

The Development of Coping

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Abstract

Research on coping during childhood and adolescence is distinguished by its focus on how children deal with actual stressors in real-life contexts. Despite burgeoning literatures within age groups, studies on developmental differences and changes have proven difficult to integrate. Two recent advances promise progress toward a developmental framework. First, dual-process models that conceptualize coping as “regulation under stress” establish links to the development of emotional, attentional, and behavioral self-regulation and suggest constitutional underpinnings and social factors that shape coping development. Second, analyses of the functions of higher-order coping families allow identification of corresponding lower-order ways of coping that, despite their differences, are developmentally graded members of the same family. This emerging framework was used to integrate 44 studies reporting age differences or changes in coping from infancy through adolescence. Together, these advances outline a systems perspective in which, as regulatory subsystems are integrated, general mechanisms of coping accumulate developmentally, suggesting multiple directions for future research.

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Coping: the study of how people deal with actual stressors in real-life contexts and how the effects of these episodes accumulate

INTRODUCTION

Children's lives are filled with challenges and problems, ranging from traumatic insults (e.g., death of a parent) to major chronic stressors (e.g., poverty) to more normative difficulties (e.g., peer rejection) to daily hassles (e.g., sibling conflict) (Garmezy, 1983). Theories and research depicting the impact of these stressors likewise originate from many sources and levels. At a macro level, work on risk and resilience maps the effects of childhood adversity onto the development of children's competence and psychopathology (Masten et al. 1999). At a micro level, researchers document infants' and children's reactions to specific stressors (e.g., novelty, restraint, delay, noncontingency), tracing the effects on their

neural, hormonal, attentional, emotional, behavioral, and cognitive functioning.

In the middle of these streams of research is coping. Coping research is distinguished by its focus on what children actually do (their profile of emotional, cognitive, and behavioral responses) in dealing with specific difficulties in real-life contexts, and how these episodes both unfold and accumulate across time. As described by Lois Murphy (1974), the first researcher to study its development systematically, coping captures "the child's way of getting along—with whatever equipment he ha[s] at his developmental stage—and his own individual makeup, as he face[s] the particular external and internal problems of his situation" (p. 71). Coping is essential to a full understanding of the effects of stress on children and adolescents because it not only depicts the individual's active role in the transactional process of dealing with the demands that adversity actually brings into a child's life, but also has the potential to consider how these ongoing encounters shape development.

A great deal has been learned since the appearance of seminal publications urging the study of coping in children and adolescents (Compas 1987, Garmezy & Rutter 1983, Murphy & Moriarity 1976) or across the lifespan (Aldwin 1994). Much of that research has been summarized in recent review articles and handbooks (Compas et al. 2001, Frydenberg 1997, Seiffge-Krenke 1995, Wolchik & Sandler 1997). As with research on adults, research on children and adolescents largely focuses on individual differences, examining the links between different strategies and a range of outcomes in an attempt to identify adaptive and maladaptive patterns. Many ways of coping have been considered—including problem-solving, support-seeking, escape, rumination, positive restructuring, distraction, negotiation, direct action, social withdrawal, and helplessness—and they have been assessed using a number of methodologies, most commonly open-ended interviews, observations, reports from parents or teachers, and, for older children and adolescents,

self-report questionnaires. Research on coping during childhood has also examined its links to early temperament and ongoing parental practices as well as the continuity of specific ways of coping over time.

However, despite widespread agreement that development shapes every aspect of how people deal with stress, it has proven surprisingly difficult to realize a developmental agenda for the study of coping (Compas 1998, Skinner & Edge 1998). The field faces many challenges. No overarching developmental framework for the study of coping currently exists. Definitions of coping, largely borrowed from work with adults, are not always explicitly developmental. Research is typically segregated by age and is further fragmented by the kind of stressors children face, such as divorce, illness, or parental conflict (Wolchik & Sandler 1997). A serious obstacle, and one that bedevils research at every age, is the proliferation of ways of coping (Skinner et al. 2003); literally hundreds of responses are measured by current assessments. As a result, work on coping does not always seem well integrated with other research that examines children's reactions to adversity and stress (Compas et al. 1999, Eisenberg et al. 1997).

Goals of the Review

Despite these challenges, there continues to be keen interest in stress and coping during childhood, and recent advances promise to reinvigorate and reorient research. In this review, we first identify key issues in current work on coping that may help guide developmental research. Second, we use a developmental framework based on these issues to structure the review and integration of current research on age differences and changes in coping from infancy to late adolescence.¹ Third, from a selective review of the contributors to coping, we suggest some general devel-

opmental mechanisms that may explain normative age-graded shifts in patterns of coping across infancy, childhood, and adolescence. Fourth, we enumerate future directions for research, highlighting the complex and substantial developmental questions that remain.

KEY ISSUES IN THE DEVELOPMENTAL STUDY OF COPING

We discuss four important advances, focusing on the core consensus that is emerging, as well as identifying important points of contention. The advances are (*a*) the convergence of developmental conceptualizations of coping on constructs of regulation, (*b*) descriptions of the structure of coping using a set of hierarchically organized families, (*c*) suggestions for the outlines of broad developmental levels of coping, and (*d*) the identification of multiple subsystems underlying coping that suggest a set of explanatory mechanisms contributing to normative age changes and differential pathways of development.²

Issue One: Developmental Conceptualizations of Coping

Twenty years ago, conceptualizations of coping in children were based almost exclusively on definitions from adulthood, which typically consider coping as "constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person" (Lazarus & Folkman 1984, p. 141). Such conceptualizations are not particularly "developmentally friendly" in that they do not provide clear theoretical links to other developing subsystems, such as cognition or language. Without such links, research cannot determine how the development of the components underlying coping

Ways of coping:

basic descriptive units that are designed to capture how people actually respond to stress as they contend with real life problems. Common ways of coping include instrumental action, problem-solving, support-seeking, distraction, escape, opposition, and social withdrawal

Developmentally friendly definitions of coping:

conceptualizations that provide theoretical links to other developing subsystems, guiding investigation of how development of components underlying coping combine to shape emergence of new coping abilities at successive ages

¹Although development is a lifelong process, we could not include research on age changes across adulthood and old age (but see Aldwin 1994).

²The seeds of many of these advances were sown in a series of meetings on the development of coping sponsored by the Coping Consortium (2001) and hosted by Irwin Sandler and Bruce Compas.

combine to shape the emergence of new coping capacities (or liabilities) at successive ages.

Although heterogeneity remains (see Compas et al. 2001 for a review), over the past ten years developmental researchers have increasingly converged on conceptualizations that build on the idea of coping as “regulation under stress” (Compas et al. 1997, Eisenberg et al. 1997, Rossman 1992, Skinner 1999). Compas and colleagues (1997, 2001) define coping as “conscious and volitional efforts to regulate emotion, cognition, behavior, physiology, and the environment in response to stressful events or circumstances” (2001, p. 89). Eisenberg and colleagues (1997) view coping as “involving regulatory processes in a subset of contexts—those involving stress” (p. 42). Our own definition of coping as “action regulation under stress” (Skinner 1999, Skinner & Wellborn 1994) refers to “how people mobilize, guide, manage, energize, and direct behavior, emotion, and orientation, or how they fail to do so” (1994, p. 113) under stressful conditions. Collectively, these definitions forge links between coping and work on the regulation of basic psychological and physiological processes, including emotion, behavior, attention, and cognition, as well as the effects of regulatory efforts on social partners and the environment.

