, engagement/approach coping was not associated with internalizing symptoms ($k = 9$, $r = -.02$, $p = .76$, 95% CI [−.16, .12]) or externalizing symptoms ($k = 5$, $r = .05$, $p = .20$, 95% CI [−.03, .12]).

Strategies.—Four effect sizes could be calculated for coping and emotion regulation strategies, and one was significant. Avoidance was significantly positively associated with internalizing symptoms ($k = 6$, $r = .08$, $p = .003$, 95% CI [.03, .13]), such that greater use of avoidance was associated with higher internalizing symptoms. However, avoidance was not significantly associated with externalizing symptoms (k = 4, $r = .04$, $p = .62$, 95% CI [−.12, .19]). In addition, distraction was not significantly associated with either internalizing (k = 4, $r = -.02$, $p = .55$, 95% CI [−.11, .06]) or externalizing (k = 3, $r = .02$, $p = .60$, 95% CI [−.06, .10]) symptoms.

Heterogeneity of effect sizes.—For longitudinal associations, all but four effect sizes had a significant Q statistic. The Q statistic for the association between emotion regulation, engagement/approach coping, disengagement coping, and primary control coping with internalizing symptoms was significant. In addition, the Q statistic for the association between avoidance and social support with externalizing symptoms was significant. As such, there was significant heterogeneity within the studies contributing to these overall effect sizes. However, due to the small number of studies contributing to these effect sizes, we did not analyze potential moderators of these relationships.

Publication Bias

Of the 16 significant cross-sectional effect sizes, four effect sizes produced significant Egger's tests, and of the three significant longitudinal effect sizes, none of these effect sizes produced significant Egger's tests. First, at the domain level, the Egger's test for the cross-sectional association between emotion regulation and internalizing symptoms ($k = 15$, regression intercept = −5.03, 95% CI [−9.62, −0.44]) as well as externalizing symptoms ($k = 18$, regression intercept = −4.63, 95% CI [−8.85, −0.41]) was significant. Second, at the factor level, the Egger's test for the cross-sectional association between disengagement coping and externalizing symptoms ($k = 7$, regression intercept = −3.50, 95% CI [−6.30, −0.69]) was significant. Finally, at the strategy level, there was a significant Egger's test for the cross-sectional association between emotional suppression and internalizing symptoms ($k = 10$, regression intercept = −6.91, 95% CI [−10.18, −3.64]).

The funnel plots for the four effect sizes with significant Egger's tests are presented separately in Figure 2. A visual inspection of these plots shows data asymmetry for these effect estimates, suggesting that they may be affected by publication bias. It is noteworthy that data asymmetry was not evident in the other 12 significant cross-sectional effect estimates or the three longitudinal effect estimates.

As a third step, we conducted trim and fill analyses for all significant meta-analytic effect sizes. The results of the trim and fill analyses are presented as adjusted effect sizes in Table 4. Of the 16 significant cross-sectional effect sizes, six effect sizes required values to be added to create a symmetrical funnel plot. Of these six effect sizes, five remained significant. Notably, all five significant adjusted effect sizes were smaller in magnitude as a result of the trim and fill analyses. The effect size for the association between engagement coping and internalizing symptoms was no longer significant as a result of the trim and fill analyses.

For the longitudinal analyses, the effect size for the association between disengagement coping and internalizing symptoms had no values that needed to be added as a result of the trim and fill analyses. Two longitudinal effect sizes required values to be added to create a symmetrical funnel plot. Of these two effect sizes, the effect size for the association between social support and internalizing symptoms remained significant, and the effect size for the association between avoidance and internalizing symptoms was no longer significant.

Discussion

Coping and emotion regulation play central roles in models of risk and resilience for psychopathology in children and adolescents. In spite of the importance of these constructs, there has been no comprehensive quantitative meta-analysis of their association with internalizing and externalizing symptoms in childhood and adolescence. The primary goal of this meta-analysis is to address this gap and determine if there is evidence for an association of domains, factors, and strategies of coping and emotion regulation with internalizing and externalizing symptoms of psychopathology. The results of the meta-analysis lead to an answer of a qualified yes. Evidence of publication bias was found in both the cross-sectional and longitudinal analyses, yet clear evidence was found for significant associations between coping and emotion regulation and symptoms of internalizing and externalizing psychopathology, as the majority of findings remained significant after adjusting for publication bias. However, progress in the field has become stagnant with regard to both conceptualization and methodology. We summarize the findings from our meta-analysis as a benchmark of the current state of the field, followed by a critique and a proposed agenda for improving our understanding of coping and emotion regulation in children and adolescents.

Meta-analytic Findings

The current meta-analysis drew on a large body of evidence from 212 studies with 80,850 participants. Significant findings were found for associations between specific domains, factors and strategies of coping and emotion regulation with internalizing and externalizing symptoms of psychopathology in cross-sectional studies. Tests of three possible moderators (age, measure quality, single vs. multiple informant) yielded relatively few significant

moderation effects. Further, substantially fewer significant effect sizes were found in longitudinal studies as compared to cross-sectional studies.

Publication bias.—All publication bias methods have limitations and no one approach is fully accurate; therefore, we have included multiple approaches to considering publication bias to help better approximate accurate estimations of effect sizes in the literature to date. Evidence was found for the possible influence of publication bias in both the cross-sectional and longitudinal findings. Four of the 16 significant cross-sectional effects had a significant Egger's test, although none of the three significant longitudinal effects had significant Egger's tests. Inspection of the funnel plots associated with the four significant Egger's tests suggested possible publication bias in cross-sectional analyses. Further, the trim and fill analyses indicated publication bias for six of the 16 cross-sectional effect sizes. However, only one cross-sectional effect size was no longer significant in the adjusted analyses. Trim and fill analyses indicated publication bias in two of the three significant longitudinal effects, and one of these longitudinal effect sizes was no longer significant in the adjusted analyses. Taken together, the overall pattern found in the unadjusted analyses was retained in the adjusted effect sizes. However, because we focused only on published studies we cannot rule out possible additional effects of publication bias on the findings in the current meta-analysis.

Cross-sectional studies.—At the domain level, significant effect sizes ranged from small to medium in magnitude (unadjusted and adjusted ranged from $r = -.11$ to .27). Significant medium *negative* associations were found for the broad domain of emotion regulation with both internalizing and externalizing symptoms and a small significant negative association was found for the broad domain of adaptive coping with externalizing symptoms. Conversely, a significant medium *positive* association was found between maladaptive coping and internalizing symptoms. These findings are important in providing the first quantitative evidence that broad measures of both coping and emotion regulation are associated with symptoms of psychopathology in children and adolescents.

However, a closer examination of the items included in the broad domains of coping and emotion regulation suggests that they provide relatively limited information about what children and adolescents do to regulate their emotions or cope with stress. For example, the emotion regulation subscale of the ERC (Shields & Cicchetti, 1997) includes items such as, "Displays appropriate negative emotions in response to hostile, aggressive, or intrusive acts by peers;" "Transitions well from one activity to another; does not become anxious, angry, distressed, or overly excited when moving from one activity to another;" and "Is able to delay gratification." Similarly, the emotion regulation coping subscale from the CEMS (e.g., Zeman, Shipman, & Penza-Clyve, 2011; Zeman et al., 2010) includes: "I keep myself from losing control of my worried/angry/sad feelings;" "I try to calmly settle the problem when I feel worried/mad/sad." These items reflect descriptions of the degree to which children are *able* to regulate their emotions but do not include information about the strategies used to achieve regulation. We discuss this limitation in more detail below when we consider findings from the meta-analysis at the level of intermediate factors and specific strategies. Further, findings on the use of maladaptive coping are largely tautological. That is, if coping

and emotion regulation are labeled *a priori* as maladaptive or dysregulated then it is circular to show that these strategies are related to higher levels of symptoms of psychopathology. Therefore, we suggest that researchers discontinue the use of measures that label coping and emotion regulation as adaptive or maladaptive on an *a priori* basis in favor of measures that provide more detailed descriptions of factors or strategies that are used to cope with stress and regulate emotions.

We found evidence that intermediate factors of coping and emotion regulation are associated with both internalizing and externalizing symptoms. The general factor of engagement/approach coping had small but significant negative associations with internalizing symptoms; however, this effect was no longer significant after adjusting for possible publication bias. Disengagement coping had small significant positive associations with both internalizing and externalizing symptoms. The most consistent factor-level evidence was found for primary control coping and secondary control coping, both of which were significantly negatively associated with both internalizing and externalizing symptoms with the effect sizes ranging from small to medium in magnitude (unadjusted and adjusted effect sizes ranged from $r = -.14$ to $-.30$). These findings suggest that the control-based model that includes primary and secondary control coping has promise for understanding types of coping that are related to lower levels of symptoms (Compas et al., 2012, 2014a). At the time of the last comprehensive review of coping in children and adolescents (Compas et al., 2001), problem-focused and emotion-focused coping were the most commonly studied factors. Therefore it is noteworthy that in the current meta-analysis, problem-focused coping had only a small negative association with internalizing symptoms and neither of the effect sizes for emotion-focused coping was significant. It appears that problem-focused and emotion-focused coping have played a smaller role in research on coping in children and adolescents in the past decade and may have been supplanted at the factor level by primary control and secondary control coping, both in terms of the frequency that they are studied and the magnitude of effects they produce. Finally, social support coping continues to be widely studied, yet, despite having enough studies to calculate effect sizes, we found no significant associations between social support and symptoms of psychopathology. While these findings suggest that using social support may not be an effective means of coping or regulating emotions for children and adolescents, it is also plausible that measures of social support may not be capturing the way that social networks are used by children and adolescents to cope with stress and regulate emotions (see Rueger et al., 2016, for a meta-analysis of available and enacted social support and depressive symptoms in adolescence).

It is important to note that, although there are no emotion regulation measures that are categorized at the factor level, emotion regulation strategies are embedded within factors derived from coping measures. For example, primary control coping includes problem solving, emotional expression, and emotional modulation; secondary control coping includes cognitive reappraisal, distraction, and acceptance; and disengagement coping includes avoidance and wishful thinking (Connor-Smith et al., 2000). All of these strategies are also included in studies of emotion regulation (Aldao et al., 2010; Gross & Jazaieri, 2014; Sheppes, Suri, & Goss, 2015). Thus, findings regarding coping factors also provide indirect support for emotion regulation factors and highlight the somewhat artificial distinctions

between these constructs in terms of current approaches to measurement. We return to this issue in our proposed directions for future research.

In spite of the hope that measures of specific strategies would yield a more detailed and nuanced picture of the association of coping and emotion regulation with symptoms, there was relatively little evidence at the level of strategies. Small but significant positive associations with symptoms were found for emotional suppression, avoidance, and denial. However, none of the other 11 effect sizes that could be estimated were significant. These findings differ from those reported by Aldao et al. (2010) and Schäfer et al. (2017) which found significant associations between specific strategies (e.g., avoidance, acceptance) and symptoms of psychopathology. This discrepancy may be due in part to differences in measurement; while the studies included in the current meta-analysis included reports of how children and adolescents coped with or regulated specific stressors or emotions, the studies included in the reviews by both Aldao and Schafer focused on dispositional or "habitual" use of strategies, or how individuals typically respond to stressors.

Overall this pattern of findings presents a challenge for the field. The limited findings for measures assessing specific strategies of coping and emotion regulation may reflect problems in the quality of these measures (e.g., a limited number of items in these scales). Alternatively, this may suggest that examining specific strategies in isolation may provide only a partial picture of the ways that individuals use multiple strategies to regulate their emotions and cope with stress. That is, effective coping and emotion regulation may require a repertoire of skills that can be used flexibly in response to different emotions or stressors (e.g., Aldao, Sheppes, & Gross, 2015; Cheng, Lau, & Chen, 2014). The most consistent effect sizes in the current meta-analysis were found for measures that aggregate coping and emotion regulation strategies into intermediate-level factors. This level of analysis may capture cohesive factors of coping and emotion regulation strategies that are often used together and provide a more complete picture of how these strategies function in relation to symptoms of psychopathology. For example, the effect sizes for cognitive reappraisal and acceptance were not significant but the use of secondary control coping, which includes these two strategies along with distraction, was significantly associated with fewer symptoms.

In spite of the potential benefits that may accrue from analyses of coping and emotion regulation strategies that have been aggregated into factors, a limitation of studying these processes at the factor level is the lack of information about specific strategies that may be carrying the effects and the relative use of different strategies that are included within these factors. An important step for future research is to unpack these factors to examine the associations of more comprehensive measures that include larger samples of items reflecting the specific coping and emotion regulation strategies that comprise them. That is, improvement is needed in the quality of measures of specific strategies that can be used in various combinations to understand which of a given set of strategies may have the strongest effects. For example, the RSQ (Connor-Smith et al., 2000) includes only three items to assess each of four strategies that make up secondary control coping (acceptance, cognitive reappraisal, positive thinking, distraction). Analyses of parcels that include a larger number of items for each strategy could yield more information about how the strategies that

comprise secondary control coping are used flexibly in different combinations and how these patterns are related to psychopathology. As discussed below, this will also require research designs that are more sensitive to processes of coping and emotion regulation as they unfold during specific events or periods of time.

Moderator analyses of cross-sectional studies.—We examined three possible moderators of the cross-sectional associations between coping and emotion regulation and symptoms of psychopathology: age, measure quality, and informant. First, analyses of age as moderator yielded a significant effect size for the association of engagement/approach coping with internalizing symptoms, with a small but significant negative effect size for adolescents and a non-significant effect for children. There was also an effect for age as a moderator of cognitive reappraisal and internalizing symptoms with a small negative association for adolescents and a small positive association for children. Finally, age was moderator of the association of emotional suppression and internalizing symptoms; there was a significant positive association for adolescents while the association for children was non-significant. Although these findings do not support a clear developmental pattern for the association of coping and emotion regulation with symptoms, results are similar to those reported in previous reviews. Aldao et al. (2010) evaluated the role of age group (children and adolescents vs. adults) and found a significant moderating effect for age on the association of problem solving and suppression with symptoms of psychopathology such that the association was stronger for adults than children and adolescents. Similarly, Cheng et al. (2014) compared effect sizes for participants under age 30 (including a small number of studies with adolescents) and over age 30 and reported a significantly larger effect size for the association of coping flexibility and measures of psychological adjustment for older than younger participants. However, it is important to note that given relatively small numbers of studies in each category for some analyses, there may not have been sufficient power to detect age as a moderator in the current meta-analysis.

Consistent with developmental models of coping and emotion regulation (e.g., Zimmer-Gembeck & Skinner, 2016), the few significant age effects in the present met-analysis indicate a stronger association between coping and emotion regulation strategies with internalizing symptoms for adolescents as compared with children. However, the majority of the tests of age as a moderator of effect sizes were non-significant. While reviews of the development of coping and emotion regulation suggest more frequent use of cognitively demanding strategies, such as secondary control coping, in adolescents as compared to children (e.g., Skinner & Zimmer-Gembeck, 2007; Zimmer-Gembeck & Skinner, 2011, 2016), it is still unknown whether the use of these strategies is more *adaptive* in adolescents as compared to children. Further, the current meta-analysis indicates few differences in associations among coping and emotion regulation and symptoms related to age. It is important to note, however, that the wide variation in samples made it difficult to conduct clear comparisons by age, as the mean age of the study sample was used to code the sample as child or adolescent. For example, a study with an age range of 8–18 years may be coded as an “adolescent” sample if the mean age was above 11, as would a study with an age range of 15–17. These necessary approximations of age may have obscured findings related to development. Notably, in a recent meta-analysis by Schäfer and colleagues (2017), age was

not a significant moderator of the association between emotion regulation and symptoms of depression and anxiety in adolescents. We return to the importance of understanding developmental differences in coping and emotion regulation in the agenda for future research presented below.