Emotion regulation and coping. The affinity between coping and regulation is clearest for emotion regulation (ER) (Barrett & Campos 1991, Bridges & Grolnick 1995, Eisenberg et al. 1997, Folkman & Moskowitz 2004, Kopp 1989, Rossman 1992). Kopp (1989), a pioneer in work on the development of ER, argues 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). As pointed out by Rossman (1992), “Models for both stress/coping and the ER process include an appraisal of the significance of the environmental circumstance, the attendant emotional experience, the selection of some action to regulate the heightened emo-

tion and perhaps alter the environment, and some kind of feedback regarding the success of the regulation attempt” (p. 1375). Eisenberg and colleagues (1997) make a cogent case for a close connection, noting that not only is coping “motivated by the presence or expectation of emotional arousal (generally resulting from stress or danger),” but “many forms of coping are very similar to types of regulation discussed in the emotion regulation literature” (p. 288). In fact, all strategies of ER can be considered ways of coping (Bridges & Grolnick 1995), and when studying young children (whose capacities to change the environment are limited) or emotion-focused coping at any age, ER and coping become virtually synonymous.

The centrality of emotion to coping is highlighted by functionalist theories, which view emotion as “a kind of radar and rapid response system,” or as “biologically endowed processes that permit extremely quick appraisals of situations and equally rapid preparedness to act to sustain favorable conditions and deal with unfavorable conditions” (Cole et al. 2004, p. 319; see also Barrett & Campos 1991, Lazarus 1999). Emotion is integral to all phases of the coping process, from vigilance, detection, and appraisals of threat to action readiness and coordinating responses during stressful encounters. However, adaptive coping does not rely exclusively on positive emotions nor on constant dampening of emotional reactions. In fact, emotions like anger have important adaptive functions, such as readying a person to sweep away an obstacle, as well communicating these intentions to others. Adaptive coping profits from flexible access to a range of genuine emotions as well as the ongoing cooperation of emotions with other components of the action system (Holodynski & Friedlmeier 2006).

Coping as a coordinating concept. Coping is both more and less than emotion regulation. On the one hand, coping refers to only a subset of self-regulatory processes—those that take place under stressful circumstances

(Compas et al. 2001, Eisenberg et al. 1997, Gianino & Tronick 1998, Skinner & Wellborn 1994). On the other hand, coping includes more than the regulation of emotion. When confronted with stress, individuals attempt not only to deal with emotional experience, expression, and physiological reactions, but also to coordinate motor behavior, attention, cognition, and reactions from the social and physical environments (Compas et al. 2001, Eisenberg et al. 1997, Lazarus & Folkman 1984). Correspondingly, researchers have made connections from coping to behavioral self-regulation (e.g., Metcalfe & Mischel 1999), attention deployment (e.g., Wilson & Gottman 1996), ego control and resiliency (Block & Block 1980), and to self-regulation more generally (Aspinwall & Taylor 1997; Carver & Scheier 1998; Kopp 1982, 1989). Collectively, these forms of regulation can be considered regulatory subsystems that work together to shape the actions that are described by coping (Compas et al. 1997, Eisenberg et al. 1997, Holodynski & Friedlmeier 2006, Skinner 1999). The focus of coping research is on how all of these features of action work together, synergistically or antagonistically, for example, how attempts to regulate behavior can have a negative effect on emotional reactions under stress.

Dual-process models of coping. Most models of regulation conceptualize two processes—one describing the target to be regulated, such as an emotion or impulse, and the other describing the set of processes that regulate it. In work on emotion, these are referred to as emotion and emotion regulation (Cole et al. 2004); in work on temperament, “reactivity” and “regulation” (Rothbart et al. 1994); in work on willpower, the “hot” emotional and the “cool” cognitive systems (Metcalfe & Mischel 1999); in work on motivation, “intrinsic” and “extrinsic” motivation (Deci & Ryan 1985).

In general, the targets of regulation are the result of a fast, reactive, emotionally driven, impulsive “hot” system that appraises and re-

acts to external stimuli or situations relatively automatically and with little conscious control. Sometimes described as “go” responses, reactions can be of many types: fear reactions to novelty, anger to restraint, approach to people, attention to a threatening object, or grabbing a forbidden treat. “Go” responses refer not to an approach response per se, but to action readiness—the hot system brings the organism into a state of readiness to act in accordance with the emotional urge, whether that be to flee, protest, or approach. The hot system has strong temperamental bases but also incorporates experiences through conditioning and learning. It is adaptive for dealing with stress: Not only is it more flexible and differentiated than innate reflexes, it also triggers environmentally tuned actions faster than a more cognitively mediated system.

In contrast, regulatory processes are given the job of working with the hot system to guide, redirect, boost, interfere with, organize, and/or sequence the actions it urges. Although some of the most effective strategies are cognitive and deliberate, there seem to be many regulatory processes, including neurophysiological, habitual, attentional, and social, that operate already in neonates and infants (e.g., Kopp 1989). Regulatory processes are also adaptive: They allow actions to be more informed and flexible and less determined by local conditions.

Consistent with most models of regulation, coping researchers posit dual-process models. Compas and colleagues (1997, 1999) distinguish between involuntary stress responses, which describe immediate and automatic reactions to stressful situations, and coping, which refers to “regulatory efforts that are volitionally and intentionally enacted specifically in response to stress” (Compas et al. 2001, p. 89). In our work (Skinner 1999), we refer to these two processes as “action tendencies,” defined “in terms of their joint properties in creating an ‘urge,’ ‘desire,’ ‘want,’ or ‘impulse’ that is redundantly experienced as a motor program (e.g., the urge to get out of the way or hide), an emotion (e.g., fear or shock),

Dual-process models of coping:

conceptualizations that incorporate stress reactions and action regulation

Stress reactions:

immediate and automatic responses to stressful situations

Action regulation:

efforts to mobilize, manage, and direct physiology, emotion, attention, behavior, and cognition in response to stress

Families of coping: higher-order core categories of coping that are based on adaptive functions coping serves and provide hierarchical organization for lower-order ways of coping

and a goal orientation (e.g., the desire to become small or disappear)” (p. 479) and “action regulation.”

As in other areas of regulation, there is active discussion about how stress reactions and regulation work together. Some researchers suggest that they are parallel processes—in that a reaction can be described as either a stress reaction or a coping response (Compas et al. 1997, 1999); some suggest that they are sequential, with the regulation following and modifying reactivity (Cole et al. 2004); and some argue that they are simultaneous and continuous (Campos et al. 2004). Researchers generally agree that they mutually influence each other over time (Compas et al. 2001, Eisenberg et al. 1997, Skinner 1999). For example, an extreme reaction to stress elicits many coping responses. Or, conversely, proactive coping allows a person to avoid situations in which they would be overwhelmed (Aspinwall & Taylor 1997). Some researchers suggest that any given response reflects a balance between the two subsystems (Metcalf & Mischel 1999). In terms of coping, this implies that “unregulated” involuntary responses could reflect a strong stress reaction and/or a weak (immature or disabled) regulatory system, whereas volitional coping attempts reflect a weak stress response and/or a well-developed action regulation system.

The effects of stress on these regulatory subsystems are receiving widespread empirical attention. Although no definitive answers are available, a common working hypothesis is that moderate levels of stress may create a zone of heightened regulation, during which subsystems are likely to become more cooperative and integrated, and during which regulatory capacities are practiced and consolidated (e.g., Kopp 1989). In contrast, high levels of stress may disrupt, disorganize, or overwhelm regulatory processes.

Summary. Built on constructs of regulation, overarching definitions of coping now have an explicit role for the emotional, behavioral, motivational, attentional, cognitive, and

social processes that have long been implicated: Coping focuses on how these multiple regulatory subsystems work together when dealing with stress. Most importantly, these advances open the door to conceptualizations that are developmental. For example, dual-process models suggest that the major components of coping, namely, stress reactions and action regulation, likely have different underlying temperamental bases and different developmental timetables (Compas et al. 2001, Eisenberg et al. 1997, Metcalf & Mischel 1999, Rothbart et al. 1994). In fact, a few strands of research on regulatory processes directly examine age-graded developmental changes (Holodynski & Friedlmeier 2006; Kopp 1982, 1989; Mischel & Mischel 1983), which should help to identify major landmarks in coping’s development. Moreover, emphasis on the constitutional and social bases of regulation points researchers to an analysis of temperament and social relationships as contributors to the differential development of coping.

Issue Two: Families of Coping

“Ways of coping” are basic descriptive units designed to capture how people actually respond to stress as they contend with real-life problems. The empirical examination of actual coping categories, such as problem-solving, support-seeking, rumination, or escape, distinguishes research on coping from closely related work on stress, adaptation, risk, resilience, and competence. The consideration of a profile of responses distinguishes the study of coping from the disparate programs of research focusing on each of the individual categories. Hence, constructing category systems to conceptualize and measure coping have been central endeavors.

However, this task is made challenging by the complexity of coping. Coping responses, because they are suited to specific demands and shaped by the resources and contexts in which they unfold, are virtually infinite in their variety; a recent review collected more

than 400 different category labels (Skinner et al. 2003). Moreover, ways of coping are multidimensional and can serve many different functions. They can be used to solve external problems or to deal with one's own emotions (Lazarus & Folkman 1984); to change the environment or to accommodate to it (Brandstädter & Renner 1990, Rudolph et al. 1995); to engage in stressful interactions or to disengage from them (Connor-Smith et al. 2000).

Hierarchical models of coping. Over the past decade, researchers have put enormous effort into conceptualizing and assessing hierarchical models that use higher-order categories or families to organize multiple lower-order ways of coping (Ayers et al. 1996, Connor-Smith et al. 2000, Ryan-Wenger 1992, Walker et al. 1997). Despite differences in theoretical approaches and dimensions, conceptual and empirical analyses have converged on a small number of families of coping, perhaps a dozen or so, that can be used to classify most if not all of the ways of coping identified in previous research (see **Table 1**; Skinner et al. 2003). These include problem-solving, support-seeking, escape, distraction, cognitive restructuring, rumination, helplessness, social withdrawal, emotional regulation, information-seeking, negotiation, opposition, and delegation.

However, each family includes more than the lower-order way of coping from which it takes its name—each includes all the ways of coping that serve that same set of functions (see **Table 1**). For example, “problem-solving” as a higher-order category includes not only generating solutions to a problem, but also other ways of coping that are designed to coordinate actions with available contingencies to produce desired or prevent undesired outcomes, such as instrumental actions, effort exertion, planning, decision making, and repair. Moreover, some of the families have complementary adaptive functions (see **Table 1**). For example, both support-seeking and self-reliance allow people to coordinate

their reliance on others with the social resources available; and both negotiation and accommodation allow people to coordinate their goals with the options available. [Similar functional analyses have been suggested by other researchers for ways of coping (Lazarus 1999, White 1974), emotions (Barrett & Campos 1991, Sroufe 1996), and action tendencies (Holodynski & Friedlmeier 2006), as well as for individual ways of coping, such as proximity-seeking (Bowlby 1969/1973)].

Developmentally friendly families. The identification of these higher-order families helps clarify the complex structure of coping and encourages renewed discussions of its adaptive functions (Coelho et al. 1974, Lazarus & Folkman 1984). Most importantly for developmentalists, the families offer a way to incorporate the spectrum of age-graded ways of coping by posing the question, “How do the ways of coping in each family manifest themselves at different developmental levels?” To answer this question, researchers first note the functions served by a higher-order family and then trace how those functions are fulfilled by different patterns of action at different ages.

For some families, such analyses have already begun. For example, young children use behavioral strategies to distract themselves (like playing with something fun), whereas older children can use cognitive strategies (like thinking about something pleasant), leading reviewers to note that cognitive secondary control coping strategies emerge in late childhood (Band & Weisz 1990, Compas 1998). By moving the analysis vertically downward in age, it is possible to identify functionally similar coping strategies during the toddler period, when children who cannot actively distract themselves can nevertheless be distracted by others, and even into infancy, when infants turn their heads away from worrisome stimuli to fasten their gaze on other interesting objects. These strategies of attention redeployment can also be seen at older ages, for example, when adolescents plan to

Developmentally graded members of coping families: different ways of coping that serve the same set of functions at different ages

Table 1 Links between higher-order families of coping and adaptive processes

Family of coping	Family function in adaptive process	Adaptive process	Also implicated
Problem-solving Strategizing Instrumental action Planning	Adjust actions to be effective	Coordinate actions and contingencies in the environment	Watch and learn Mastery Efficacy
Information-seeking Reading Observation Asking others	Find additional contingencies		Curiosity Interest
Helplessness Confusion Cognitive interference Cognitive exhaustion	Find limits of actions		Guilt Helplessness
Escape Behavioral avoidance Mental withdrawal Denial Wishful thinking	Escape noncontingent environment		Drop and roll Flight Fear
Self-reliance Emotion regulation Behavior regulation Emotional expression Emotion approach	Protect available social resources	Coordinate reliance and social resources available	Tend and befriend Pride
Support-seeking Contact-seeking Comfort-seeking Instrumental aid Social referencing	Use available social resources		Proximity-seeking Yearning Other alliance
Delegation Maladaptive help-seeking Complaining Whining Self-pity	Find limits of resources		Self-pity Shame
Social isolation Social withdrawal Concealment Avoiding others	Withdraw from unsupportive context		Duck and cover Freeze Sadness
Accommodation Distraction Cognitive restructuring Minimization Acceptance	Flexibly adjust preferences to options		Pick and choose Secondary control
Negotiation Bargaining Persuasion Priority-setting	Find new options	Coordinate preferences and available options	Compromise
Submission Rumination Rigid perseveration Intrusive thoughts	Give up preferences		Disgust Rigid perseverance
Opposition Other-blame Projection Aggression	Remove constraints		Stand and fight Anger Defiance

Adapted from Skinner et al. (2003).

bring a favorite book to distract themselves while they wait for a painful medical procedure. If analyses of the ways of coping in other families uncover parallel age-graded patterns, they may suggest major developmental shifts, for example, toward the increasing use of cognitive means of coping during late childhood.

Summary. Ways of coping are building blocks in the coping area, describing people's actual behavioral, emotional, and cognitive responses to stress. Recent conceptual and empirical analyses have identified approximately a dozen core families of coping; they can be depicted by a small number of dimensions but encompass a wide variety of ways of coping. Each of these families serves multiple functions in dealing with stress, and the discovery of how those functions can be achieved through different ways of coping at different developmental levels may allow the identification and study of age-graded ways of coping within a family and eventually of normative developmental shifts across families.

Issue Three: Developmental Shifts in Coping

Although studies have examined age differences and changes in ways of coping, few reviews are available (Aldwin 1994, Fields & Prinz 1997, Losoya et al. 1998). These studies, because they utilize a wide variety of partially overlapping coping categories and a wide variety of largely unselected age groups and gaps, have proven difficult to integrate (Compas et al. 2001). Hence, a central goal was to construct a framework to organize the research on the normative development of coping during childhood and adolescence (for the complete review, see Zimmer-Gembeck & Skinner 2006). To do so, we relied on (a) conceptualizations of coping as regulation to suggest landmarks indicating key ages at which coping might show developmental shifts, and (b) notions of hierarchical families to clarify the ways of coping that should be distinguished at each age. We identified studies,

coded the ways of coping they assessed according to the families, and arrayed findings for each family along the axis of age, looking for regular patterns of age changes.