There was no evidence that the association of coping and emotion regulation with symptoms was affected by measure quality. The absence of significant effects for measure quality suggests that the findings are not compromised by the psychometric quality of the measures of coping and emotion regulation that were included in this review. This may be a consequence of our requirement that authors reported at least some reliability data or that reliability data be reported for the measure elsewhere in the literature, and that each scale have more than two items to be included in the current review. In addition, as noted above, we may have also had low power to detect measure quality as a moderator.

Finally, no significant moderator effects were identified for studies that used a single informant to assess coping and emotion with symptoms as compared with studies that examined effects using different informants for each construct (e.g., children and their parents). This provides some evidence that the association of coping and emotion regulation with symptoms is not simply an artifact of shared method variance that can be the consequence of obtaining self-reports of both of these constructs (Compas et al., 2014b). However, these findings should be viewed with caution as we identified relatively fewer studies that used multi-informant reports compared to those that used single-informant designs, resulting in relatively low statistical power. Further, multi-informant analyses provide the most stringent test of the association of coping and emotion regulation with symptoms of psychopathology and continue to be the method of choice (see below).

Longitudinal studies.—The evidence for the association of coping and emotion regulation with internalizing and externalizing symptoms was not supported in longitudinal studies. Specifically, only disengagement coping, social support coping, and avoidance were significantly positively associated with internalizing symptoms in longitudinal analyses (effect sizes ranged from $r = .12$ to .18). Thus, there is substantially less evidence for the association of coping and emotion regulation with symptoms of psychopathology in longitudinal as compared with cross-sectional studies. Several factors may have contributed to these diminished effect sizes. First, there were only 17 studies with longitudinal data that could be included in the meta-analysis, yielding a smaller body of evidence to evaluate these associations. Second, it is possible that the only longitudinal associations between coping and emotion regulation and symptoms are for those factors or strategies that are related to *higher* levels of symptoms over time. In contrast, factors that are associated with *lower* levels of symptoms (e.g., primary control coping and secondary control coping) may only be correlates of symptoms when measured at the same point in time, as evidenced by the consistent cross-sectional findings in the current meta-analysis for these factors, and may not be associated with symptoms longitudinally. We consider the implications of these findings in greater detail below.

Comparison with Previous Reviews

The pattern and magnitude of the findings in the current meta-analysis can be evaluated in part through comparison with previous meta-analyses of the association of coping and emotion regulation with symptoms of psychopathology. First, previous meta-analyses examining coping and emotion regulation and symptoms in children and adolescents found only small effects for these associations (Aldridge & Roesch, 2007; Clarke, 2006). The effect sizes reported in the current meta-analysis provide substantially stronger support for the association of coping and emotion regulation with symptoms of psychopathology than either of these two previous meta-analyses focused on research with children and adolescents. Further, compared with these previous meta-analyses with children and adolescents, the current study found much clearer and stronger evidence for associations between coping and emotion regulation factors (i.e., primary control coping and secondary control coping) and lower levels of symptoms (i.e., effect sizes that are reflected in negative correlations).

Several other meta-analyses have included only a small portion of studies with children or adolescents along with a much larger number of studies with adults. For example, a recent meta-analysis examined the association of coping flexibility in adults with psychological adjustment, and found that coping flexibility was positively associated with better adjustment (overall effect size $r = .23$) and the overall association between coping flexibility and psychological adjustment was moderated by individualism, SES, and age (Cheng, Lau, & Chen, 2014). In addition, Rueger et al. (2016) found a significant positive association between social support coping and depressive symptoms (overall effect size $r = .26$). Aldao et al. (2010) reported a meta-analysis of associations between emotion regulation strategies and symptoms of psychopathology in studies with primarily adult samples. Significant medium positive effect sizes were found for avoidance, rumination, and suppression and significant negative effect sizes were found for reappraisal and problem solving with symptoms of psychopathology (i.e., anxiety, depression, disordered eating, and substance use). Similarly, Schäfer et al. (2017) reported significant medium negative effect sizes for cognitive reappraisal, problem solving, and acceptance, and significant positive effect sizes for avoidance, suppression, and rumination) with symptoms of anxiety and depression in adolescence. The results of the current meta-analysis found associations of similar magnitude as these previous meta-analyses, while extending these findings specifically to children and adolescents and including studies of both coping and emotion regulation. Thus, the findings of the current study are in line with and expand on those of previous meta-analyses of coping and emotion regulation.

Limitations of Previous Research

In spite of the significance of these findings, research on coping and emotion regulation in children and adolescents is constrained by two fundamental limitations. First, there is a continued overreliance on the use of questionnaires to assess these processes. Although questionnaires can provide important information on the ways that children and adolescents cope with stress and regulate their emotions in their daily lives, the limitations of questionnaires to assess coping and emotion regulation are well documented. Some limitations of questionnaire measures of coping and emotion regulation include reliance on

retrospective reports and concerns about accuracy of recall (particularly with children and adolescents), confounding of items with their outcomes, and variations in the recall period across different measures (Folkman & Moskowitz, 2004). As outlined in greater detail below, rather than simply recommending against the use of questionnaires to assess coping and emotion regulation, we believe questionnaires must be augmented by other methods that can provide more objective evidence for the strategies children and adolescents use to cope with stress and regulate their emotions. Second, the majority of studies included in the current meta-analysis were cross-sectional and single informant. The direction of the associations of coping and emotion regulation with symptoms cannot be determined when both are measured at a single, contemporaneous time point. Although this design remains useful as an initial step in addressing new or novel research questions, it cannot be the focus for advances in this area of research. Further, by relying on a single source of information for both coping and emotion regulation and symptoms, this level of evidence may be confounded by shared method variance. Notably, it is encouraging that the moderator analyses of informant effects were not significant, suggesting that the findings were not limited to the use of single informants. However, in some cases there were small numbers of studies contributing to the moderator analyses, and therefore these analyses may have been limited by low statistical power. Despite this limitation, it is important that the field uses the most rigorous designs possible to test the association of coping and emotion regulation with symptoms of psychopathology.

An Agenda for Future Research

The clearest conclusion that can be drawn from this meta-analysis is that questionnaire measures of coping and emotion regulation are associated with questionnaire measures of internalizing and externalizing symptoms in children and adolescents. Although these findings provide an important foundation for this field, the aim of future research on these constructs cannot be limited to showing these simple associations using a limited set of methods. We now outline an agenda for next steps in research on coping, emotion regulation and psychopathology in children and adolescents. We draw extensively on reviews of constructs that are closely related to coping and emotion regulation, including effortful control, executive function, and cognitive factors in child and adolescent psychopathology (e.g., Hankin, Snyder, & Gulley, 2016; Zhou, Chen, & Main, 2012; Zimmer-Gembeck & Skinner, 2016).

Improve conceptualization.—Research on coping and emotion regulation in children and adolescents is at a crossroads. To varying degrees, both of these constructs involve adaptive processes to regulate emotion, cognition, behavior, and physiology (Compas et al., 2014a; Skinner et al., 2003; Thompson, 1994; Zimmer-Gembeck & Skinner, 2016). However, as clearly illustrated by the studies included in the current meta-analysis, research on coping and emotion regulation continues to be reflected in separate literatures without a shared conceptual framework and little to no integration of findings from research across constructs. Based on the findings presented here, we propose that many of the distinctions between these two constructs are artificial and synthesis of these two lines of theory and research is long overdue. The following steps are suggested to increase the coordination and integration of future research.

First, the processes of coping and emotion regulation are concerned with the same set of strategies of adaptation. Specifically, all of the strategies identified in the current meta-analysis have appeared in studies of *both* emotion regulation and coping. The distinction between these constructs and the factors and strategies they encompass has led to an underestimation of our knowledge base of these processes. Reviews have summarized findings from studies of coping to the exclusion of studies of emotion regulation (e.g., Aldridge & Roesch, 2007) and similarly, reviews of evidence on emotion regulation have overlooked much of the research on coping (e.g., Schäfer et al., 2017). An example from recent research is illustrative. Christensen, Aldao, Sheridan, and McLaughlin (2017) presented important findings on the differential effects of emotion regulation strategies in response to controllable versus uncontrollable stressors. However, the findings regarding emotion regulation and controllable and uncontrollable stressors will be better understood when considered in light of a rich history of similar research on coping with stressors. For example, several studies have found an interaction of type of coping by controllability of a stressor in predicting levels of internalizing symptoms (e.g., Compas et al., 2012; Forsythe & Compas, 1987; Folkman, Chesney, Pollack, & Coates, 1993; Osowiecki & Compas, 1998, 1999). The current review is a first step in bringing these lines of research together for a comprehensive analysis.

Second, coping research will be informed by closer attention to specific emotions that arise in response to stress. Likewise, emotion regulation research will be informed by closer attention to the sources of stress and events that give rise to specific emotions. It can be argued that all efforts to cope with stress are motivated by the goal of reducing negative emotions and enhancing positive emotions in response stressful events and circumstances. However, coping efforts may be aimed at other goals in addition to the regulation of emotion such as altruistic efforts to help another or more instrumental goals related to personal achievement (e.g., Gross, 1999; Scheier, Weinbtraub, & Carver, 1986). A primary division between coping and emotion regulation centers on the precipitants of regulatory efforts. As discussed above, coping is conceptualized as a response to stressful events or stressful conditions in the environment, whereas emotion regulation is directed toward emotions that may occur in reaction to both stressful and normative, non-stressful experiences (e.g., Gross & Jazaieri, 2014). Conversely, many emotions arise in response to stressful events and chronic sources of adversity and one important function of coping responses is the regulation of emotions that arise in these circumstances.

Third, coping and emotion regulation include cognitive and behavioral processes that are organized and goal directed. However, the field has been lacking a framework that encompasses both of these constructs. Synthesis of research and theory will benefit from tests of competing or complementary models that include both of these processes. We propose that at least three models could be tested: (a) coping and emotion regulation are organized around specific emotions, (b) coping and emotion regulation are organized as temporal processes, and (c) coping and emotion regulation are organized around the degree actual or perceived control of precipitating events or circumstances.

Studies of coping and emotion regulation frequently examine these processes in relation to overall negative emotion that is typically measured at the aggregate level. However, it is

possible that coping and emotion regulation strategies are differentiated in response to specific negative emotions, such as sadness, anger, or anxiety. This is reflected in the work of Zeman and colleagues (Zeman et al., 2001, 2002, 2010) who have developed measures of emotion regulation for use in response to specific negative emotions. Different strategies may be enacted in response to different emotions and strategies or sets of strategies may differ in their effectiveness in managing specific emotions. For example, fear and anger have different effects on attentional processes, have both shared and distinct environmental and genetic correlates, and maybe related to different processes of self-regulation (Clifford et al., 2015; Engen et al., 2017; Kim-Spoon et al., 2015). Coping and emotion regulation factors such as primary and secondary control coping or strategies such as cognitive reappraisal and distraction may have different effects on these two emotions. Testing emotion-specific models will require careful measurement of both discrete emotions and the use of sets of strategies as measured at the level of factors in response to these emotions.

The importance of process is seen most clearly in the process model of emotion regulation of Gross and colleagues (e.g., Gross, 2015; Sheppes, Suri, & Gross, 2015). As described above, in this model, emotion regulation strategies are grouped into five broad categories that act on specific stages of the emotion generative cycle as an emotion is experienced: situation selection, situation modification, attentional deployment, cognitive change, and response modulation (Gross, 1998). The process model posits that these skills are deployed sequentially with different strategies potentially being more appropriate or adaptive prior to, during, or after the experience of an emotion. Current conceptualizations of coping in children and adolescents can be expanded by considering ways in which the process of coping may unfold over the course of a stressful event or prolonged exposure to chronic stress. For example, a diagnosis of cancer or diabetes may present children and adolescents with different stressors over the course of the diagnosis, treatment, and long-term adaptation, and these stressors may require different coping and emotion regulation responses (e.g., Compas et al., 2012, 2014b; Jaser, Patel, Xu, Tamborlane, & Grey, 2016). As noted below, this will require the use of short and long-term prospective studies in which coping and emotion regulation and symptoms of psychopathology are assessed at carefully selected times over the course of a stressor. Little empirical research has tested process models in children and adolescents, either under the rubric of coping or emotion regulation, and thus more research is needed to test this proposed structure of these processes.

Levels of actual and perceived control over stressors play a central role in several conceptualizations of coping across the lifespan (e.g., Allen et al., 2016; Landau, Kay, & Whitson, 2105; Skinner & Zimmer-Gembeck, 2010; Troy, Ford, McRae, Zarolia, & Mauss, 2016; Troy, Shallcross, & Mauss, 2013). Further, current conceptualization of learned helplessness and psychopathology emphasize the importance of both controllable and uncontrollable stress in the development of adaptive and maladaptive responses to stress (Maier & Seligman, 2016). As described above, a control-based model of coping in childhood and adolescence (Compas et al., 2001, 2012, 2014a; Weisz et al., 1994) has received considerable empirical support from studies using the RSQ and is robust across cultures and nationalities and types of stressors (Connor-Smith et al., 2000). Support for this model has come from studies using CFA with Euro-American adolescents (Compas et al., 2006b; Connor-Smith et al., 2000), Native American (Navajo) adolescents (Wadsworth et

al., 2004), and adolescents in Spain (Connor-Smith & Calvete, 2004), Bosnia (Benson et al., 2011), and China (Xiao et al., 2010). This model has also been supported in CFAs using the RSQ in response to a wide range of stressors including war-related trauma (Benson et al., 2011), chronic pain (Compas et al., 2006b), and peer stress (Connor-Smith et al., 2000; Connor-Smith & Calvete, 2004; Xiao et al., 2010). However, support for a control-based model of coping and emotion regulation also has several limitations. The most significant concern is that empirical evidence has not been provided that the coping responses on the RSQ are purposefully organized around the perceived or actual controllability of stressors, as the three-factor model implies. Thus, future research will benefit from more direct tests of controllability of the stressors with which children and adolescents are faced.

The potential importance of both the process model of emotion regulation and the control-based model of coping can be found in their shared emphasis on adapting responses to the demands of specific situations. That is, these models both posit that the effectiveness of types of coping and emotion regulation may depend on the context in which they are used. For example, the goodness-of-fit hypothesis suggests that the effectiveness of some coping strategies depends on the controllability of the stressor (e.g., Forsythe & Compas, 1987; Gidron, 2013; Lazarus & Folkman, 1984). Similarly, flexibility in the use of different emotion regulation strategies is related to greater regulation efficacy (e.g., Aldao & Nolen-Hoeksema, 2012, 2013; Aldao, Sheppes, & Gross, 2015; Christensen et al., 2017). We return to the broader importance of context in more detail below.

In summary, there are still issues to be resolved in defining and conceptualizing coping and emotion regulation. We propose that in instances where the context or precipitant for the process being studied is specific to the emotions that arise in the fabric of daily life (i.e., contexts and events that are not sources of stress), the process represents emotion regulation specifically. However, once a precipitating situation or context is identified as stressful, the process of adaptation lies broadly in the domain of coping. At this point, however, there is not enough evidence to distinguish coping and emotion regulation along the lines of presence or absence of a stressor. Until these distinctions are clarified empirically, we encourage the field to use the terms coping and emotion regulation together in order to be inclusive and representative of the state of the field and to lead to greater integration and synthesis of research findings. As an example of the importance of including these two concepts together, if we had used only coping or emotion regulation as search terms we would have identified very different sets of studies and drawn very different conclusions. Therefore, an approach that includes both of these concepts will provide a more complete picture of research on these adaptive processes.

Prioritize development.—Understanding the development of skills to regulate emotions and cope with stress across childhood and adolescence is central to understanding sources of risk and resilience and for the development of interventions to enhance these skills. Current knowledge about how coping and emotion regulation may change in their association with psychopathology with age is disappointing at best, as we found relatively little evidence in the current meta-analysis that the association of coping and emotion regulation with symptoms is different in childhood compared to adolescence. Guidance for future research can come from descriptive research on the development of coping and emotion regulation

skills from early childhood through adolescence and into adulthood (Skinner & Zimmer-Gembeck, 2007, 2010; Zimmer-Gembeck & Skinner, 2011, 2016). Further, a roadmap for the development of coping and emotion regulation can be drawn from models of closely related constructs, including effortful control, executive function, and other related cognitive processes that develop across childhood and adolescence (Hankin et al., 2016; Zhou et al., 2012).