Retrieval of studies. Studies were included if they explicitly used a measure of coping in response to stress.³ In total, 44 studies reported age differences (or changes) in coping responses prior to or during late adolescence (only 3 studies for children under age 5; 28 for children between ages 5 and 13; and 13 for adolescents age 12 to 18+). Much of the research on developmental changes in children's reactions to stress prior to age five is likely contained in studies of stress physiology, temperament, and regulation (Derryberry et al. 2003; Holodynski & Friedlmeier 2006; Kopp 1982, 1989).

Although research is limited, there was little difficulty in summarizing the studies of very young children; all studies relied on laboratory observations in distressing situations—background interpersonal conflict, stranger-infant interactions, or arm restraint and toy removal. It was more challenging to summarize studies of older children due to the heterogeneity in ages and measures included; age ranges varied from a minimum of 4–10 years to a maximum of 6–32 years, and assessments included interviews, standardized questionnaires, written open-ended responses, observations, and teacher reports.

Families of coping and developmental levels. We abstracted details of study design and measurement and (based on descriptions of

³It was a difficult decision to exclude studies that examined phenomena we felt tapped coping but were not so labeled by their authors. The inclusion of some studies would likely not be controversial, for example, studies of emotional self-regulation that examine avoidance, distraction, and support-seeking strategies in preschoolers. However, once the terminological condition is removed, it is difficult to know exactly where to stop, given the many phenomena closely allied with coping, such as attachment, mastery, helplessness, problem-solving, delay of gratification, and many kinds of regulation (Compas 1987).

subscale content and sample items provided) systematically coded for families of coping. Unfortunately, coping subscales often contained a mix of coping families. For example, “support-seeking” subscales sometimes combined seeking support from parents and peers, sometimes combined seeking help with seeking guidance and emotional comfort, sometimes distinguished among all these kinds of support-seeking, and sometimes combined support-seeking with other constructive ways of coping like problem-solving. In these cases, we assigned multiple codes and, in a few cases, included the findings multiple times. Because coping strategies can be dependent upon features of the stressful encounter, we also noted whether coping was assessed in response to self-identified stressors, within a particular domain, or with regard to a wide variety of stressors.

Particular times of developmental transition were underscored. Theory and evidence from studies of children’s cognitive, emotional, language, memory, and other aspects of development (e.g., brain development) have pointed to particular points during which structure, organization, and flexibility in coping processes are likely to undergo significant qualitative and quantitative shifts. Although there may be others, the most conclusive evidence points to transitions during the following age periods: (a) infancy to toddlerhood; (b) ages 5 to 7; (c) late childhood to early adolescence (about ages 10 to 12); (d) early and middle adolescence (about ages 12 to 16); and (e) middle and late adolescence (about ages 16 to 22).

Translating these into terms of coping suggests several broad developmental phases characterized by different mechanisms of regulation and different kinds of participation by social partners. Infancy would begin with stress reactions governed by reflexes, soon to be supplemented by coordinated action schema; during this period, caregivers would carry out coping actions based on the expressed intentions of their infants (interpersonal coregulation). During toddlerhood and

preschool age, coping would increasingly be carried out using direct actions, including those to enlist the participation of social partners; this would be the age at which voluntary coping actions would first appear (intrapersonal self-regulation). During middle childhood, coping through cognitive means would solidify, as described in work on distraction, delay, and problem-solving; children would be increasingly able to coordinate their coping efforts with those of others. By adolescence, coping through meta-cognitive means would be added, in which adolescents are capable of regulating their coping actions based on future concerns, including long-term goals and effects on others. Throughout the review, we highlight evidence for the development of coping during these transitional age periods.

Ways of coping. Although there were intermittent references to other strategies, 12 coping strategies appeared most often (listed here in order of prevalence of use): support-seeking (sometimes encompassing information-seeking or help-seeking), escape (cognitive and/or behavioral), distraction (cognitive and/or behavioral), problem-solving and instrumental action, accommodation, opposition and denial, self-reliance, aggression, social isolation, negotiation, helplessness, and positive cognitive reappraisal. We provide detailed findings for the four most common strategies, followed by a summary of results for the remaining families.

Support-seeking. Support-seeking and help-seeking, assessed in 32 studies, are among the most commonly used strategies across all ages. However, support-seeking is a complex, multidimensional tactic, with conclusions about development dependent on age, source of support (e.g., parents, peers, teachers), domain (e.g., medical, academic), kind of support sought (e.g., contact, comfort, guidance, instrumental aid), and means of seeking support (e.g., expressions of distress, bids and appeals, social referencing, proximity-seeking, verbal requests).

In the first years of life, young children become better able to seek the aid of attachment figures when distressed. About mid-first year, infants direct their facial responses in ways that elicit support or shape instrumental actions of others (also see Barrett & Campos 1991). Other adaptive strategies also emerge around this time, such as seeking eye contact with caregivers when soothing or other forms of assistance are desired (Kopp 1989; see also Bridges & Grolnick 1995, Holodyski & Friedlmeier 2006, Sroufe 1996).

Age differences in support-seeking were reported in about half of the 29 studies of children and adolescents, with an almost equal number reporting increases and decreases. After examining subscale content, we concluded that there are declines in seeking support from adults, especially from about age 4 to 12, and increases in seeking support from peers into middle adolescence. Further, there is evidence that much of this occurs because of a decline in seeking support from adults during two periods—the age 5 to 7 shift and the adolescent transition (age 9 to 12). Moreover, the pattern of developmental changes in support-seeking between the ages of about 4 and 12 differed as a function of domain of the stressor (e.g., aggression by peers, medical). When in situations that are uncontrollable or in which adults have authority, young people seek support from adults more as they get older. Hence, children are increasingly able to identify situations in which adult support is appropriate and helpful. As children move into adolescence, especially between the ages of about 10 and 16, they become more effective in determining the best source of support for particular problem domains.

Finally, we expected that reasons for support-seeking, such as comfort, instrumental assistance with a problem, advice, or simply to talk about a problem, would change with age. In particular, there should be increasing differentiation among the many reasons to seek support, which would appear as declines in some forms of support-seeking and increases in others. A pattern of in-

creasing differentiation could not be discerned, however, primarily because most subscales included a mix of types of support-seeking as well as items from other coping families.

Problem-solving. Across 28 studies, patterns of age differences depended on whether subscales focused on instrumental actions to change the stressful situation, more complex forms of problem-solving, or, for younger children, some combination that included help- or support-seeking (usually from adults). In studies of children under age 8 (which utilized observer or teacher-report scales focusing on instrumental actions or combinations), children showed modest or low levels of problem-solving as a coping strategy, and age differences were not apparent. Among studies of children 6 and older, when subscales included cognitive problem-solving (e.g., working out other ways of dealing with the problem), this strategy was used much more often, especially by older children and adolescents; in fact, problem-solving was used as often (or more often) than support-seeking and distraction. However, when subscales contained items referring to specific instrumental behaviors or included items concerning self-criticism or taking responsibility, these combinations of coping strategies were not as frequently endorsed.