What is not known is whether the use of these strategies is more adaptive in adolescence as compared to childhood, or how the use of these skills changes across development. In some cases, the use of a strategy that is adaptive for one age group in response to a specific source of stress may either have no effect or be maladaptive for another age group faced with the same stressor. For example, seeking social support may be an adaptive strategy for a child to regulate feelings of sadness, but it may be maladaptive for adolescents if social support does not involve coping of controlled regulation of emotion and instead takes the form of co-rumination (e.g., Stone, Hankin, Gibb, & Abela, 2011).

Further, risk for psychopathology differs for boys and girls as they reach adolescence (e.g., Angold, 2008; Zahn-Waxler, Shirtcliff, & Marceau, 2008). Therefore, the associations of coping and emotion regulation with symptoms of psychopathology may differ by gender depending on the developmental stage at which these constructs are measured (e.g., Carlson & Grant, 2008; Sontag & Graber, 2010). This suggests that future research needs to examine carefully selected periods of development during which changes may occur both in the emergence of emotion regulation and coping skills and internalizing and externalizing symptoms. For example, it may be most important to study coping and emotion regulation as a source of risk and resilience for depressive symptoms during early and middle adolescence, as the rate of depressive symptoms and the onset of depressive disorders increases significantly during middle adolescence (e.g., Hankin et al., 1998).

We propose that the developmental course of coping and emotion regulation (a) is cumulative such that new skills are developed over time to build a broader skill set rather than replacing earlier ones as youth move into adolescence and young adulthood; (b) moves from a reliance on automatic processes in early childhood to both automatic and controlled processes in childhood and adolescence; (c) progresses from dependence primarily on caregivers to co-regulate or guide in regulation towards greater autonomy in the implementation of these processes; (d) becomes more differentiated moving into adolescence; and (e) involves increasingly more complex cognitive skills, which coincides with the development of language and executive function skills. For example, we hypothesize that coping and emotion regulation skills are used in largely undifferentiated ways in early childhood and will be best captured by the broad distinction of engagement/approach strategies vs. disengagement strategies. During late childhood and adolescence we propose that the use of engagement strategies become more differentiated based on increasing abilities to recognize varying degrees of control in stressful events and circumstances.

As a consequence of the development of the ability to perceive control, coping and emotion regulation attempts can be further differentiated into primary control and secondary control

efforts (see also Skinner & Zimmer-Gembeck, 2010). This pattern of greater differentiation would reflect heterotypic continuity of coping and emotion regulation across childhood and adolescence (see Hankin et al., 2016). In contrast, an example of the homotypic continuity in the structure of coping and emotion regulation in adolescence and adulthood can be found in tests of the factor structure of a control-based model of coping. The three-factor structure of primary control coping, secondary control coping, and disengagement coping has been confirmed using CFA in diverse samples of adolescents (e.g., Benson et al., 2011; Xiao et al., 2010) and adults (e.g., Compas et al., 2006ab). However, this model has not been tested in younger children to determine if these factors are less differentiated earlier in development.

Despite a number of remaining questions regarding the developmental course of processes of coping and emotion regulation, the skilled use of these processes emerges over the course of childhood and adolescence. Therefore coping and emotion regulation may act as a source of risk or resilience at later points in development (Skinner & Zimmer-Gembeck, 2007; Zimmer-Gembeck & Skinner, 2016). Interventions to enhance those coping and emotion regulation skills that promote resilience could be guided by more specific information about the likely points in development (i.e., sensitive periods) when children and adolescents will be responsive to learning and applying various skills and strategies.

Improve measurement and research design.—Since the previous broad reviews of measures of coping and emotion regulation in childhood and adolescence (Adrian et al., 2011; Compas et al., 2001), there has been progress in the availability of measures with established reliability and validity. We identified 16 measures of coping and emotion regulation that were used in over half of the studies reported in the meta-analysis (see Table 2). All of these measures have adequate reliability. Fourteen of these measures have at least some form of validity data, with five providing data on convergent and discriminant validity, and seven have reported findings from CFA to test the hypothesized structure of coping and emotion regulation. It is promising that research has progressed by more frequently using measures with acceptable psychometric properties. Further, because many researchers are interested in the ways that children and adolescents cope with stress and regulate their emotions in their daily lives, questionnaires and especially self-reports, will remain a central tool to study these processes.

The use of multiple informants to assess coping, emotion regulation and symptoms is important to improve the methodological rigor of the field. For example, the RSQ (Connor-Smith et al., 2000) is one of the few measures of coping with both self- and parent-report versions available. Obtaining reports on coping and emotion regulation using different methods than those used to assess symptoms of psychopathology provides stronger evidence for these associations that is not limited by problems of shared method variance that is inherent in single-informant methods (e.g., Compas et al., 2014b). Multi-informant methods need to become a standard for the field.

However, these measures need to be used in concert with other methodologies to improve external validity and generalizability. Ecological momentary assessment (EMA) of coping and emotion regulation offers an important method to understand these processes in real

world contexts and closer to real time. For example, Allen et al. (2016) used EMA with a sample of children and adolescents (9–14 years old) during which they reported on perceived control, emotional reactivity (anxiety and physiological arousal), and emotion regulation strategy use in response to daily negative life events. Children's perceptions of control over negative life events were related to less anxious reactivity and greater use of both problem solving and cognitive restructuring as reported in EMA. Tan et al. (2012) utilized an EMA approach to compare real-world emotional experiences of youth (9–13 years old) with generalized anxiety disorder, social anxiety disorder, or social phobia and age-matched healthy controls. Anxious youth reported more frequent physiological reactions in response to a negative event, and reports of avoidance, distraction and problem solving using EMA were associated with the down-regulation of negative emotions for both anxious and control youth. Further, Price et al. (2016) used EMA to assess avoidance, suppression and distraction during negative life events and linked these findings to functional neuroimaging data in a sample of adolescents. In this study, vigilance toward threat was positively associated with EMA distraction and suppression. These findings suggest the potential importance of using EMA methods along with child or adolescent and parent reports of children's coping and emotion regulation to provide a more comprehensive picture of these processes.

Experimental designs and methods are also needed in which coping and emotion regulation are directly manipulated and causal effects on proxy measures of symptoms can be assessed under controlled conditions. Examples of this approach can be found in the rich tradition of experimental studies of emotion regulation in adults and children (e.g., Eisenberg, Smith, & Spinrad, 2011; Fox, Kirwan, & Reeb-Sutherland, 2012; Gross & Jazaieri, 2014; Penela, Walker, Degnan, Fox, & Henderson, 2015). Studies with children and adolescents have employed experimental designs to elicit negative emotions in the laboratory setting and observe automatic processes that reflect aspects of reactivity and arousal, while instructing participants to use a specific emotion regulation strategy (or strategies) to regulate the experience of the emotion in real time (e.g., Morris et al., 2011; Santucci et al., 2008). Experimental studies are not without their own limitations (e.g., only analogues of stress can be generated in the laboratory; observational methods cannot access covert cognitive forms of coping and emotion regulation) but it will be important to complement correlational designs with evidence obtained under controlled, experimental conditions.

In addition, relatively little attention has been given to sample characteristics with regard to important sources of diversity (e.g., race, ethnicity, socioeconomic status) or to comparisons of clinical as compared with non-clinical samples. It is possible that these processes differ in their associations with symptoms of psychopathology in children and adolescents faced with greater cumulative sociodemographic risk and subsequently greater levels of stress (Wadsworth, 2015). Further, it is possible that strategies typically considered a source of risk (e.g., avoidance), may be more strongly associated with psychopathology in a clinical sample, whereas those strategies may be unrelated to psychopathology in a non-clinical sample. More careful selection of samples that differ in ways that may have bearing on the association of coping and emotion regulation with symptoms of psychopathology is an important direction for future research.

Lastly, longitudinal designs are needed to test the directions of the relations of coping and emotion regulation with symptoms. Similar to multi-informant methods, longitudinal studies have been used with increasing frequency in recent research, but this design, although more costly and time consuming for researchers, needs to be prioritized. Longitudinal designs offer the opportunity to examine the direction of the association between coping and emotion regulation and symptoms of psychopathology. The degree to which coping and emotion regulation can predict changes or residual variance in levels of symptoms across time can provide better evidence about the direction of the relationship of these constructs with psychopathology. However, it is also possible that initial levels of internalizing and externalizing symptoms predict later coping and emotion regulation, in part because high levels of symptoms may impede the development of or the ability to effectively use these skills. Longitudinal designs can be used to test whether coping, emotion regulation, and symptoms of psychopathology are correlated because of the shared effect of a third variable. Finally, longitudinal designs are essential to test the developmental course of coping and emotion regulation to determine if these constructs are stable in their form across childhood and adolescence (homotypic continuity) or change in form with development (heterotypic continuity) (see Hankin et al., 2016). For example, the hypothesis presented above that coping becomes more differentiated with development would reflect heterotypic continuity and requires longitudinal studies that span childhood and the transition to adolescence to test this possibility.

Further, greater attention is needed to matching research designs to the specific questions and models being tested. For example, studies of an acute stressful event (e.g., the diagnosis of a serious illness) require assessments spaced over short periods of time, as the associations between coping and emotion regulation and symptoms may be strongest closest to and/or during the experience of that specific event (e.g., Compas et al., 2014b). In addition, an acute stressful event may also require long-term follow-up to assess the residual effects of this event and the ways in which youth coped with and regulated emotions in response to it (e.g., Compas et al., 2017). On the other hand, studies of chronic stressful conditions and adversity (e.g., economic disadvantage) need to examine processes of coping and emotion regulation over longer time frames during which the stressor is experienced.

Identify cognitive and neurobiological substrates of coping and emotion regulation.—Research in psychopathology has been reshaped by an emphasis on underlying processes as reflected in the RDoC from the National Institute of Mental Health (Casey et al., 2014; Insel & Cuthbert, 2015). A similar approach is needed to provide a better understanding of the processes that reflect the neurobiological foundations and substrates of coping and emotion regulation (see Etkin, Buchel, & Gross, 2015; Fernandez, Jazaieri, & Gross, 2016). One important avenue for future research involves the examination of neurocognitive correlates of coping and emotion regulation. Several aspects of executive function (e.g., working memory, attentional control) may provide a foundation for the use of coping and emotion regulation, as these processes often require the use of complex cognitive skills (Campbell et al., 2009; Eisenberg & Zhou, 2016; McRae et al., 2010).

Researchers have begun to identify neurobiological substrates of these processes using neuroimaging methods such as functional magnetic resonance imaging in order to identify

patterns of activation in specific brain regions in children and adolescents that are associated with coping and emotion regulation skills. The most frequent target of these studies has been the use of cognitive reappraisal as a coping and emotion regulation strategy. A consistent pattern of findings has emerged, suggesting that increased activation during reappraisal of emotional stimuli occurs in several areas of the prefrontal cortex (PFC), including the ventromedial, ventrolateral, and dorsolateral PFC (e.g., Belden et al., 2014, 2015; Dougherty et al., 2015; McRae et al., 2012; Robinson et al., 2015; Stephanou et al., 2015). The associations between executive function and coping and emotion regulation can also be examined using neuroimaging methods. For example, Robinson et al. (2015) found significant correlations between activation of prefrontal brain regions in response to a standard working memory (n-back) task and parent and child reports of children's use of secondary control coping strategies in a sample of pediatric brain tumor patients and healthy controls. Similarly, Reising et al (2017, in press) found that activation in the DLPFC, dACC, and APFC was significantly related to adolescents' reports of their use of secondary control coping and accounted for adverse effects of stress exposure on adolescents' coping. Neuroimaging methods can shed light on the associations between rapid automatic processes as contrasted with controlled processes of coping and emotion regulation by examining responses of both emotion (e.g., the amygdala) and executive function regions (e.g., areas of the PFC) of the brain (e.g., Belden et al., 2014, 2015).

Further, coping and emotion regulation may play an important role in explicating individual differences in genetic sources of risk and resilience (e.g., Ford, Mauss, Troy, Smolen, & Hankin, 2014). Individual differences in coping and emotion regulation may be associated with specific patterns of polymorphisms of genes that are related to stress sensitivity including the serotonin transporter polymorphism (5-HTTLPR) and corticotropin-releasing hormone receptors (CRHR) (Hankin, Badanes, Smolen, & Young, 2015). Examining correlates of coping and emotion regulation at multiple levels of analyses will provide a much richer understanding of factors that contribute to the development of these skills.

Examine context.—Research on the neurobiological substrates of coping and emotion regulation needs to be balanced by careful attention to the context in which children and adolescents are engaged in the processes of coping and emotion regulation. First, emotion regulation will be better understood by examining this process in the context in which emotions arise. For example, a child or adolescent who experiences sadness in the context of a peer rejection (e.g., not being included in a party with classmates) may be faced with a very different challenge than one who experiences sadness in the context of chronic stress associated with living with a depressed parent. Current questionnaire measures of emotion regulation often do not assess the context in which emotions occur and as a consequence possible differences in emotions as a function of the context in which they arise. Second, as noted above, it will be important to examine flexibility in coping with different types of stress including levels of objective and perceived control as important aspects of context (Skinner & Zimmer-Gembeck, 2010). Third, it will be important to give greater attention to the broader social context in which coping and emotion regulation occur, especially poverty and economic hardship. For example, the work of Wadsworth and colleagues has shown that the types of coping that may be adaptive for children and adolescents exposed to chronic

economic hardship may differ from youth who live in more economically advantaged environments (e.g., Wadsworth, 2015; Wadsworth & Compas, 2002; Wadsworth, Rindlaub, Hurwich-Reiss, Rienks, Bianco, & Markman, 2013).

Intervention research.—Studies of the effects of interventions that target coping and emotion regulation skills represent an important next step for research in this field for several reasons. First, intervention studies using randomized designs can provide true experimental tests of the associations of coping and emotion regulation with psychopathology in real-world contexts. Second, intervention trials, especially preventive interventions, can provide information on the role of coping and emotion regulation in the etiology of internalizing and externalizing symptoms. And most importantly, intervention research can clarify the role that coping and emotion regulation can play in alleviating and preventing psychopathology in young people. There is promising evidence that interventions can lead to changes in specific types of coping and that these changes account for the effects of these interventions on changes in symptoms (e.g., Compas et al., 2010; Tein et al., 2004, 2006). For example, in a randomized trial testing a preventive intervention for children of parents with a history of depression, Compas et al. (2010) found that changes in children's use of secondary control coping skills as reported by children and their parents after completion of the intervention (6 months after baseline) partially accounted for (i.e., mediated) the effects of the intervention on child and parent reports of children's internalizing and externalizing symptoms at 12-months. Continued research in this area is a high priority to establish the importance of coping and emotion regulation in treating and preventing psychopathology.

Summary and Conclusions

This review provides another important step in the integration of research on coping and emotion regulation in children and adolescents by considering the shared features of these two concepts and providing a synthesis of empirical research on their associations with internalizing and externalizing symptoms of psychopathology. The findings from the meta-analysis provide the first clear benchmark of empirical research for the field and a base of evidence for the association of coping and emotion regulation with symptoms of internalizing and externalizing psychopathology in children and adolescents. The findings from the current review also highlight significant limitations in the field, including stagnation in conceptualization and methods. To move the field forward we have outlined an ambitious and challenging agenda for next step in this research.