When it was assessed as cognitive activity to master the problem, problem-solving showed age-related increases, and these increases were found between mid-childhood and early, middle, and late adolescence, and between adolescence and young adulthood. Specifically, increases were reported in 11 studies of children within the age range of 4 to 18, and these findings were specific to the measurement of problem-solving coupled with items that tap self-reliance, cognitive decision-making strategies, and/or have a majority of items tapping practical and mastery-type problem-solving. Similarly, higher levels of problem-solving were found between the ages of 20 and 25 compared with between

the ages of 14 and 17. In addition, one study found lower problem-solving at age 11–12 in comparison with younger and older children, which suggests that a focus on the adolescent transition might yield important information about the development of problem-solving and instrumental action as ways of coping with stress.

Conversely, when age-related decreases or no age differences were found, subscales with problem-solving items also included items tapping a range of other families of coping. For example, age-related decreases were found when subscales combined problem-solving and support-seeking from parents or help-seeking. Age-related declines were also found for subscales that combined cognitive and behavioral problem-solving, plus planning, making lists, and reflecting on emotional responses to stress; in addition, declines were found for a subscale that combined problem-solving with commitment, ambition, and hard work.

Taken together, the findings suggest that instrumental action to change the stressful situation (sometimes called approach or primary control engagement coping) comes on-line as a potential stress response as soon as children gain motor control, but that it can be supplemented and replaced by more self-regulated and cognitive activities, such as problem-solving and going to others for advice and help. Even more cognitively advanced forms that extend instrumental actions proactively, such as planning, list making, reflection, commitment, and ambition, may emerge in later adolescence or early adulthood.

Distraction. Twenty-five studies included distraction as a way to cope with stress. Fortunately, behavioral and cognitive forms were often measured separately, making age differences clearer. Surprisingly, however, this distinction was not utilized in studies of adolescents age 14 and over; all of these studies either measured behavioral distraction alone or mixed behavioral and cognitive distraction items.

Behavioral distraction tactics, such as keeping busy or playing games, were among the most common strategies reported by or observed in children, and adolescents reported using these strategies about as often as they used support-seeking. Regarding age differences, there were increases in behavioral distraction during infancy. As would be expected from increasing abilities to locomote and coordinate behaviors, infants' use of escape via gaze aversion declined while distraction by turning to other objects increased between 6 months and 12 months. In contrast, little age-related change in the use of behavioral distraction was found from about age 4 to 6, but behavioral distraction increased between about age 6 and early adolescence. It should be noted, however, that some of these studies included behavioral distraction items in multiple subscales, producing mixed results.

There was little evidence of age differences in behavioral distraction between the ages of 12 to 18. Yet, as was found with support-seeking, features of the stressors were important considerations; age-related increases in behavioral distraction were found when participants reported how they would deal with inescapable and uncontrollable stressors (dental, school report, cancer) or when adolescents identified their own recent problem.

Cognitive distraction, which was assessed separately from behavioral distraction only up to age 14, was most often described as some form of diversionary thinking, such as thinking about other things, thinking about something fun, or trying to forget the stressor. These were used more often as children got older, regardless of whether the age range was from 6 to 9, 5/6 to 11/12, 8 to 14, or 10 to 13. However, these subscales often contained items assessing strategies other than cognitive distraction. Nevertheless, the bulk of the evidence suggested increases in the use of cognitive distraction between childhood and adolescence.

Taken together, the mixed results likely reflect the variety of distraction tactics drawn

upon to cope with particular stressors. As children add strategies, they also increasingly comprehend how to apply this expanding repertoire to specific adverse situations, and, as their use becomes more conscious and regulated, young people can more easily shift from behavioral to cognitive distraction and back again.

Escape. Twenty-seven studies examined escape—attempts to leave the distressing environment or to avoid direct action. However, the use of mixed subscales made it challenging to draw conclusions. When we isolated nine studies with the “purest” escape measures, age differences between 4 and 12 years were typically found. Although evidence was not balanced across all age periods, three transitional periods were especially important for identifying changes—ages 5 to 7, ages 9 to 12, and ages 12 to 14. Developmental patterns depended upon whether coping was assessed in response to a specific (recent) stressor or as a general “coping style.” When participants, especially adolescents, identified their own stressors or focused on uncontrollable and specific stressors, slight age declines in the use of escape were typically revealed. Unfortunately, findings were too nonspecific and contradictory to test expectations about developmental shifts from behavioral to cognitive forms of escape.

Other families. Because there were so few studies and subscales were nonspecific, there was little evidence of age differences in the coping strategies of social isolation, negotiation, and helplessness. There were some age differences in six categories that appeared more frequently: rumination (part of submission), aggression in response to problems, accommodation (e.g., focus on the positive, acceptance), opposition (e.g., blaming others), denial, and self-reliance (e.g., accepting responsibility for solving the problem, self-regulation of emotions). Of these strategies, children and adolescents reported high lev-

els of rumination and worry, accommodation, and self-reliance.

With regard to developmental patterns, age differences were found in two stress responses—rumination and aggression. Rumination was more common among adolescents as compared with preadolescents, and this escalated across the adolescent years. Aggression was relatively uncommon, but was higher in adolescence as compared with late childhood. The transition period between childhood and adolescence also brought with it more use of cognitive restructuring, higher rates of blaming others for problems, and more self-reliance, including managing the practical and emotional aspects of stress. During adolescence, young people increasingly relied on positive self-talk to cope with stress (i.e., accommodation), and self-reliance became a more frequent response.

Summary. Organizing ways of coping into sets of broader families and focusing on certain ages as likely to mark developmental transitions allowed some trends to be detected, especially in comparison with earlier reviews (which included fewer than half of these studies). Despite the hundreds of ways of coping that have been identified, children and youth seem to favor four families—support-seeking, problem-solving (and instrumental action), escape, and, when escape is not possible, distraction. Studies that combined these families or failed to distinguish developmentally appropriate members within them (e.g., behavioral versus cognitive) were unlikely to reveal clear developmental trends.

Interestingly, behavioral forms of these ways of coping, which are common at all ages, may decrease across middle childhood, but they do not disappear. Instead, they tend to be partially replaced or supplemented at older ages, becoming more differentiated in both form and application. Among preschool children, coping shows little differentiation: Young children primarily seek support from caregivers, intervene directly in stressful situations, withdraw, or use behavioral activities to

Temperament:

inborn physiological differences in patterns of responding to environmental stimulation (such as novelty, restraint, or other people)

Temperamental reactivity:

individual differences in arousability or the amount of stimulation required to produce positive and negative reactions

Temperamental regulation:

constitutional differences in the ease with which infants can modulate their reactivity, either facilitating or inhibiting their affective, motor, and attentional responses

distract themselves. As children start school, these strategies become more differentiated: More cognitive strategies are added to both problem-solving and distraction tactics, and children begin to rely on additional sources of support. Moreover, developmental patterns of support-seeking suggest increasing understanding of contextual specificity—in comparison with younger children, older children and adolescents become more selective about sources of support within different stressful situations. Distraction tactics also become more diverse and flexible; as they get older, young people increasingly draw upon both behavioral and cognitive strategies. Further, with age, young people are more self-reliant and can more intentionally monitor and modulate their own internal emotional states through positive self-talk and cognitive reframing. The capacity to focus on the future may also lead to more anxiety and rumination as well.

Our focus on particular transitional periods also revealed that the earliest years of life, as well as the years between ages 5 to 7 and during the transition to adolescence (about ages 8 to 12), are important periods when coping develops rapidly. Yet, as would be expected from recent research on adolescent brain development and knowledge of other important developmental tasks undertaken during adolescence, the capacity to use particular cognitive strategies under stress (such as strategizing, decision making, planning, and reflection) may not fully emerge until late adolescence or early adulthood.