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APPENDIX

Domains

Total Coping	Cope, Coping Attempts, Coping, Religion, Religious Coping, Self Coping, Self-Directed Coping, Total Coping, Unitary Coping
Adaptive Coping	Adaptive Balance Score, Adaptive Coping (with Anger, Sadness, Worry), Adaptive Strategies, Mean Positive Coping Score, Palliative Ratio, Positive Coping, Positive Religious Coping, Productive Coping
Maladaptive Coping	Dysfunctional Coping, Helpless Coping, Internalizing Negative Coping, Maladaptive Coping, Negative Coping, Negative Religious Coping, Non-constructive Coping, Nonproductive Coping
Emotion Regulation	Active/Emotional Regulation, Adaptive Affect Regulation, Adjusting, Anger Management, Anger Regulation (Coping), Anger-Related Emotion Regulation, Emotion Regulation (Anger, Anger Coping, Sadness, Sadness Coping), Emotion Regulation Scale, ER Adaptive, External Functional ER, Internal Functional ER, Palliative Emotion Regulation, Regulation Anger, Regulation Coping, Regulation, Sadness Regulation, Sadness Regulation Coping
Emotion Dysregulation	Abreacting, Clarity, Dysregulation, Impulse
Factors	
Problem-Focused Coping	Problem Focus, Problem Focused Action, Problem Focused (Engagement) Coping, Problem-Analyzing Coping, Problem-Directed Coping, Problem-Oriented Coping, Task-Oriented Coping
Emotion-Focused Coping	Emotion Focused (Engagement) Coping, Emotional Coping, Emotional Engagement, Emotion Oriented Coping, Internal Coping
Engagement/ Approach Coping	Active Coping, Active Self-Regulation, Approach Coping, Approach-Oriented Coping, Assertion, Behavioral Coping, Distraction and Problem Solving, Engagement Coping, Mobilizing, Not Hiding, Observed Active Self Regulation, Physical Exercise, Physical Exercise Coping, Positive/Approach Coping, Rational Coping, Resorting, Work Hard
Disengagement Coping	Behavioral Disengagement, Deferring Coping, Detached Coping, Disengagement, Disengagement Coping, Passive Coping
Primary Control Coping	Primary Control, Primary Control Coping, Primary Control Engagement Coping
Secondary Control Coping	Accommodative Coping, Secondary Control, Secondary Control Coping, Secondary Control Engagement Coping
Social Support Coping	Active/Support Seeking, Adult Social Support, Advice/Support, Asking for Help, Collaborative Coping, Developing Social Support, Emotional Support, Emotion-Focused (Social) Support, Friend Support Seeking, Hangout with Peers Coping, Help Seeking, Instrumental Social Support, Invest in Close Friends, Parent Support Seeking, Parental Support, Peer Social Support, Problem Focused (Social) Support, Reference to Others Coping, Seek Professional Help, Seek Spiritual Support, Seek to Belong, Seeking Guidance, Seeking Help from Family/Peers, Seeking Others, Seeking Social Support, Seeking Spiritual Support, Seeks Support, Social Support (Family/Friends/Coping/Problem-Focused), Social Support Seeking, Support Coping, Support for Actions/Feelings, Support Seeking (Coping), Teacher Support Seeking
Strategies	
Acceptance	Acceptance (Coping), Acceptance/Resignation, Rational Acceptance, Resignation, Tolerating
Cognitive Reappraisal	Cognitive Coping, Cognitive Reappraisal, Cognitive Restructuring, Cognitive-Palliative Coping, Comforting Thoughts, Develops Competence and Optimism, Focus on Positive, Illusory Control, Interpretive Control, Minimization, Minimize Threat, Naïve Optimism, Positive Cognition/Cognitive Restructuring, Positive Reappraisal/Refocusing/Reframing/ Reinterpretation, Positive Self Statements/Instructions, Predictive Control, Putting Into Perspective, Rationalization, Reappraisal, Reappraisal Frequency, Reinterpretation, Seeking Understanding, Take Light. Trivializing, Vicarious Control
Emotional Expression	Anger Expression, Emotion(al) Expression, Expressing Emotions, Expressing Feelings, Expression of Emotions, Focusing and Venting of Emotions, Physical Release of Emotions, Verbal Sharing
Problem Solving	Appearance Fixing, Behavioral Problem Solving, Cognitive Decision Making, Cognitive Problem Solving, Complies with Treatment, Conflict Resolution, Decision Making, Direct Problem Solving, Information Seeking, Logical Analysis, Planning, Proactive Mediation, Problem Solving (Coping/Style), Refocus on Planning, Self Reliant Problem Solving, Situation Control

Distraction	Behavioral Distraction, Cognitive Distraction, Demanding Activities, Distracting Activities/Actions, Distraction, Distraction Coping, Engage in Physical Recreation, Entertainment, Media Use, Seek Alternate Rewards, Seek Relaxing Diversions, Seeking Diversions
Avoidance	Avoidance (Coping), Avoidance of Social Support, Avoidant Actions/Activities/Coping/Style, Avoidant Oriented Coping, Avoiding (Problems), Behavioral Avoidant Coping, Cognitive Avoidance/Avoidant Coping, Cognitive Distancing, Distance/ing Coping, Emotion Focused Avoidance, Escape, Feels Different and Withdraws, Hedonistic Avoidance, Ignore Problems, Intropunitive Avoidance, Keeps to Self, Passive Avoidance, Problem Avoidant Coping, Problem Focused Avoidance, Self Isolation, Withdrawal (Coping), Withdrawing
Denial	Blame Others, Blaming Others, Defensive Coping, Denial (Coping), Other Blame, Retaliation, Revenge
Emotional Suppression	Anger In, Anger Inhibition, Concealing, Emotion(al) Suppression, Expressive Reluctance, Expressive Suppression, Inhibition, Masking, Repression, Sadness Inhibition, Suppression, Worry Inhibition
Wishful Thinking	Fantasizing, Fantasy, Imagining, Personal Superstitious Thinking, Wishful Thinking (Coping)

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Public significance:

This meta-analysis reveals small to medium associations between the ways that children and adolescents cope with stress and regulate their emotions with symptoms of psychopathology. The findings have important implications for understanding the ways that some children and adolescents may be resilient to stress in their lives.

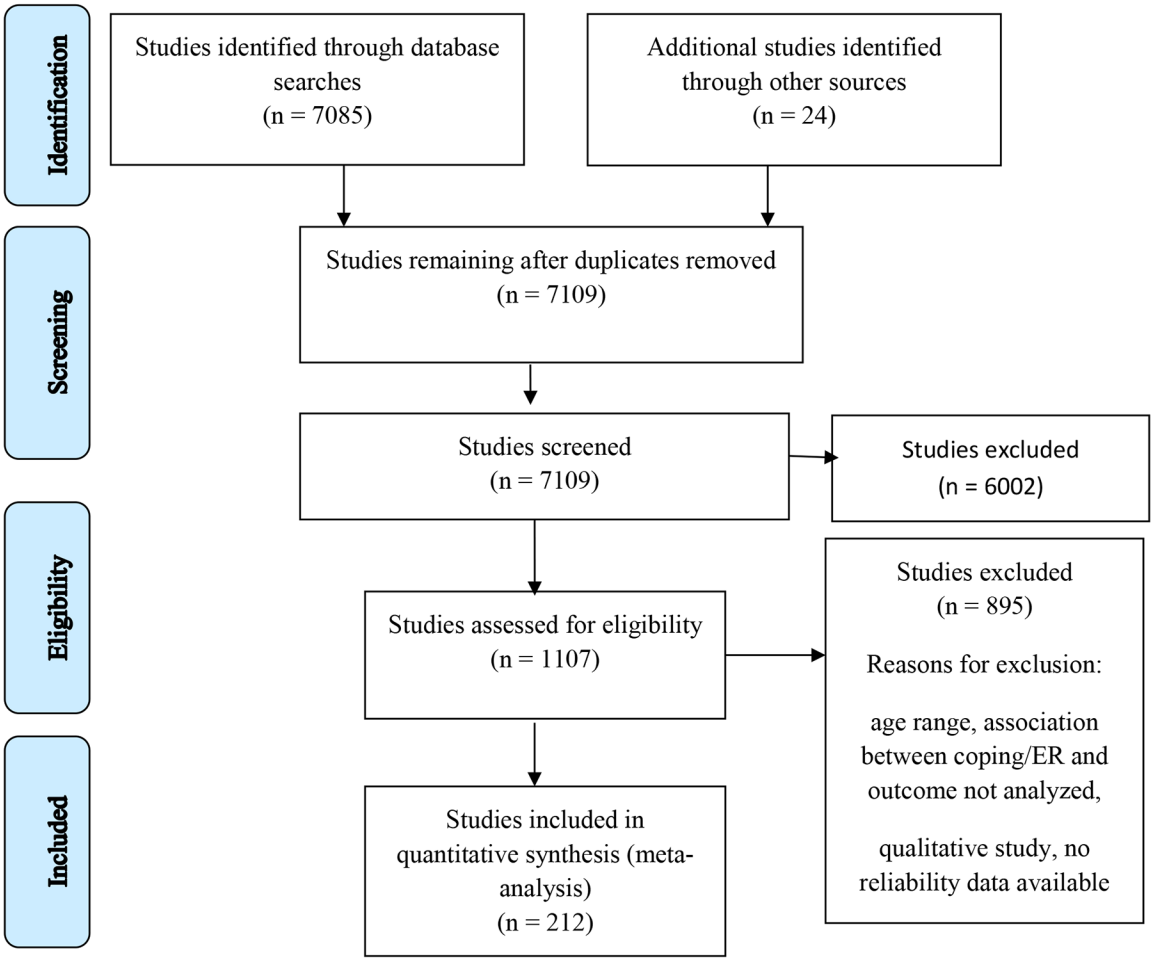
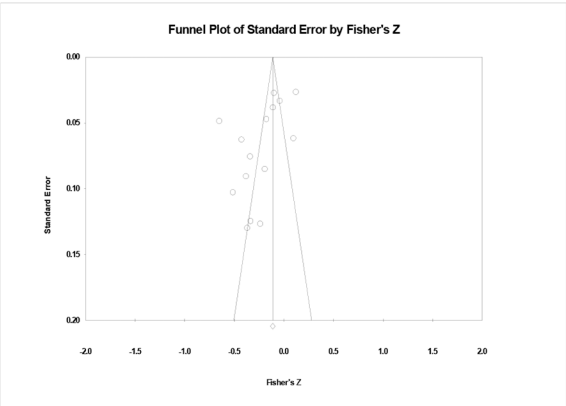
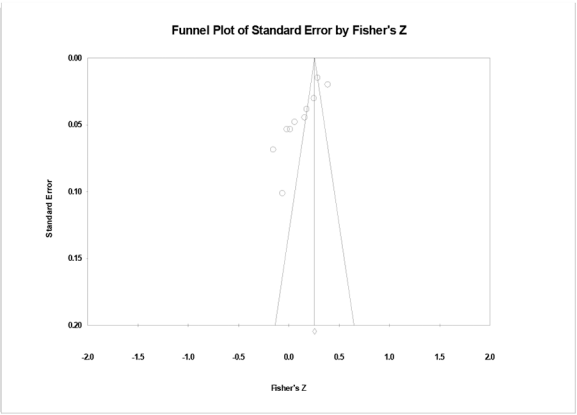


Figure 1.
PRISMA flow diagram.

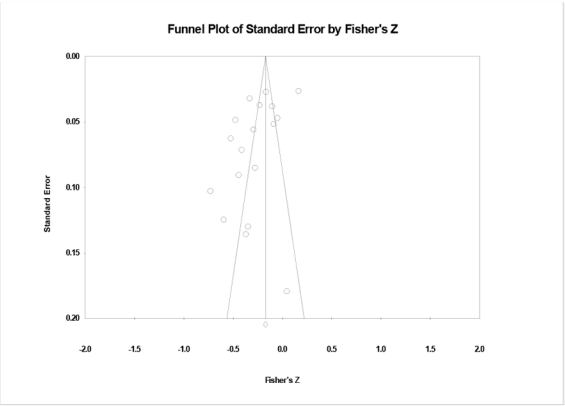
Emotion Regulation and Internalizing Symptoms



Emotional Suppression and Internalizing Symptoms



Emotion Regulation and Externalizing Symptoms



Disengagement Coping and Externalizing Symptoms

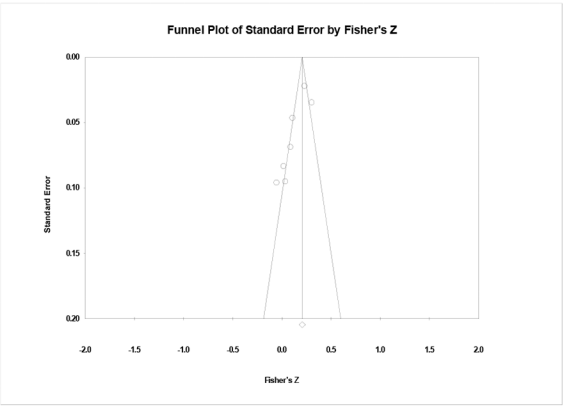


Figure 2a-2d.

Funnel plots for the relationship between the standard error and Fisher's *Z* in cross-sectional studies of coping and emotion regulation and symptoms of psychopathology.

Table 1.

Definitions of coping and emotion regulation.

Citation	Construct of Interest	Definition
Cicchetti and colleagues (e.g., Cicchetti, Ganiban, & Barnett, 1991)	Emotion Regulation	"For the purposes of this study, emotion regulation was defined in terms of lability, flexibility, and situational responsivity and conceptualized as the capacity to modulate one's emotional arousal such that an optimal level of engagement with one's environment is fostered (Cicchetti, Ganiban, & Barnett, 1991; Thompson, 1994)."
Compas and colleagues (e.g., Compas et al., 2001; Connor-Smith et al., 2000)	Coping	"conscious and volitional efforts to regulate emotion, cognition, behavior, physiology, and the environment in response to stressful events or circumstances" (Compas et al., 2001; p. 89)
Eisenberg and colleagues (e.g., Eisenberg et al., 1997, 2010)	Emotion Regulation	"processes used to manage and change if, when, and how (e.g., how intensely) one experiences emotions and emotion-related motivational and physiological states, as well as how emotions are expressed behaviorally" (p. 495).
Thompson, Gross and colleagues (e.g., Gross & Thompson, 2007, 2010; Thompson, 1991, 1994; Thompson & Calkins, 1996)	Emotion Regulation	"the extrinsic and intrinsic processes responsible for monitoring, evaluating, and modifying emotional reactions, especially their intensive and temporal features, to accomplish one's goals" (Thompson, 1994; p. 27–28)
Lazarus and colleagues (e.g., Folkman & Lazarus, 1985; Lazarus & Folkman, 1984; Lazarus & Launier, 1978)	Coping	"constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the re-sources of the person" (Lazarus & Folkman, 1984; p. 141)

Table 2.

Coping and emotion regulation measures used in studies included in the current meta-analysis.

Author(s) and Measure	Age Group and Informant(s)	Stressor/Emotion	Format and Scales	Reliability Data	Validity Data	Number of Studies in Meta-Analysis
Emotion Regulation Measures						
Abela et al. (2000); Children's Response Styles Quesitonnaire (CRSQ)	Developed and tested in 3rd – 7th graders; Self-report	Depressive Symptoms	25 items, 3 scales *Domains:* none *Factors:* none *Strategies:* Distraction Problem Solving	Internal consistency: α's ranged from .57 to .76 Test-retest correlations ranged from .55–.67	Three-factor and Two-factor models were tested. The two-factor model was confirmed in a Turkish sample	5
Garnefski et al. (2001); Cognitive Emotion Regulation Questionnaire (CERQ)	Age 12–17 years; Self-report	Threatening or stressful life events	36 items, 9 scales *Domains*: none *Factors*: none *Strategies*: Acceptance Positive Refocusing Refocus on Planning Positive Reappraisal Putting into Perspective Blaming Others	Internal consistency: α's ranged from .68 to .83 with most .80. Test-retest correlations ranged from .40 – .60	Principal component analyses provided empirical support to the allocation of items to subscales	8 (1 used modified version)
Gratz & Roemer (2004); Weinberg & Klonsky (2009) Difficulties in Emotion Regulation Scale (DERS)	Age 18–55 years; (tested in adolescents age 13–17); Self-report	"When I'm upset"	36 items, 6 scales *Domains*: Clarity Impulse *Factors*: none *Strategies*: none	Internal consistency: α's > .80 for each subscale (overall DERS = .93) Test-retest correlations ranged from .57 – .89 (.88 for overall score) Adolescent sample: internal consistency (α's ranged from .76–.89).	Construct validity: correlations with another measure of emotion regulation and emotional expressivity. DERS subscales showed a differential pattern of association with the constructs of interest. Adolescent sample: Confirmatory factor analysis supported 6 factors.	5
Gross & John (2003); Emotion Regulation Questionnaire (ERQ) Gullone et al., (2011) Emotion Regulation Questionnaire for Children and Adolescents (ERQ-CA)	Developed for Adults; ERQ-CA tested in ages 10–18 years; Self-report	Negative emotions	10 items; 2 scales *Domains*: none *Factors:* none *Strategies*: Cognitive Reappraisal Emotional Suppression	Internal consistency: α's averaged .79 for Reappraisal (.83 in child and adolescent sample) and .73 for Suppression (.75 in child and adolescent sample); Test-retest correlations over 3 months were .69 for both scales	Exploratory factor analyses supported two factors; confirmatory factor analyses on same sample; confirmatory factor analysis in children and adolescents supported 2 scales; tested convergent and discriminant validity with other measures of coping, personality, and mood regulation (COPE, Trait MegaMood questionnaire; Negative Mood Regulation Scale; Big Five Inventory)	5 (1 used modified version)

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Author(s) and Measure	Age Group and Informant(s)	Stressor/Emotion	Format and Scales	Reliability Data	Validity Data	Number of Studies in Meta-Analysis
Shields & Cicchetti (1994); Emotion Regulation Checklist (ERC)	Age 6–18 years; Other-report		24 items, 2 scales *Domains:* Emotion Regulation *Factors:* none *Strategies:* none	Internal consistency: Reliability α's are high for the overall scale (.89) and for the subscale Regulation = .83.	Principal Components Factor Analysis yielded two factors	12
Zeman, Shipman, & Penza-Clyve; Zeman, Cassano, Suveg & Shipman, 2010; Children's Emotion Management Scales (CEMS)	Age 7–17 years; Self-report	Feeling angry/sad/ worried	Sad and Worry - 12 items, Mad - 11 items, 3 scales *Domains:* Coping/Cope Emotion Regulation *Factors*: none *Strategies:* Inhibition	Internal consistency: α's range from .62–.77. Test-retest correlations range from .61 −.80.	Principal Components Analysis supported 3 factors; Convergent validity demonstrated with Emotion Awareness Scale, Emotion Regulation Checklist, and Affect Regulation Interview	6
Coping Measures						
Ayers et al., (1996); Children's Coping Strategies Checklist (CCSC) and How I Cope Under Pressure (HICUPS)	Age 9–13 years; Self-report	CCSC: General Coping Style; HICUPS: Child-selected stressor	52 items, 4 scales *Domains*: none *Factors:* Active Coping Support Seeking *Strategies*: Avoidance Distraction	Internal consistency: α's ranged from .73 to .89 for secondary scales	Confirmatory factor analysis demonstrated superiority of theoretic model to other models	22 (6 used modified version)
Carver et al. (1989); Coping with Problems Experienced (COPE) And Brief COPE	Adults; Self-report	General Stress	60 items, 15 scales *Domains:* Religious Coping *Factors*: Active Coping Behavioral Disengagement Seeking Social Support (emotional and instrumental) *Strategies:* Planning Positive Reframing Acceptance Denial Humor	Internal consistency: α's ranged from .43–.85. Test-retest reliability over 2 weeks ranged from .46 – .86; over 8 weeks ranged from .42 – .89	Inconsistent findings of factor structure	15 (3 used modified version)
Causey & Dubow (1992); Self Report Coping Scale (SRCS)	4th-6th grade; Self-report	Social and Academic Stressor versions	34 items, 5 scales *Domains:* none *Factors*: Seeking Social Support *Strategies:* Self-Reliance/Problem Solving Distancing	Internal consistency: α's ranged from .66 to .84 Test retest over 2 weeks ranged from .66 to .84	Self-report scales moderately correlated with abbreviated version completed by peers	6 (4 used modified version)
Connor-Smith et al. (2000); Responses to Stress Questionnaire (RSQ)	Self-report: 9–17 years; Parent report: 6–17 years	Stressor- and Domain-Specific versions (e.g., parental depression, type 1 diabetes)	57 items, 5 scales *Domains:* none *Factors*: Primary Control Secondary Control Disengagement *Strategies:* none	Internal consistency: α's ranges from .67 – .84; test-retest 1–2 weeks .69–.81	Confirmatory factor analysis and latent variable analyses across 7 different samples support 3 coping factors; Cross-informant correlations; convergent and discriminant validity data reported with COPE.	28 (1 used modified version)
Ebata & Moos, 1991; Coping Response Inventory - Youth (CRI-Y) and CRI-YF	12–18 years; Self-report	Most important problem in previous year	48 items; 2 scales; 8 subscales *Domains:* none *Factors:* Seeking Guidance *Strategies*: Logical Analysis Positive Reappraisal Cognitive Avoidance	Internal consistency: α's ranged from .55 – .79	Not reported	4

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Author(s) and Measure	Age Group and Informant(s)	Stressor/Emotion	Format and Scales	Reliability Data	Validity Data	Number of Studies in Meta-Analysis
			Acceptance/Resignation Seek Alternate Rewards Emotional Discharge			
Frydenberg & Lewis (1993); Adolescent Coping Scale (ACS)	12–16 years; Self-report	Specific Form - how an individual copes with a specific stressor and General Form - how individual copes in general	88 items; 3 scales *Domains:* Nonproductive Coping *Factors:* Reference to Others *Strategies:* none	Internal consistency: α's ranged from .87 – .89; Test-retest reliability (stability over unspecified time frame): .44–.81	Confirmatory factor analysis supported 3 coping styles in relplication study (1996)	8 (1 used modified version)
Patterson & McCubbin (1991); Adolescent Coping Orientation for Problem Experience (A-COPE)	Mean age = 15 years; Self-report	General coping style	54 items; 12 scales *Domains*: Total Coping *Factors:* Seeking Spiritual Support Investing in Close Friends Seeking Professional Support *Strategies:* Seeking Diversions Avoiding Problems Engaging in Demanding Activities	Internal consistency: α's ranged from .50 – .76	Not reported	4 (1 used modified version)
Seiffge-Krenke (1995); Coping Across Situations Questionnaire (CASQ)	15–27 years; Self-report	Eight age-specific problems areas	20 items; 3 scales *Domains*: none *Factors*: Active Coping Internal Coping *Strategies*: Withdrawal	Internal consistency: α's ranged from .76–.80	Confirmatory factor analyses replicated findings in samples from Israel and Finland	5
Spirito, Stark, & Williams (1988); KidCope	12–18 years; Self-report	Specific areas selected by participant or experimenter	10 items; no specific scales *Domains:* Total Score *Factors*: none *Strategies*: none	Internal consistency: None. Only provide test-retest reliability for individual items	Item correlations with coping scales for CSI and A-COPE	4
Walker et al. (1997); Pain Response Inventory (PRI)	8–23 years; Self-report	Specific Stress (pain)	60 items; 3 scales *Domains*: none *Factors*: Active Coping Passive Coping Accommodative Coping *Strategies*: none	Internal consistency: α's range from .64–.82 Test-retest reliability 1 week: .46–.71; 6 months: .34–.46	Confirmatory Factor Analysis validated across samples	6

Note. Only scales that were included in the meta-analysis are listed.

Table 3.

Description of studies included in the current meta-analysis.

Study	Sample Size	Coping/ER Measure(s) Used	Coping or ER	Measure of Psychopathology	Age Group	Coping /ER Measure Validity	Informant	Study Design
Abela et al., (2002)	Sample 1: 130; Sample 2: 184	CRSQ	Coping	CDI; HSC	Child and Adolescent	No	Single	Cross-sectional
Abela et al., (2004)	Sample 1: 70; Sample 2: 190	CRSQ	Coping	CDI	Child and Adolescent	No	Single	Cross-sectional
Abela et al., (2007)	140	CRSQ	Coping	CDI	Child	No	Single	Cross-sectional and Longitudinal
Adams, Abela, & Hankin (2007)	392	CRSQ	Coping	CDI	Adolescent	No	Single	Cross-sectional
Adrian, Zeman, Erdley, Lisa, Homan, & Sim (2009)	140	ERC; DERS	ER	CBCL; YSR	Adolescent	Yes	Single and Multiple	Cross-sectional
Ahmed, Kia-Keating, & Tsai (2011)	240	Brief RCOPE	Coping	YSR; STAI; CES-D	Adolescent	No	Single	Cross-sectional
Amone-P'Olak, Garnefski, & Kraaij (2007)	294	CERQ	ER	IES-R; YSR	Adolescent	No	Single	Cross-sectional
Auerbach, Abela, Zhu, & Yao (2007)	411	RSQ	Coping	RBQ-A	Adolescent	Yes	Single	Cross-sectional
Auerbach et al. (2010)	150	RSQ	Coping	CES-D; MASC	Adolescent	Yes	Single	Cross-sectional
Bachanas, Kullgren, Suzman Schwartz, Lanier, McDaniel, Smith, & Nesheim (2001)	36	Coping Strategies Inventory	Coping	BASC; CBCL	Child	Yes	Single and Multiple	Cross-sectional
Bal, Crombez, De Bourdeaudhuij, & Van Oost (2009)	100	HICUPS	Coping	TSCC	Adolescent	Yes	Single	Cross-sectional
Bal, De Bourdeaudhuij, Crombez, & Van Oost (2005)	65	HICUPS	Coping	TSCC	Adolescent	Yes	Single	Longitudinal
Bal, Van Oost, De Bourdeaudhuij, & Crombez (2003)	970	HICUPS	Coping	TSCC	Adolescent	Yes	Single	Cross-sectional
Batum & Yagmurlu (2007)	100	ERC	ER	ECBI	Child	Yes	Single and Multiple	Cross-sectional
Bender, Reinholdt-Dunne, Esbjørn, & Pons (2012)	544	DERS	ER	SCARED-R	Adolescent	No	Single	Cross-sectional
Bowie (2010)	126	CSREE	ER	BASC	Adolescent	No	Single and Multiple	Longitudinal

Study	Sample Size	Coping/ER Measure(s) Used	Coping or ER	Measure of Psychopathology	Age Group	Coping /ER Measure Validity	Informant	Study Design
Braun-Lewensohn, Sagy, & Roth (2011)	135	ACS	Coping	STAI; Psychosomatic Distress	Adolescent	No	Single	Cross-sectional
Brechting & Giancola (2007)	326	Wills Coping Questionnaire	Coping	DUSI - Modified	Adolescent	No	Single	Longitudinal
Brenning, Soenens, Braet, & Bosmans (2012)	Sample 1: 339; Sample 2: 746	Emotion Regulation Inventory	ER	CDI	Adolescent	No	Single	Cross-sectional
Brumariu, Kerns, & Seibert (2012)	87	Children's Coping Strategies Scale	Coping	SCARED	Adolescent	No	Multiple	Cross-sectional
Calvete, Camara, Estevez, & Villardon (2011)	978	RSQ	Coping	YSR	Adolescent	Yes	Single	Cross-sectional and Longitudinal
Caples & Barrera (2006)	232	CCSC	Coping	CDI; YSR; RCMAS; CBCL	Adolescent	Yes	Single and Multiple	Cross-sectional
Carlo, Mestre, McGinley, Samper, Tur, & Sandman (2012)	1557	ACS	Coping	Caprara & Pastorelli instrument	Adolescent	No	Single	Cross-sectional
Carpenter et al. (2012)	111	Brief RCOPE	Coping	CDI	Adolescent	No	Single	Cross-sectional and Longitudinal
Carthy, Horesh, Apter, Edge, & Gross (2010)	49	ERQ	ER	SCARED; CDI; BDI-II	Adolescent	Yes	Single	Cross-sectional
Cascone, Zimmermann, Auckenthaler, & Robert-Tissot (2011)	110	CASQ	Coping	ASI; STAI-Y	Adolescent	No	Single	Cross-sectional
Catanzaro & Laurent (2004)	210	COPE	Coping	ABQ	Adolescent	No	Single	Cross-sectional
Cicchetti, Rogosch, & Sturge-Apple (2007)	339	A-COPE	Coping	DISC	Adolescent	No	Single	Cross-sectional
Clark, Novak, & Dupree (2002)	70	A-COPE	Coping	AXS	Adolescent	No	Single	Cross-sectional
Compas, Boyer, Stanger, Colletti, Thomsen, Dufton, & Cole (2006)	164	RSQ	Coping	YSR; CBCL	Adolescent	Yes	Single and Multiple	Cross-sectional
d'Acremon & van der Linden (2007)	110	CERQ	ER	RADS	Adolescent	No	Single	Cross-sectional
Dahlbeck & Lightsey (2008)	39	CODI	Coping	STAIC	Adolescent	No	Single	Cross-sectional
Dalton & Pakenham (2002)	78	ACS	Coping	YSR; BSI	Adolescent	No	Single	Cross-sectional
Davies, Forman, Rasi, & Stevens (2002)	924	SIS	ER	YSR; CBCL	Adolescent	Yes	Single and Multiple	Cross-sectional
Davis & Humphrey (2012)	748	CCSC-R1	Coping	BYI II	Adolescent	Yes	Single	Cross-sectional

Study	Sample Size	Coping/ER Measure(s) Used	Coping or ER	Measure of Psychopathology	Age Group	Coping /ER Measure Validity	Informant	Study Design
Dempsey (2002)	120	Coping in the Home and School Environments	Coping	Checklist of Children's Distress Symptoms; STAIC	Adolescent	No	Single	Cross-sectional
Downey, Johnston, Hansen, Birney, & Stough (2010)	145	ACS	Coping	YSR	Adolescent	No	Single	Cross-sectional
Dufton, Dunn, Slosky, & Compas (2011)	Sample 1: 42; Sample 2: 21	RSQ	Coping	CBCL; YSR	Adolescent	Yes	Single and Multiple	Cross-sectional
Duncombe, Havighurst, Holland, & Frankling (2012)	373	ERC	ER	SDQ	Child	Yes	Single and Multiple	Cross-sectional
Durakovic-Belko et al. (2003)	393	WOC	Coping	Depression Self-Rating Scale	Adolescent	No	Single	Cross-sectional
Eccleston, Crombez, Scotford, Clinch, & Connell (2004)	75	PCQ	Coping	SCAS, CDI	Adolescent	No	Single	Cross-sectional
Edlynn, Gaylord-Harden, Richards, & Miller (2008)	240	Children's Integrated Stress and Coping Scale	Coping	STAIC, CBCL	Adolescent	No	Single and Multiple	Cross-sectional
Elgar, Arlett, & Groves (2003)	Sample 1: 100; Sample 2: 146	WOC-R	Coping	YSR	Adolescent	No	Single	Cross-sectional
Endriga, Jordan, & Speltz (2003)	68	Assessment of Emotion SelfRegulation	ER	CBCL	Child	No	Multiple	Longitudinal
Erath, Flanagan, & Bierman (2007)	84	Coping Strategies Interview	Coping	SAS-A	Adolescent	No	Single	Cross-sectional
Erdem & Slesnick (2010)	140	CISS-A	Coping	BDI-II	Adolescent	No	Single	Cross-sectional
Erdur-Baker (2009)	250	Problem Solving Inventory, Form-A	Coping	CDI	Adolescent	No	Single	Cross-sectional
Eschenbeck, Heim-Dreger, Tasdaban, Lohaus, & Kohlmann (2012)	473	SSKJ 3–8	Coping	SSKJ 3–8; SDQ	Adolescent	No	Single	Cross-sectional
Escobar, Fernandez-Baena, Miranda, Trianes, & Cowie (2011)	392	ACS - Short form	Coping	BASC	Child	No	Single	Cross-sectional
Farrell, Bettencourt, Mays, Kramer, Sullivan, & Kliewer (2012)	477	CAMS, ERCT	ER	PBFS-Y; CBCL	Adolescent	No	Single	Cross-sectional
Fear, Champion, Reeslund, Forehand, Colletti, Roberts, & Compas (2009)	108	RSQ	Coping	CBCL; YSR	Adolescent	Yes	Multiple	Cross-sectional