Such a progression is consistent with the picture painted in major reviews of coping during childhood and adolescence (Compas et al. 2001, Fields & Prinz 1997, Losoya et al. 1998). Yet, it was difficult to confirm all the developmental shifts suggested by previous narrative reviews. The current literature on age differences in coping strategies provides important information, but many studies were not designed to capture development, resulting in unclear or incomplete findings; only six were longitudinal. Future studies should use

more differentiated subscales and target specific age periods; there is no reason to believe that all strategies included in mixed subscales show the same developmental trajectories or that coping evinces major, uniform, or linear shifts across all age gaps. More fine-grained analyses within age groups will also be informative, perhaps incorporating information on normative development of emotion and behavioral self-regulation strategies, broadly defined. There is clearly much work to be done in order to investigate how coping strategies become more differentiated, organized, and flexible while they may also be changing in form and function.

Issue Four: Contributors to the Development of Coping

Most of the research on predictors during childhood and adolescence, like research in adulthood, examines concurrent correlates of coping strategies. Recent developmental analyses have pointed out the need to go beyond such research (Aldwin 1994, Bridges 2003, Compas 1998, Compas et al. 1992, Eisenberg et al. 1997, Fields & Prinz 1997, Skinner & Edge 1998) to integrate individual differences and developmental perspectives by examining the constitutional and social contributors to differential developmental pathways of coping; at the same time, studies need to begin to identify underlying developmental changes (e.g., in cognition, communication, and attachment) that contribute to normative developmental shifts in the coping process.

Temperament and coping. Although coping theorists have long pointed out potential connections (Compas 1987, Maccoby 1983, Rutter 1983), research linking dimensions of temperament to specific ways of coping is thin, involving a handful of studies at preschool age (e.g., Eisenberg et al. 1994) and middle childhood (e.g., Lengua & Sandler 1996). However, rich conceptual and empirical literatures on physiologically based differences in susceptibility to stress and

stress reactivity in infants would seem to hold particular promise for identifying the constitutional underpinnings of children's coping (Derryberry et al. 2003, Eisenberg et al. 1997). As suggested by Derryberry and colleagues (2003), "temperamental systems can be viewed as coping mechanisms" (p. 1050), some of which "constitute motivational systems that have evolved to detect and respond to stimuli that are crucial to the survival of our species" (p. 1052).

At the most general level, temperament refers to inborn physiological differences in patterns of responding to environmental stimulation (such as novelty, restraint, or other people). A set of dimensions particularly relevant to coping focuses on reactivity, which describes individual differences in arousability or the amount of stimulation required to produce positive and negative reactions. Although all human infants come with species-general capacities and motivations to detect and respond to psychological and bodily threats (Gunnar & Cheatham 2003), the systems of some infants seem to be tuned to a lower threshold and a narrower range of reactions. For example, highly inhibited children tend to react to novelty with fearfulness and withdrawal (Fox et al. 2005), and some children are predisposed to react to mild stressors (e.g., restraint or delay) with anger and frustration (e.g., Calkins et al. 2002). In general, children with high negative reactivity seem particularly vulnerable to the disorganizing effects of stress.

A second broad set of temperamental dimensions relevant to coping refers to regulatory processes and describes constitutional differences in the ease with which infants can modulate their reactivity, either facilitating or inhibiting their affective, motor, and attentional responses. Infants higher in dispositional regulation are better able to govern their attention and behavior, for example, disengaging attention from distressing stimuli, in ways that return arousal to manageable levels (Rothbart et al. 1994). In general, regulation should provide a buffer to reactivity, allowing

children more flexibility and adaptability in their reactions to stress (Eisenberg & Fabes 1992).

Other dimensions, particularly ones describing an "easy" temperament, have also been implicated in coping (Rutter 1983). Children who are more active, sociable, and emotionally positive have been found to be more resistant to the effects of stress, and this may in part be due to the advantages such predispositions confer on coping (Eisenberg et al. 1997). Moreover, infants higher in mastery motivation (i.e., more active, attentive to contingencies, and persistent in the face of challenge) are likely to show more constructive problem-solving and information-seeking.

Empirical studies of children during preschool age and middle childhood are beginning to show that temperament shapes coping processes in many ways, contributing to individual differences in environmental sensitivity, stress reactivity, threat appraisals, initial emotional reactions, preferred ways of coping, and ease of modifying coping strategies in the face of changing demands (e.g., Eisenberg et al. 1994, Lengua & Sandler 1996). Moreover, temperamental dimensions, such as sociability or impulsivity, may also influence coping by shaping other people's reactions, thus making some children more likely to be targets of social stressors, such as criticism or rejection, as well as differential recipients of social support (Maccoby 1983).

Most interesting for developmental research on coping are findings showing that stress reactivity and dispositional regulation are not fixed at birth. Both show regular developmentally graded changes and are shaped by social relationships and experiences of dealing with stress. For example, maturation of the central nervous system during infancy allows for normative improvements in the capacity to maintain behavioral and physiological organization in the face of distressing events (Kopp 1982, Maccoby 1983). Regulation of behavioral, attentional, and emotional reactions have their own interrelated developmental timetables, with the

Socialization of coping: ways that social partners shape the development of coping and how these processes change as children develop

general suggestion that high reactivity interferes with or slows the development of regulatory capacities (Eisenberg & Fabes 1992, Kopp 1989, Rothbart et al. 1994). Moreover, even the physiologically based processes of reactivity and regulation can be dampened or exacerbated by the quality of caregiving and attachments (Fox et al. 2005, Gunnar & Cheatham 2003) and their functioning shaped by cognitive expectancies and developments (Derryberry et al. 2003).

Socialization of coping. Research in adulthood is often accused of considering coping as an individual affair, but research in childhood, from its inception, recognized that coping is shaped by social relationships and contexts (Compas 1987, Maccoby 1983, Murphy & Moriarty 1976, Rutter 1983). Consistent with that perspective, research on attachment, social support, parenting, family processes, peer relationships, teaching, and parent-child interactions have all shown links between availability of support and quality of relationships, on the one hand, and children's physiological and psychological stress reactivity, regulation, and coping, on the other. Social partners, especially sensitive and responsive caregivers, seem to be a fundamental part of the stress reactivity system of infants, influencing not just how they respond but whether they even physiologically register an event as stressful (Gunnar et al. 1996).

It is difficult to overstate the importance of social partners, especially parents, to children's coping (Kliewer et al. 1994, Power 2004, Skinner & Edge 2002, Zimmer-Gembeck & Locke 2006). Parents play a role in determining the stressors, both chronic and acute, to which children are exposed; parents' problems can themselves become stressors for children; parents contribute to the development of children's coping resources, such as their self-efficacy or social skills; parents participate in children's coping through their own emotions and actions; and parents help children learn from bad experiences, including planning proactive coping to prevent their re-

occurrence. Beyond the general conclusion that good relationships accompany good coping, specific findings suggest that parents can also be too protective; for example, if they completely shield their highly reactive children from stress, they may also prevent children from developing effective coping strategies (e.g., Fox et al. 2005). These findings suggest that an important function of parents may be to "dose" children, grading their exposure to stress, while providing sufficient supports so that they can learn to manage it well (Power 2004).