Study	Sample Size	Coping/ER Measure(s) Used	Coping or ER	Measure of Psychopathology	Age Group	Coping /ER Measure Validity	Informant	Study Design
Feng, Keenan, Hipwell, Henneberger, Rischall, Butch, … Babinski (2009)	225	CSMS; CAMS	ER	KSADS-PL	Child	No	Multiple	Cross-sectional and Longitudinal
Flanagan, Vanden Hoek, Ranter, & Reich (2012)	616	Coping measure by Kochenderfer-Ladd (2004)	Coping	Social Anxiety Scale for Adolescents	Adolescent	No	Single	Cross-sectional
Flanders, Simard, Paquette, Parent, Vitaro, Pihl, & Seguin (2010)	34	ERC	ER	NLSCY	Child	Yes	Single	Cross-sectional
Flannery et al. (2003)	3691	Coping Measure created for study	Coping	VBQ	Adolescent	No	Single	Cross-sectional
Flett, Druckman, Hewitt, & Wekerle (2012)	58	The Coping Measure	Coping	CES-D	Adolescent	No	Single	Cross-sectional
Flynn & Rudolph (2007)	510	RSQ	Coping	CDI	Adolescent	Yes	Single	Cross-sectional
Flynn & Rudolph (2010)	345	RSQ - Modified	Coping	SMFQ	Child	Yes	Single	Cross-sectional
Forns, Amador, Kirchner, Gomez, Muro, & Martorell (2005)	1401	CRI-Y	Coping	YSR	Adolescent	No	Single	Cross-sectional
Forns, Balluerka, Gomez-Benito, Kirchner, & Amador (2010)	447	CRI-Y	Coping	YSR	Adolescent	No	Single	Cross-sectional
Fredland, Campbell, & Han (2008)	309	A-COPE - modified	Coping	Pediatric Symptom Checklist	Adolescent	No	Single	Cross-sectional
Gardner, Archer, & Jackson (2012)	113	CSQ-3	Coping	RPAQ	Adolescent	No	Single	Cross-sectional
Garnefski & Kraaij (2006)	Sample 1: 597; Sample 2: 1164	CERQ	ER	SCL-90	Adolescent	No	Single	Cross-sectional
Garnefski, Boon, & Kraaij (2003)	129	CERQ	Coping	SCL-90	Adolescent	No	Single	Cross-sectional
Garnefski, Kraaij, & van Etten (2005)	271	CERQ	ER	YSR	Adolescent	No	Single	Cross-sectional
Garnefski, Legerstee, Kraaij, van den Kommer, & Teerds (2002)	487	CERQ	Coping	SCL-90	Adolescent	No	Single	Cross-sectional
Garnefski, Rieffe, Jellesma, Meerum Terwogt, & Kraaij (2007)	717	CERQ-k	ER	FSSC-R; CDI	Child	No	Single	Cross-sectional
Gaylord-Harden (2008)	235	CCSC-R1	Coping	BASC-TRS	Child	Yes	Multiple	Cross-sectional
Gaylord-Harden, Elmore, Campbell, & Wethington (2011)	278	HICUPS	Coping	RCMAS; CDI	Child	Yes	Multiple	Cross-sectional
Gaylord-Harden, Gipson, Mance, & Grant (2008)	498	CCSC	Coping	YSR	Adolescent	Yes	Single	Cross-sectional

Study	Sample Size	Coping/ER Measure(s) Used	Coping or ER	Measure of Psychopathology	Age Group	Coping /ER Measure Validity	Informant	Study Design
Gaylord-Harden, Taylor, Campbell, Kesselring, & Grant (2009)	393	CCSC	Coping	CDI	Adolescent	Yes	Single	Cross-sectional
Gentzler, Santucci, Kovacs, & Fox (2009)	65	Feelings and My Child	ER	CBCL, K-SADS	Child	No	Multiple	Cross-sectional
Gold, Mahrer, Treadwell, Weissman, & Vichinsky (2008)	41	Kidcope	Coping	CBCL	Adolescent	No	Multiple	Cross-sectional
Gonzales, Tein, Sandler, & Friedman (2001)	445	CCSC	Coping	CDI; Youth Self-Report Hostility Scale	Adolescent	Yes	Single	Cross-sectional
Gould, Hussong, & Hersh (2012)	75	A-COPE	Coping	SMFQ; RCMAS	Adolescent	No	Multiple	Cross-sectional
Gratz, Tull, Reynolds, Bagge, Latzman, Daughters, & Lejuez (2009)	263	ERC	ER	RCADS	Adolescent	Yes	Multiple	Cross-sectional
Graziano, Reavis, Keane, & Calkins (2007)	325	ERC	ER	BASC	Child	Yes	Single	Cross-sectional
Grootenhuis & Last (2001)	84	CCSS-c	Coping	DQC	Adolescent	No	Single	Cross-sectional
Gullone & Taffe (2012)	827	ERQ-CA	ER	CDI	Adolescent	Yes	Single	Cross-sectional
Hadd & Crocker (2007)	125	CFQ	Coping	PANAS	Adolescent	No	Single	Cross-sectional
Hampel & Petermann (2006)	286	SVF-KJ	Coping	RAASI	Adolescent	No	Single	Cross-sectional
Hasking (2006)	199	ACS	Coping	EAT-26; AusAUDIT	Adolescent	No	Single	Cross-sectional
Hasking (2007)	259	ACS	Coping	Self-Reported Delinquency Scale	Adolescent	No	Single	Cross-sectional
Hasking, Scheier, & ben Abdallah (2011)	548	Brief COPE	Coping	BSI	Adolescent	No	Single	Cross-sectional
Hebert, Parent, & Daignault (2007)	Sample 1: 121; Sample 2: 57	SRCS-S	Coping	CBCL	Child	No	Multiple	Cross-sectional
Hebert, Tremblay, Parent, Daignault, & Piche (2006)	63	SRCS - Modified	Coping	CBCL	Child	No	Multiple	Cross-sectional
Hermann, Hohmeister, Zohsel, Ebinger, & Flor (2007)	401	PRCQ-C	Coping	SDQ	Child and Adolescent	No	Multiple	Cross-sectional
Hilt et al. (2010)	722	CRSQ	Coping	CDI	Adolescent	No	Single	Cross-sectional
Hocking, Barnes, Shaw, Lochman, Madan-Swain, & Saeed (2011)	44	RSQ	Coping	MASC-10; BASC-2	Adolescent	Yes	Single and Multiple	Cross-sectional
Holen, Lervag, Waaktaar, & Ystgaard (2012)	1323	Kidcope	Coping	SDQ	Child	No	Multiple	Cross-sectional

Study	Sample Size	Coping/ER Measure(s) Used	Coping or ER	Measure of Psychopathology	Age Group	Coping /ER Measure Validity	Informant	Study Design
Horwitz, Hill, & King (2011)	140	Brief COPE	Coping	RADS-2:SF	Adolescent	No	Single	Cross-sectional
Hourigan, Goodman, & Southam-Gerow (2011)	61	CAMS; CWMS	ER	RCADS; CBCL	Child	No	Multiple	Cross-sectional
Hsieh & Stright (2012)	438	ERQ	ER	Social Skills Improvement System	Adolescent	Yes	Single and Multiple	Cross-sectional
Hudek-Knezevic, Kardum, & Maglica (2005)	794	Coping Inventory for Adolescents - short version	Coping	PILL	Adolescent	No	Single	Cross-sectional
Ireland, Boustead, & Ireland (2005)	95	CSQ-3	Coping	GHQ-28	Adolescent	No	Single	Cross-sectional
Jacob, Morelen, Suveg, Jacobsen, & Whiteside (2012)	57	ERC	ER	CPRS-R:S	Child	Yes	Single	Cross-sectional
Jaser, Champion, Dharamsi, Riesing, & Compas (2011)	72	RSQ	Coping	CBCL; IFIRS	Adolescent	Yes	Multiple	Cross-sectional
Jaser, Champion, Reeslund, Keller, Merchant, Benson, & Compas (2007)	73	RSQ	Coping	YSR	Adolescent	Yes	Single and Multiple	Cross-sectional
Jaser, Langrock, Keller, Merchant, Benson, Reeslund, … & Compas (2005)	78	RSQ	Coping	CBCL; YSR	Adolescent	Yes	Single and Multiple	Cross-sectional
Jose & Huntsinger (2005)	113	ACES	Coping	CES-D; SelfPerception Profile for Adolescent; Somatic Complaints and Academic Anxiety from Crystal et al. (1994)	Adolescent	No	Single	Cross-sectional
Jose & Schurer (2010)	566	Coping Strategies Scale	Coping	CDI; RCMAS; Psychosomatic Self-Esteem	Adolescent	No	Single	Cross-sectional
Kaczynski, Simons, & Claar (2011)	280	PRI	Coping	CSI	Adolescent	Yes	Single	Cross-sectional
Kaminsky, Robertson, & Dewey (2006)	50	PRI	Coping	CDI	Adolescent	Yes	Single	Cross-sectional
Keogh & Eccleston (2006)	161	PCQ	Coping	SCAS, CDI	Adolescent	No	Single	Cross-sectional
Kim & Cicchetti (2010)	421	ERC	ER	TRF	Child	Yes	Single	Cross-sectional
Kim & Kim (2007)	1908	CSCY	Coping	“Child Self-Report Aggressive Behavior”	Adolescent	No	Single	Cross-sectional
Kim et al., (2012)	1957	MHQKA	Coping	Child Psychiatry Symptoms; Zung Self-Rating Anxiety Scales	Adolescent	No	Single	Cross-sectional

Study	Sample Size	Coping/ER Measure(s) Used	Coping or ER	Measure of Psychopathology	Age Group	Coping /ER Measure Validity	Informant	Study Design
Kochenderfer-Ladd & Skinner (2002)	356	SRCS	Coping	TRF	Child	No	Multiple	Cross-sectional
Langrock, Compas, Keller, Merchant, & Copeland (2002)	101	RSQ	Coping	CBCL	Adolescent	Yes	Single	Cross-sectional
Larsen, Vermulst, Eisinga, English, Gross, Hofman, … Engels (2012)	2,051	ERQ	ER	CES-D	Adolescent	Yes	Single	Cross-sectional
Legault, Anawati, & Flynn (2006)	220	Coping Scale by Flynn & Legault (2002)	Coping	NILSCY	Adolescent	No	Single	Cross-sectional
Lengua & Long (2002)	101	CCSC	Coping	CBCL; YSR	Child	Yes	Multiple	Cross-sectional
Lewis, Byrd, & Ollendick (2012)	709	HICUPS	Coping	MASC	Adolescent	Yes	Single	Cross-sectional
Li, DiGiuseppe, & Froh (2006)	246	ACS	Coping	RADS	Adolescent	No	Single	Cross-sectional
Libby & Glenwick (2010)	57	CSQ-C	Coping	CDI-S	Adolescent	No	Single	Cross-sectional
Lim, Stormshak, & Falkenstein (2011)	102	LECI	Coping	OHTS	Adolescent	No	Single	Cross-sectional
Lima, Guerra, & de Lemos (2010)	89	SCSI	Coping	CBCL	Child	No	Multiple	Cross-sectional
Liu, Gonzales, Fernandez, Millsap, & Dumka (2011)	189	CCSC-R2	Coping	YSR; CBCL	Adolescent	Yes	Single and Multiple	Cross-sectional and Longitudinal
Liu & Huang (2012)	613	CWCQ	Coping	STAI; CDI	Adolescent	No	Single	Cross-sectional
Lougheed & Hollenstein (2012)	177	DERS; ERQ	ER	BAI; BDI-II; SAS-A short form	Adolescent	No	Single	Cross-sectional
Lunkenheimer, Shields, & Cortina (2007)	87	ERC	ER	CBCL; TRF	Child	Yes	Single and Multiple	Cross-sectional
Martyn-Nemeth, Penckofer, Gulanick, Velsor-Friedrich, & Bryant (2009)	102	CASQ	Coping	Kandel Depressive Mood Scale	Adolescent	No	Single	Cross-sectional
Maurice-Stam, Oort, Last, Brons, Caron, & Grootenhuis (2009)	27	CCSS	Coping	ZBV-K	Child	No	Single	Longitudinal
Mavroveli, Petrides, Rieffe, & Bakker (2007)	282	UCL-A	Coping	CDI; SCL	Adolescent	No	Single	Cross-sectional
Maxwell & Cole (2012)	830	RSQ; BICSI	Coping	CDI; EDDS	Adolescent	Yes and No	Single	Cross-sectional
Maybery, Steer, Reupert, & Goodyear (2009)	701	KCS	Coping	SDQ	Child	No	Multiple	Cross-sectional
McKee, Jones, Roland, Coffelt, Rakow, & Forehand (2007)	108	SCSI	Coping	CDI	Child	No	Single	Cross-sectional

Study	Sample Size	Coping/ER Measure(s) Used	Coping or ER	Measure of Psychopathology	Age Group	Coping /ER Measure Validity	Informant	Study Design
McMahon & Watts (2002)	209	CCSC	Coping	RCMAS	Adolescent	Yes	Single	Cross-sectional
Miers, Rieffe, Terwogt, Cowan, & Linden (2007)	692	BARQ-C	Coping	SCL	Adolescent	No	Single	Cross-sectional
Miller, Vannatta, Compas, Vasey, McGoron, Salley, & Gerhardt (2009)	75	RSQ	Coping	CBCL	Child	Yes	Single	Cross-sectional
Molock, Puri, Matlin, & Barksdale (2006)	212	RCS	Coping	RADS	Adolescent	No	Single	Cross-sectional
Monopoli & Kingston (2012)	67	ERC	ER	BASC-2	Child	Yes	Single	Cross-sectional
Morris & Age (2009)	65	CCSC-R1	Coping	SDQ	Adolescent	Yes	Single	Cross-sectional
Mosher & Prelow (2007)	243	CCSC - Modified	Coping	CES-D—Brief Version	Adolescent	Yes	Single	Cross-sectional
Murdock, Greene, Adams, Hartmann, Bittinger, & Will (2010)	45	Problem-solving skills (Schmidt & Dubow, 1998)	Coping	BASC	Child	No	Single	Cross-sectional
Muris, Mayer, Reinders, & Wesenhagen (2011)	376	UCL-A	Coping	PQY; YSR	Adolescent	No	Single	Cross-sectional
Muris, Schmidt, Lambrichs, & Meesters (2001)	373	UCL-A	Coping	CDI	Adolescent	No	Single	Cross-sectional
Muris et al., (2004)	337	CRSS	Coping	CDI; SCARED	Adolescent	No	Single	Cross-sectional
Ng, Ang, & Ho (2012)	719	CRI	Coping	BDI-II; STAI; AQ-Short; TAXI-modified	Adolescent	No	Single	Cross-sectional
Nicolotti, El-Sheikh, & Whitson (2003)	89	CCSC	Coping	CDI; RCMAS; CBCL	Child	Yes	Multiple	Cross-sectional
Ollendick, Langley, Jones, & Kephart (2001)	99	HICUPS	Coping	FSSC-R	Adolescent	Yes	Single	Cross-sectional
Orsmond, Kuo, & Seltzer (2009)	56	COPE	Coping	CES-D	Adolescent	No	Single	Cross-sectional
Penza-Clyve & Zeman (2002)	208	EESC	ER	STAIC; CDI; CSI	Child	No	Single	Longitudinal
Phillips & Power (2007)	225	CREQ	ER	SDQ	Adolescent	No	Multiple	Cross-sectional
Piko (2001)	1039	WOCQ	Coping	Modified Langner Index	Adolescent	No	Single	Cross-sectional
Prakash & Coplan (2003)	40	CISS	Coping	HBSC; Competitive State Anxiety Inventory	Adolescent	No	Single	Cross-sectional
Pina, Villalta, Ortiz, Gottschall, Costa, & Weems (2008)	46	CCSC	Coping	PTSD checklist, RCADS	Adolescent	Yes	Single	Cross-sectional
Raviv & Wadsworth (2010)	24	RSQ	Coping	CBCL; RCMAS; RCDS	Child	Yes	Single	Cross-sectional

Study	Sample Size	Coping/ER Measure(s) Used	Coping or ER	Measure of Psychopathology	Age Group	Coping /ER Measure Validity	Informant	Study Design
Rawana & Ahola Kohut (2012)	311	CERQ	Coping	K-SPAQ; MASC-R; CES-D	Adolescent	No	Single	Cross-sectional
Reschly, Huebner, Appleton, & Antaramian (2008)	293	SRCS	Coping	PANAS-C	Adolescent	No	Single	Cross-sectional
Rhoades, McIntosh, Wadsworth, Ahlkvist, Burwell, Gudmundsen, … & Rea (2007)	154	RSQ	Coping	RADS; STAIC; UCLA	Adolescent	Yes	Multiple	Cross-sectional
Rieffe, Oosterveld, Miers, Terwogt, & Ly (2008)	665	EAQ-30	ER	SAS-A, CDI, SCL	Adolescent	No	Single	Cross-sectional
Roelofs et al. (2009)	770	CRSS	Coping	SCARED	Adolescent	No	Single	Cross-sectional
Rudolph & Troop-Gordon (2010)	167	RSQ	Coping	K-SADS-E-5	Adolescent	Yes	Multiple	Cross-sectional and Longitudinal
Sandstrom (2004)	95	SCORE	Coping	CDI; SASC-R; CBCL	Child	No	Single	Cross-sectional
Schiff (2006)	600	COPE	Coping	CES-D; CPTSRI; SRQ	Adolescent	No	Single	Cross-sectional
Schneider & Phares (2005)	60	HICUPS	Coping	CBCL; CDI	Adolescent	Yes	Single and Multiple	Cross-sectional
Seiffge-Krenke & Stemmler (2002)	115	CASQ	Coping	YSR	Adolescent	No	Single	Cross-sectional
Šerek, Lacinová, & Macek (2012)	444	Coping Strategies Inventory - Modified	Coping	Mood and Feelings Questionnaire	Adolescent	No	Single	Cross-sectional
Shelton & Harold (2007)	100	Children's Coping Strategies	Coping	CDI; YSR	Adolescent	No	Single	Cross-sectional
Shelton & Harold (2008)	252	SIS	Coping	TRF; CDI; YSR	Adolescent	Yes	Single and Multiple	Cross-sectional
Shirkey, Smith, & Walker (2011)	116	PRI	Coping	CDI	Child	Yes and No	Single	Longitudinal
Siener & Kerns (2012)	87	The Coping Questionnaire	Coping	CDI-S	Adolescent	No	Multiple	Cross-sectional
Siffert & Schwarz (2011)	192	FEEL-JK	ER	SCAS; CES-D; Self-Report Somatic Problems List; RCPM; SDQ	Child	No	Single	Cross-sectional
Sim & Zeman (2006)	234	CEMS	ER	EDI-BD; EAT-26	Adolescent	No	Single	Cross-sectional
Simons, Claar, & Logan (2008)	217	PRI	Coping	CSI	Adolescent	Yes	Single	Cross-sectional
Skočić, Rudan, Brajković, & Marčinko (2010)	101	SCS	Coping	YSR	Adolescent	No	Single	Cross-sectional

Study	Sample Size	Coping/ER Measure(s) Used	Coping or ER	Measure of Psychopathology	Age Group	Coping /ER Measure Validity	Informant	Study Design
Smith, Eisenberg, Spinrad, Chassin, Morris, Kupfer, … Kwok (2006)	293	CCSC-R1	Coping	CBCL; Anxiety Scale; Teacher Report Index of Depression	Child	Yes	Multiple	Cross-sectional
Song et al. (2012)	586	ERSI	ER	Intensity Time Affect Scale	Adolescent	No	Single	Cross-sectional
Sontag, Graber, Brooks-Gunn, & Warren (2008)	111	RSQ	Coping	YSR	Adolescent	Yes	Single	Cross-sectional
Steele, Legerski, Nelson, & Phipps (2009)	803	AESC	ER	ChIA; CMHS; BASC-PRF; CHI	Adolescent	No	Single and Multiple	Cross-sectional
Sullivan, Helms, Kliewer, & Goodman (2010)	358	CAMS; CSMS	ER	Risk Behavior Survey; Measure of Relational Aggression	Adolescent	No	Single	Cross-sectional
Sung, Puskar, & Sereika (2006)	72	CRI-Y	Coping	RADS; SCARED	Adolescent	No	Single	Cross-sectional
Suveg, Shaffer, Morelen, & Thomassin (2011)	97	ERC; CSMS; CAMS; CWMS	ER	CBCL	Child	No	Single	Cross-sectional
Tam & Lam (2005)	993	CASQ	Coping	CDI; ABQ	Adolescent	No	Single	Cross-sectional
Tam (2008)	1116	CASQ	Coping	CDI; ABQ	Adolescent	No	Single	Cross-sectional
Thompson, Mata, Jaeggi, Buschkuehl, Jonides, & Gotlib (2010)	149	RSQ	Coping	CDI	Adolescent	Yes	Single	Cross-sectional
Thomsen, Compas, Colletti, Stanger, Boyer, & Konik (2002)	190	RSQ	Coping	CBCL	Adolescent	Yes	Single	Cross-sectional
Thuen & Bru (2004)	2006	COPE	Coping	Hopkins Symptom Checklist	Adolescent	No	Single	Cross-sectional
Tompkins, Hockett, Abraibesh, & Witt (2011)	146	RSQ	Coping	YSR; TRF	Adolescent	Yes	Single and Multiple	Cross-sectional
van Dijk, Grootenhuis, Imhof, Cohen-Kettenis, Moll, & Huisman (2009)	31	CISS	Coping	YSR	Adolescent	No	Single	Cross-sectional
Van Dyke, Glenwick, Cecero, & Kim (2009)	76	Brief RCOPE	Coping	PANAS-C; BSI-18	Adolescent	No	Single	Cross-sectional
Vasilev, Crowell, Beauchaine, Mead, & Gatzke-Kopp (2009)	165	DERS	ER	YSR; CDI; CBCL; CSI	Adolescent	No	Single and Multiple	Cross-sectional
Vaughn & Roesch (2003)	182	COPE	Coping	BDI	Adolescent	No	Single	Cross-sectional
Vigna, Hernandez, Kelley, & Gresham (2010)	261	Kidcope	Coping	BASC-2	Child	No	Single	Cross-sectional

Study	Sample Size	Coping/ER Measure(s) Used	Coping or ER	Measure of Psychopathology	Age Group	Coping /ER Measure Validity	Informant	Study Design
Visconti & Troop-Gordon (2010)	420	SRCS - Modified	Coping	RCMAS; CES-D; Multi-Informant Peer Victimization Inventory - Modified	Child	No	Single and Multiple	Cross-sectional and Longitudinal
Votta & Manion (2003)	100	COPE	Coping	YSR; BDI	Adolescent	No	Single	Cross-sectional
Votta & Manion (2004)	100	COPE	Coping	YSR; BDI	Adolescent	No	Single	Cross-sectional
Vulic-Prtoric & Macuka (2006)	331	SUO	Coping	SKAD-62; SDD	Adolescent	No	Single	Cross-sectional
Wadsworth & Berger (2006)	79	RSQ	Coping	YSR	Adolescent	Yes	Single	Longitudinal
Wadsworth & Compas (2002)	364	RSQ	Coping	YSR	Adolescent	Yes	Single	Cross-sectional
Wadsworth & Santiago (2008)	164	RSQ	Coping	YSR; CBCL	Adolescent	Yes	Multiple	Cross-sectional
Wadsworth, Raviv, Compas, & Connor-Smith (2005)	57	RSQ	Coping	YSR; CBCL	Adolescent	Yes	Multiple	Cross-sectional
Wadsworth, Rieckmann, Benson, & Compas (2004)	332	RSQ	Coping	MMPI-A; CDI	Adolescent	Yes	Single	Cross-sectional
Wagner, Ferguson, & Smith (2012)	80	Kidcope; CHIC	Coping	CDI	Adolescent	No	Single and Multiple	Cross-sectional
Walker, Smith, Garber, & Claar (2005)	133	PRI	Coping	CSI; CDI	Child	Yes	Single	Cross-sectional
Walker, Smith, Garber, & Claar (2007)	247	PRI	Coping	CSI; CDI	Child	Yes	Single	Longitudinal
Wang & Gan (2011)	460	COPE	Coping	Zung	Adolescent	No	Single	Cross-sectional
Weinberg & Klonsky (2009)	428	DERS	ER	PHQ-A	Adolescent	No	Single	Cross-sectional
Wills, Sandy, & Yaeger (2002)	1699	Intention-Based Inventory	Coping	Substance Problems Inventory	Adolescent	No	Single	Cross-sectional
Wills, Sandy, Yaeger, Cleary, & Shinar (2001)	Sample 1: 1702; Sample 2: 1827; Sample 3: 1895	Child Intention-Based Assessment	Coping	Adolescent Substance Use	Adolescent	No	Single	Cross-sectional
Wilson, Pritchard, & Revalee (2005)	542	Brief COPE	Coping	POMS	Adolescent	No	Single	Cross-sectional
Wolfradt, Hempel, & Miles (2003)	276	Coping questionnaire by Seiffge-Krenke (1989)	Coping	STAI	Adolescent	No	Single	Cross-sectional
Wright, Banerjee, Hoek, Rieffe, & Novin (2010)	270	SRCS - Modified	Coping	Social Anxiety Scale for Children - Revised; CDI-S	Child	No	Single	Cross-sectional

Study	Sample Size	Coping/ER Measure(s) Used	Coping or ER	Measure of Psychopathology	Age Group	Coping /ER Measure Validity	Informant	Study Design
Wu, Chin, Chen, Lai, & Tseng (2011)	229	PCCS	Coping	RCMAS-2	Adolescent	No	Single	Cross-sectional
Xiao, Yao, Zhu, Zhang, Auerbach, McWhinnie, & Abela (2010)	1068	RSQ	Coping	SAS-SCS	Adolescent	Yes	Single	Cross-sectional
Zaremba & Keiley (2011)	62	ERC	ER	YSR	Adolescent	Yes	Single	Cross-sectional
Zehnder, Prchal, Vollrath, & Landolt (2006)	119	HICUPS	Coping	Child PTSD RI; CBCL	Child	Yes	Multiple	Longitudinal
Zeidner (2005)	227	COPE	Coping	Dundee Stress State Questionnaire; Personal Stress Symptom Assessment; EMAS; Post-Traumatic Reaction Scale	Adolescent	No	Single	Cross-sectional
Zeman, Cassano, Suveg, & Shipman (2010)	214	CWMS	ER	CBCL, ADIS-IV	Child	No	Multiple	Cross-sectional
Zeman, Shipman, & Penza-Clyve (2001)	227	CSMS	“Emotion Regulation Coping”	STAIC; CDI; CBCL	Child	No	Single and Multiple	Cross-sectional
Zhou et al. (2012)	867	SCSQ	Coping	CMSSLSS	Adolescent	No	Single	Cross-sectional

Note. A-COPE = Adolescent Coping Orientation for Problem Experiences; ABQ = Alcohol Behavior Questionnaire; ACES = Adolescent Coping Efforts Scale; ACS = Adolescent Coping Scale; ADIS-IV = Anxiety Disorder Interview Schedule for Children-Fourth Edition-Child/Parent Versions; AESC = Anger Expression Scale for Children; ASI = Addiction Severity Index; AusAUDIT = Australian Alcohol Use Disorders Identification Test; AXS = State-Trait Anger Expression Inventory; BAI = Beck Anxiety Inventory; BARQ-C = Behavioral Anger Response Questionnaire; BASC = Behavior Assessment System for Children; BASC-2 = Behavioral Assessment System for Children-Second Edition; BASC-PRF = Behavior Assessment Scale for Children-Parent Report Form; BASC-TRS = The Behavior Assessment Scale for Children - Teacher Rating Scales; BDI = Beck Depression Inventory; BDI-II = Beck Depression Inventory-II; BICSI = Body Image Coping Strategies Inventory; Brief RCOPE = Brief Religious Coping Measure; BSI = Brief Symptom Inventory; BSI-18 = Brief Symptom Inventory; BYI II = Beck Youth Inventories of Emotional and Social Impairment, Second Edition; CAMS = Children’s Anger Management Scales; CASQ = Coping Across Situations Questionnaire; CBCL = Child Behavior Checklist; CCSC = Children’s Coping Strategies Checklist; CCSC-R1 = The Children’s Coping Strategies Checklist - Revision 1; CCSC-R2 = Children’s Coping Strategies Checklist-2nd Revision; CCSS = Cognitive Control Strategies Scale; CCSS-c = Cognitive Control Strategy Scale for Children; CDI = Children’s Depression Inventory; CDI-S = Children’s Depression Inventory-Short Form; CEMS = Children’s Emotion Management Scales; CERQ = Cognitive Emotion Regulation Questionnaire; CERQ-k = Cognitive Emotion Regulation Questionnaire; CES-D = The Center for Epidemiologic Studies Depression Scale; CES-D—Brief Version = The Center for Epidemiologic Studies Depression Scale—Brief Version; CFQ = Coping Function Questionnaire; CHI = Children’s Hostility Inventory; ChIA = Children’s Inventory of Anger; CHIC = Coping Health Inventory for Children; CISS = Coping Inventory for Stressful Situations; CISS-A = Coping Inventory for Stressful Situations-Adolescent version; CMHS = Cook-Medley Hostility Scale, children’s version; CMSSLSS = China Multi-dimensional Life Satisfaction Scale for adolescents; CODI = Coping with a Disease; COPE = Cope Inventory; CPRS-R:S = Connor’s Parent Rating Scale-Revised - Short Version; CPTSRI = Child Post-Traumatic Stress Reaction Index; CRI = Coping Responses Inventory; CRI-Y = Coping Response Inventory - Youth Form; CRSQ = Children’s Response Styles Questionnaire; CSCY = Coping Scale for Children and Youth; CSI = Children’s Somatization Inventory; CSMS = Children’s Sadness Management Scales; CSQ-3 = Coping Styles Questionnaire; CSQ-C = Coping Strategies Questionnaire - Child version; CSREE = Child Self-Report of Emotional Experience; CWCQ = Chinese Ways of Coping Questionnaire; CWMS = Children’s Worry Management Scale; DERS = Difficulties with Emotion Regulation Scale; DISC = Diagnostic Interview Schedule for Children; DQC = Depression Questionnaire for Children; DUSI = Drug Use Screening Inventory; EAQ-30 = Emotion Awareness Questionnaire; EAT = Eating Attitudes Test; EAT-26 = Eating Attitudes Test-26; ECBI = Eyberg Child Behavior Inventory; EDDS = Eating Disorder Diagnostic Scale; EDI-BD = Eating Disorder Inventory-Body Dissatisfaction Scale; EESC = Emotional Expression Scale for Children; EMAS = Endler’s Multidimensional Anxiety Scale; ERC = Emotion Regulation Checklist; ERCT = Emotion Regulation Checklist; ERQ = Emotion Regulation Questionnaire; ERQ-CA = Emotion Regulation Questionnaire for Children and Adolescents; FEEL-KJ = Fragebogen zur Erhebung der ER bei Kindern und Jugendlichen; FSSC-R = Revised Fear Survey Schedule for Children; GHQ-28 = General Health Questionnaire; HICUPS = How I Cope Under Pressure Scale; HSC = Hopelessness Scale for Children;