Although multiple pathways have been suggested, research is just beginning to explore the precise mechanisms through which social forces shape children's coping (Eisenberg et al. 1997, Power 2004, Skinner & Edge 2002). Of special import are studies examining the ways in which parents socialize coping, either explicitly, for example, through modeling, teaching, and coaching (Kliewer et al. 1994), or implicitly, through comforting, soothing, and helping (Holodynski & Friedlmeier 2006, Sroufe 1996). Theories and methods adapted from work on the socialization of children's emotional reactivity and expression, as well as their behavioral and emotional self-regulation, promise to enrich these avenues of research on coping (Eisenberg et al. 1997, Power 2004). Two intriguing suggestions from this work are that the kinds of parenting that promote the development of coping depend on children's temperamental characteristics (Eisenberg & Valiente 2004) and are likely to change as children develop (Power 2004).

Developments underlying shifts in coping. Perhaps the greatest challenge to the developmental study of coping is to discover how developments in the processes underlying children's reactions and responses to stress lead to age-graded changes in children's coping (Compas et al. 1992, Compas 1998). As noted in previous reviews, the development of coping is affected by changes in physiology, perception, memory, cognition,

language, emotion, self-perceptions, motivation, social comparison, and social relationships (Derryberry et al. 2003, Eisenberg et al. 1997, Fields & Prinz 1997, Maccoby 1983, Murphy & Moriarty 1976, Rutter 1983).

Up to now, there has been a narrow focus on specific underlying developments. For example, the development of social referencing allows infants long-distance access to information from their caregivers about danger and safety. The development of mobility opens up a whole range of coping through physical interactions with the environment, such as reaching, withdrawal, and proximity-seeking. Cognitive developments contribute to improvements in problem-solving, internalization of behavioral standards, and perspective taking, all of which allow more constructive and effective coping. During adolescence, improvements in metacognitive skills and the recognition of emotions facilitate planning and the use of cognitive strategies to regulate complex emotions. Although many of these developments signal improvements, reviewers also point out developmental increases in vulnerabilities. For example, adolescents are less likely to be overwhelmed by emotional arousal, but they may also be more likely to experience threats to their self-concepts, to worry about social relationships, to internalize negative experiences, or to ruminate (Eisenberg et al. 1997).

At this point, the underlying mechanisms that have been suggested are numerous, heterogeneous, and follow differing yet intertwined timetables. Useful studies will continue to describe age differences, but will also directly examine how coping changes as a function of developments in specific underlying processes (Compas et al. 1992). For example, studies that directly assess cognitive development and then examine whether certain coping strategies are more likely at different levels (e.g., Band & Weisz 1990) provide a firmer foundation for inferences about the basis of age differences. Mapping out these interrelated changes and figuring out how they interact to produce quantitative and qualita-

tive shifts in coping are among the greatest challenges to the area (Compas 1998).

Summary. A broader integrative framework allows for a consideration of how temperament, socialization, and normative developments shape differential pathways of coping. According to this framework, the first “coping” subsystem is physiological, including individual differences such as temperament (Derryberry et al. 2003). These subsystems have their own checks and balances, including social ones, in the form of caregivers who fulfill all the functions of a coping system, such as monitoring and detecting threats, protecting, removing stressors, soothing, and comforting (Barrett & Campos 1991, Holodynski & Friedlmeier 2006). From birth, infants are active participants in these processes, communicating their distress reactions and preferences through their motor behaviors and emotions in social interactions. All these subsystems are shaped by objective stressors, that is, the actual dangers, threats, losses, pleasures, and challenges faced by children and their families on an ongoing basis. Key developmental questions involve how, as children age, the development of new capacities, such as language, voluntary behavior, and cognition, changes both the structure of the coping system and how it functions when encountering such stressors.

FUTURE RESEARCH ON THE DEVELOPMENT OF COPING

Traditional research on the development of coping, including most of the research reviewed above, tends to focus on a single facet, like appraisals, stress reactivity, or ways of coping, and examine how it changes with age or can be predicted from earlier personal or social factors. The next generation of coping research will build on the advances just described, but will focus on individual differences in developmental pathways of coping and on coping episodes as mechanisms of development. Moreover, studies will frame

developmental issues as not only increases or decreases in particular components, but also as potential reorganizations of the entire coping system over time. These three important sets of questions, as guides to a developmental agenda to the study of coping, are described below (see also Compas 1998).

What Are the Different Developmental Pathways of Coping and What Shapes Them?

The descriptive strand of this research involves longitudinal studies tracing different pathways from early forms of coping to later forms. For example, if negotiation emerges as an interpersonal coping strategy at about age three, then longitudinal research could trace whether it is more likely to emerge from earlier interpersonal coping via aggression, submission, or some other way of coping. This research could also uncover whether certain early forms of coping or reactivity are “developmental dead ends” in that they interfere with the emergence of later forms.

The explanatory strand of this research examines how profiles of coping emerge as the long-term effect of different combinations of stressors and social relationships on children with differing temperaments. It would be especially important to include markers of previous experiences with aversive events and of the resources or liabilities these experiences engendered, such as stress tolerance or learned helplessness. Studies could also probe possible explanations for why children fail to transform from one means of coping to another (e.g., temperamental vulnerabilities, too much stress, insecure attachments, or repeated failure experiences).

What Are the Effects of Coping on Development?

This research focuses on how coping influences development. Children’s reactions and ways of dealing with stress likely shape their social relationships, the subsequent stressors

they encounter, and eventually, even their own stress physiology and development. Studies would investigate how certain patterns of coping contribute to the accumulation of resources and liabilities that shape future stressful encounters, such as a sense of autonomy or close friendships. Eventually, research may explore how coping marks a site of developmental significance—a zone of struggle, practice, or experience—that cumulatively shapes major developments (Skinner & Edge 1998).

How Does Coping (Potentially) Get Better and How Can It Be Promoted?

This research investigates aspects of coping suggested (but not really specified) by terms like flexible, differentiated, appropriate, selective, reflective, considered, organized, constructive, measured, modulated, sturdy, and autonomous. These terms imply a system that potentially progresses from diffuse to differentiated, from uncoordinated to integrated, from egocentric to cooperative, and from reactivity to proactive autonomous regulation. These developmental potentials depict a system that can increasingly monitor and appropriately appraise more (current and future) demands using its own and others’ “radar”; maintain composure under higher levels of appraised threat with more capacity to withstand multiple demands and better “fallbacks”; respond increasingly in measured socially competent ways that reflect integration of ongoing emotional, attentional, and motivational reactions; more flexibly adjust actions to meet changing environmental demands without losing sight of genuine priorities; recover more quickly from setbacks; and at the same time, take more away from stressful encounters, learning how to prevent and deal with future challenges and how to deploy coping in line with future goals.

Because not all adolescents (or adults) reach these potentials, the refinement of interventions that promote more adaptive coping is a high priority for developmental research

(Sandler et al. 1997). To the extent that such programs take into account the constraints and opportunities created by children's dispositions and developmental levels and by the configuration of stressors and supports present in their daily lives, these interventions will be more effective in helping children develop their long-term coping resources and capacities.

CONCLUSION

As it becomes clear that the development of coping cannot be understood without considering the multiple physiological, emotional, behavioral, attentional, and interpersonal processes that give rise to it and the larger social ecological contexts within which it unfolds, more researchers have suggested conceptualizing coping as part of a complex adaptive system that includes stress, resilience, and competence (Haggerty et al. 1994, Masten 2006). Although no consensus exists about the specifics of such a perspective, it seems clear that coping operates at multiple levels and across several different time scales. As graphically depicted in **Figure 1**, coping can be considered an adaptive process on the scale of developmental time, an episodic process across days and months, and an interactive process in real time (Coping Consortium 2001).