IES-R = Impact of Event Scale-Revised; IFIRS = Iowa Family Interaction Rating Scales; K-SADS = 'Kiddie' Schedule for Affective Disorders and Schizophrenia; K-SADS-E-5 = Schedule for Affective Disorders and Schizophrenia for School-Age Children - Epidemiologic Version 5; K-SPAQ = Kiddie Seasonal Pattern Assessment Questionnaire; KCS = Kids Coping Scale; KSADS-PL = Kiddie Schedule for Affective Disorders and Schizophrenia for School-Age Children—Present/Lifetime Version; LECI = Life Events and Coping Inventory; MASC = Multidimensional Anxiety Scales for Children; MASC-10 = Multidimensional Anxiety Scale for Children - 10-item form; MHQKA = Mental Health Questionnaire for Korean Adolescents; MMPI-A = Minnesota Multiphasic Personality Inventory - Adolescent Version; NLSCY = National Longitudinal Study of Children and Youth Behavior Questionnaire; OHTS = Oregon Healthy Teens Survey; PANAS = Positive and Negative Affects Schedule; PANAS-C = Positive and Negative Affect Schedule for Children; PBFS-Y = Problem Behavior Frequency Scale—youth report; PCCS = Paediatric Cancer Coping Scale; PCQ = The Pain Coping Questionnaire; PHQ-A = Patient Health Questionnaire - Adolescent; PILL = Pennebaker Inventory of Limbic Languidness; POMS = Profile of Mood States; PQY = Psychopathology Questionnaire for Youths; PRCQ-C = Pain-Related Cognitions Questionnaire for Children; PRI = Pain Response Inventory for Children; RAASI = Reynolds Adolescent Adjustment Screening Inventory; RADS = The Reynolds Adolescent Depression Scale; RADS-2:SF = Reynolds Adolescent Depression Scale 2nd Edition, Short Form; RBQ-A = Risky Behavior Questionnaire for Adolescents; RCADS = Revised Child Anxiety and Depression Scale; RCDS = Reynolds Child Depression Scale; RCMAS = Revised Children's Manifest Anxiety Scale; RCMAS-2 = Revised Children's Manifest Anxiety Scale, Second Edition; RCPM = Revised Class Play Method; RCS = Religious Coping Scale; RI = Frederick Reaction Index; RPAQ = Reactive-Proactive Aggression Questionnaire; RSQ = Responses to Stress Questionnaire; SAS-A = Social Anxiety Scale for Adolescents; SAS-A short form = Social Anxiety Scale for Adolescents - short form; SAS-SCS = Social Anxiety Subscale of the Self-Consciousness Scale; SASC-R = Social Anxiety Scale for Children - Revised; SCARED = Screen for Child Anxiety Related Emotional Disorders; SCARED-R = Screen for Child Anxiety Related Emotional Disorders-Revised; SCAS = Spence Children's Anxiety Scale; SCL = Somatic Complaint List; SCL-90 = Symptom Check List; SCORE = Survey for Coping with Rejection Experiences; SCS = Scale of Coping with Stress; SCSI = Schoolagers' Coping Strategies Inventory; SCSQ = Simplified Coping Style Questionnaire; SDD = Depression Scale for Children and Adolescents; SDQ = Strengths and Difficulties Questionnaire; SIS = Security in the Interparental Subsystem Scale; SKAD-62 = Fear and Anxiety Scale for Children and Adolescents; SMFQ = Short form of the Mood and Feelings Questionnaire; SRCS = Self-Report Coping Scale; SRCS-S = Self-Report Coping Scale Short Form; SRQ = Stress Reaction Questionnaire; SSKJ 3–8 = Stress and Coping Questionnaire for Children and Adolescents; STAI = State Trait Anxiety Inventory; STAI-Y = State-Trait Anxiety Inventory for Youth; STAIC = State Trait Anxiety Inventory for Children; SUO = Coping Strategies Inventory for Children and Adolescents; SVF-KJ = German Coping Questionnaire for Children and Adolescents; TAXI-modified = State-Trait Anger Expression Inventory; TRF = Child Behavior Profile - Teacher Report Form; TSCC = Trauma Symptom Checklist for Children; UCL-A = Adolescent version of the Utrecht Coping List; UCLA = UCLA Reaction Index; WOC-R = Ways of Coping Scale - Revised; WOCQ = Ways of Coping Questionnaire; YSR = Youth Self Report; ZBV-K = Dutch version of the State-Trait Inventory for Children.

Table 4.

Cross-sectional effect sizes for coping and emotion regulation and internalizing and externalizing symptoms.

	Internalizing Symptoms					Externalizing Symptoms				
Level I: Domains	***k***	***n***	***r***	**95% CI**	***Q***	***k***	***n***	***r***	**95% CI**	***Q***
Total Coping	12	2867	−.01	[−.13, .11]	**109.98**	4	--	--	--	--
Adaptive Coping	13	3077	**−.04**	**[−.16, .08]**	**113.87**	7	4949	**−.11**	**[−.20, −.02]**	**25.41**
Maladaptive Coping	5	1266	**.27**	**[.18, .36]**	9.05	2	--	--	--	--
Adjusted value			**.22**	[.12, .31]	**17.99**			--	--	--
Emotion Regulation	15	6437	−.23+	[−.34, −.11]	282.21	18	7682	−.27+	**[−.37, −.17]**	**337.34**
Level II: Factors	***K***	***n***	***R***	**95% CI**	***Q***	***k***	***n***	***r***	**95% CI**	***Q***
Problem-Focused	18	6597	**−.07**	**[−.14, .00]**	**113.83**	4	--	--	--	--
Emotion-Focused	13	4728	.11	[−.02, .23]	**182.02**	7	3276	.03	[−.12, .17]	**55.89**
Engagement/Approach	48	17987	**−.07**	**[−.14, −.01]**	**735.70**	25	21437	−.04	[−.09, .01]	**178.07**
Adjusted value			−.02	[−.08, .04]	1019.11			--	--	--
Disengagement	29	14684	**.18**	**[.12, .24]**	**360.67**	7	3924	**.13**+	**[.04, .22]**	**31.92**
Primary Control	20	7205	**−.17**	**[−.24, −.10]**	**154.75**	6	1739	**−.23**	**[−.33, −.14]**	**15.46**
Adjusted value			**−.14**	**[−.21, −.07]**	**170.67**			--	--	--
Secondary Control	23	8295	**−.25**	**[−.32, −.18]**	**226.05**	6	1815	**−.30**	**[−.38, −.22]**	**13.24**
Adjusted value			**−.20**	**[−.27, −.13]**	**319.61**			**−.29**	**[−.37, −.20]**	**15.98**
Social Support	42	18599	.02	[−.02, .05]	**246.08**	21	14441	.00	[−.06, .07]	**239.28**
Level III: Strategies	***K***	***n***	***R***	**95% CI**	***Q***	***k***	***n***	***r***	**95% CI**	***Q***
Problem-Solving	45	27447	−.03	[−.07, .01]	**408.12**	16	10497	−.02	[−.08, .03]	**98.05**
Emotional Expression	6	2171	.08	[−.10, .25]	**78.00**	2	--	--	--	--
Emotional Suppression	10	10618	**.13**+	**[.03, .22]**	**165.15**	6	2150	.02	[−.02, .07]	6.11
Cognitive Reappraisal	31	23541	−.05	[−.10, .00]	**356.78**	10	8633	−.03	[−.08, .03]	**36.11**
Acceptance	12	6686	.04	[−.05, .12]	**119.82**	1	--	--	--	--
Distraction	25	7950	−.04	[−.10, .03]	**189.55**	11	3114	.06	[−.02, .14]	**37.55**
Avoidance	65	29570	**.17**	**[.14, .20]**	**458.96**	32	25255	**.09**	**[.05, .13]**	**271.68**
Adjusted value			**.16**	**[.13, .19]**	**496.08**			--	--	--
Denial	12	6880	**.10**	**[.03, .17]**	**80.14**	2	--	--	--	--

Note: Bolded text indicates the effect size or Q statistic was significant at the $p < .05$ level.

[+]Indicates the Egger's test analyses were significant for the effect size. Adjusted values were calculated for any effect size in which the trim and fill analyses indicated significant publication bias. Adjusted values indicate the effect size when the trim and fill procedures are applied.

Table 5.

Categorical moderator analyses testing mean age (child vs. adolescent), measurement quality (adequate vs. high), and informant (single vs. multiple) as moderators of coping and emotion regulation with internalizing and externalizing symptoms.

Moderator: Age								
	Internalizing Symptoms				Externalizing Symptoms			
Level I: Domains	Q_b	***k***	***r***	**95% CI**	Q_b	***k***	***R***	**95% CI**
Adaptive Coping	.01	13			.34	7		
Child		3	−.05	[−.39, .31]		2	.02	[−.43, .47]
Adolescent		10	−.03	[−.15, .10]		5	−.12	[−.23, −.01]
Emotion Regulation	2.53	15			1.26	18		
Child		8	−.30	[−.44, −.15]		11	−.32	[−.42, −.21]
Adolescent		7	−.13	[−.27, .01]		7	−.20	[−.38, −.01]
Level II: Factors	Q_b	***k***	***r***	**95% CI**	Q_b	***k***	***r***	**95% CI**
Problem-Focused	.23	18			--			
Child		3	−.06	[−.11, .00]				
Adolescent		15	−.08	[−.17, .01]				
Engagement/Approach	7.60*	48			.29	25		
Child		9	−.08	[−.22, .07]		4	−.01	[−.12, .10]
Adolescent		38	−.07	[−.14, −.00]		21	−.04	[−.09, .01]
Secondary Control	.02	23			--			
Child		3	−.24	[−.49, .06]				
Adolescent		20	−.26	[−.33, −.18]				
Social Support Coping	1.29	42			1.56	21		
Child		9	−.03	[−.13, .07]		5	−.05	[−.15, .04]
Adolescent		33	.03	[−.01, .07]		16	.02	[−.05, .10]
Level III: Strategies	***Qb***	***k***	***r***	**95% CI**	Q_b	***k***	***r***	**95% CI**
Problem-Solving	4.03	45			--			
Child		6	−.07	[−.18, .04]				
Adolescent		36	.00	[−.05, .04]				
Emotional Suppression	11.16**	10			.46	6		
Child		3	.01	[−.18, .20]		3	.00	[−.09, .09]

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Adolescent		6	.16	[.03, .28]		3	.04	[−.03, .11]
Cognitive Reappraisal	8.53*	31			--			
Child		3	.02	[−.07, .12]				
Adolescent		27	−.06	[−.12, .01]				
Distraction	2.78	25			--			
Child		3	.00	[−.13, .12]				
Adolescent		20	−.01	[−.03, .01]				
Avoidance	2.40	65			.05	32		
Child		10				8	.08	[−.03, .19]
Adolescent		55				24	.10	[.05, .14]

Moderator: Measure Quality

	Internalizing Symptoms				Externalizing Symptoms			
Level I: Domains	Q_b	***K***	***r***	**95% CI**	Q_b	***k***	***r***	**95% CI**
Adaptive Coping	--				.26	7		
Adequate Quality						5	−.16	[−.19, −.14]
High Quality						2	−.17	[−.26, −.08]
Emotion Regulation	1.79	15			2.71	18		
Adequate Quality		8	−.05	[−.25, −.04]		7	−.19	[−.33, −.03]
High Quality		7	−.34	[−.50, −.09]		11	−.34	[−.43, −.24]
Level II: Factors	Q_b	***k***	***r***	**95% CI**	Q_b	***k***	***r***	**95% CI**
Engagement/Approach	1.51	48			.00	25		
Adequate Quality		27	−.11	[−.18, −.04]		15	−.04	[−.10, .02]
High Quality		21	−.03	[−.14, .08]		10	−.04	[−.13, .05]
Disengagement	0.27	29			--			
Adequate Quality		8	.21	[.07, .34]				
High Quality		21	.17	[.11, .24]				
Social Support Coping	0.26	42			1.56	21		
Adequate Quality		31	.01	[−.03, .05]		16	.02	[−.05, .10]
High Quality		11	.04	[−.05, .12]		5	−.05	[−.15, .04]
Level III: Strategies	Q_b	***k***	***r***	**95% CI**	Q_b	***k***	***r***	**95% CI**
Problem-Solving	2.80	45			2.29	16		
Adequate Quality		41	−.04	[−.08, .01]		12	−.05	[−.12, .02]

High Quality		4	.04	[−.04, .11]		4	.07	[−.07, .21]	
Emotional Suppression	1.82	10			--				
Adequate Quality		5	.07	[−.07, .21]					
High Quality		5	.19	[.08, .30]					
Cognitive Reappraisal	0.15	31			1.76	10			
Adequate Quality		23	−.04	[−.09, .01]		6	−.06	[−.13, .02]	
High Quality		8	−.07	[−.22, .08]		4	.02	[−.06, .09]	
Distraction	3.28	25			.07	11			
Adequate Quality		15	−.08	[−.15, −.01]		3	.08	[−.17, .32]	
High Quality		10	.04	[−.07, .14]		8	.04	[−.02, .11]	
Avoidance	.06	65			.86	32			
Adequate Quality		45	.17	[.13, .21]		18	.11	[.05, .16]	
High Quality		20	.16	[.11, .22]		14	.07	[.02, .13]	

Moderator: Informant

	Internalizing Symptoms				**Externalizing Symptoms**			
Level I: Domains	Q_b	***k***	***r***	**95% CI**	Q_b	***k***	***r***	**95% CI**
Emotion Regulation	.35	15			.41	50	−.24	−.29, −.19
Single Informant		5	−.30	[−.61, .08]		25	−.28	−.41, −.15
Multi-Informant		6	−.19	[−.51, −.06]		25	−.24	−.29, −.18
Level II: Factors	Q_b	***k***	***r***	**95% CI**	Q_b	***k***	***r***	**95% CI**
Problem-Focused	.20	18			--			
Single Informant		15	−.07	[−.15, .01]				
Multi-Informant		3	−.11	[−.26, .05]				
Engagement/Approach	3.23	48			.02	39	−.04	−.08, .00
Single Informant		38	−.06	[−.13, .00]		33	−.04	−.08, .00
Multi-Informant		7	−.18	[−.30, −.05]		6	−.04	−.12, .05
Disengagement	.81	29			--			
Single Informant		19	.20	[.12, .28]				
Multi-Informant		3	.15	[.05, .24]				
Social Support Coping	1.89	42			5.26*	38	.02	−.02, .07
Single Informant		34	.02	[−.02, .06]		25	.07	.01, .12
Multi-Informant		6	−.05	[−.15, .05]		13	−.04	−.11, .03

Level III: Strategies	Q_b	*k*	*r*	95% CI	Q_b	*k*	*r*	95% CI
Problem-Solving	1.33	45			5.18	16		
Single Informant		40	−.03	[−.07, .02]		12	−.06	[−.12, −.01]
Multi-Informant		3	−.10	[−.27, .08]		3	.12	[−.11, .34]
Cognitive Reappraisal	1.33	31			1.83			
Single Informant		25	−.04	[−.10, .02]		7	−.05	[−.11, −.02]
Multi-Informant		3				3	.03	[−.06, .12]
Distraction	--				.36	11		
Single Informant						7	.09	[.05, .17]
Multi-Informant						4	.02	[−.09, .14]
Avoidance	3.20	65			.41	32		
Single Informant		49	.17	[.13, .21]		18	.10	[.04, .15]
Multi-Informant		10	.13	[.09, .18]		11	.07	[−.01, .16]

Note. Total coping, maladaptive coping, emotion dysregulation, emotion-focused coping, disengagement coping, emotional expression, and denial did not have enough studies in both categories (child and adolescent) to test age as a moderator of the overall effect. Total coping, maladaptive coping, emotion dysregulation, emotion-focused coping, primary control coping, secondary control coping, emotional expression, acceptance, and denial did not have enough studies in both categories (adequate and high quality) to test measure quality as a moderator of the overall effect. Total coping, adaptive coping, maladaptive coping, emotion-focused coping, primary control coping, secondary control coping, emotion expression, emotion suppression, acceptance, and denial did not have enough studies in both categories (single and multi-informant) to test informant as a moderator of the overall effect.