Currently, most research focuses on coping as an episodic process (middle portion of **Figure 1**): Coping is recruited in response to demands (environmental or intrapsychic) and is shaped by the individual's appraisals and by social and individual resources. From this perspective, the primary questions involve how coping functions with the other components during an episode: How do particular social contexts, demands, social factors, and individual characteristics shape coping? Up to now, these are the main questions that have preoccupied coping researchers.

As important as these questions are, coping research needs to grow and change if it is to benefit from and contribute to other work on stress, adversity, and development. At a more

micro level, studies will need to consider coping as an interactional process, as it operates at the level of interactions with the social and physical context (bottom of **Figure 1**), and as captured by observations or daily diaries. Such research would need to include the multiple components of reactions to stress evoked in real time and should specify how they work together in interactions. Studies may use new conceptualizations of coping as regulation under stress to build on what is known about temperament and stress physiology and to create a place for behavior, emotion, attention, cognition, motivation, and social relationships (Derryberry et al. 2003, Gunnar & Cheatham 2003, Holodynski & Friedlmeier 2006).

At a more macro level, coping has the potential to contribute to research on adversity, competence, and resilience if studies can document its function as part of the adaptive processes through which exposure to adversity has a long-term impact on individual functioning and development (Grant et al. 2003, Masten et al. 1999). At this level (top portion of **Figure 1**), coping can be considered a set of proximal processes depicting how children actually react to and deal with the specific stressors to which they have been exposed.

This article summarizes challenges to research on the development of coping as well as recent advances that promise progress in charting developmental shifts in coping patterns and in capturing the many constitutional, psychological, and social factors that interact to shape those developments. We suggest future research directions that focus on differential pathways of development and on the power of coping episodes to shape short- and long-term developments. As a subtext throughout this article runs the conviction that research on coping is critical to an understanding of stress and adversity in the real lives of children and adolescents. We believe that as an organizational construct, it has the potential to provide an integrative link from the physiological processes of stress reactions to the sociocultural forces that

Coping as a multi-level adaptive system: models of coping as a system operating at multiple embedded levels

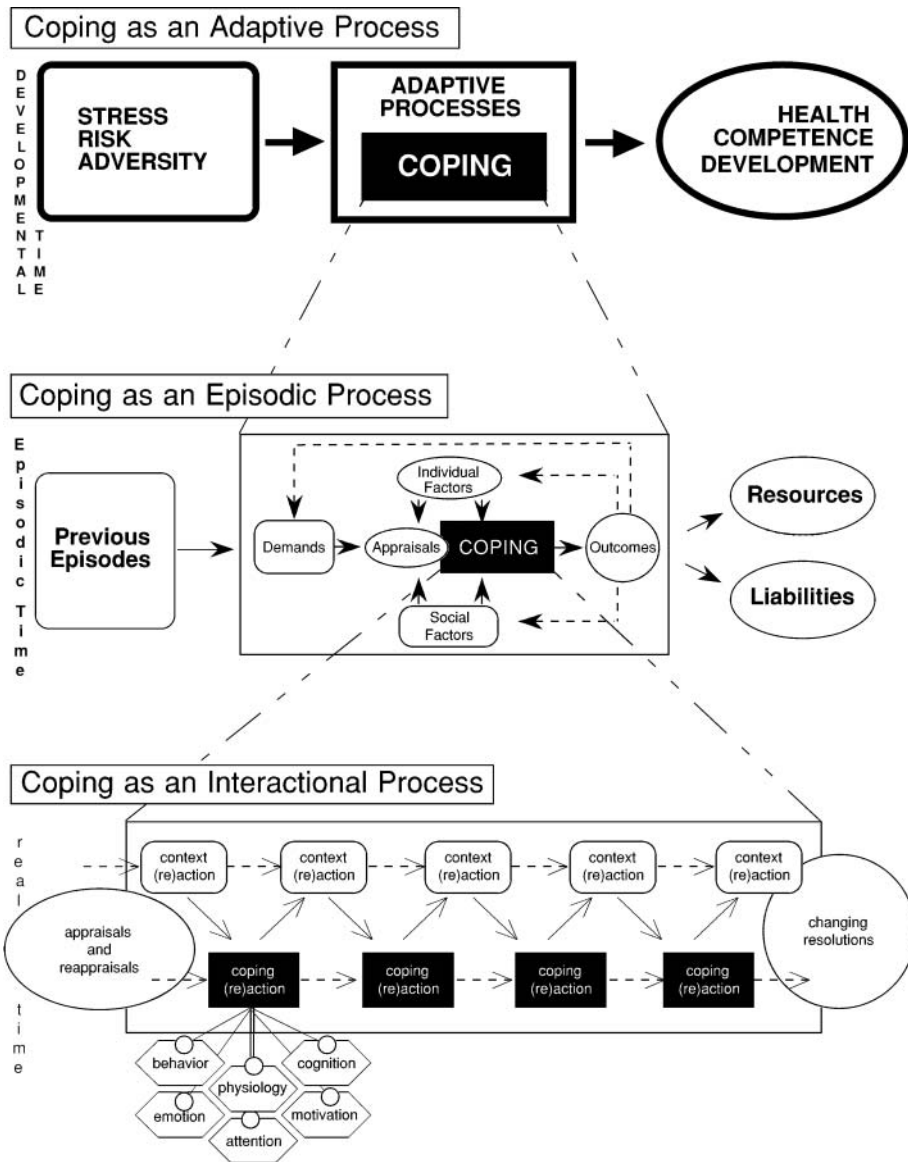


Figure 1

A model of coping as a multi-level adaptive system operating (a) as an adaptive process across developmental time, (b) as an episodic process across episodic time, and (c) as an interactional process across real time.

determine the stressors that societies allow into children's lives. To the extent that work on coping can make developmental progress, it may not only guide research across the age-graded literatures on coping within childhood

and adolescence, but may also begin to create meaningful theoretical and empirical links to other important literatures currently attempting to chart the effects of childhood stress and adversity.

SUMMARY POINTS

1. Although development shapes every aspect of how people deal with stress, it has been very difficult to realize a developmental agenda for the study of coping.
2. Two recent theoretical advances promise to orient and invigorate research. First, conceptualizations of coping as regulation under stress establish links between coping and the normative development of emotional, attentional, and behavioral self-regulation. They also suggest constitutional underpinnings and social factors that shape the development of coping. Second, functional analyses of about a dozen hierarchically organized core families of coping can be used to identify how those functions can be achieved through different ways of coping at different ages, allowing the study of developmentally graded ways of coping within a family.
3. The research on age differences and age changes in coping from early childhood to early adulthood can be organized using a framework that relies on the families of coping to map ways of coping and the developmental course of regulation to identify key ages at which coping might show developmental shifts.
4. General mechanisms of coping may accumulate developmentally, starting with stress responses guided by reflexes during the neonatal period, and adding regulation via action schemes during infancy, supplemented by coping through direct action during preschool age, coping using cognitive means during middle childhood, and coping using meta-cognitive means during adolescence.
5. A broad integrative framework considers how temperament, socialization, and normative developments shape differential pathways of coping. Accordingly, the first coping subsystem is physiological, including individual differences such as temperament. These subsystems have their own checks and balances, including social ones, in the form of caregivers who fulfill all the functions of a coping system, such as monitoring and detecting threats, protecting, removing stressors, soothing, and comforting.
6. The greatest challenge to the developmental study of coping is to discover how, as children and adolescents age, the development of new capacities, such as language, voluntary behavior, and meta-cognition, changes both the structure of the coping system and how it functions when encountering stressors.
7. Future research may be guided by multilevel systems perspectives on the development of coping as including both the successive differentiation of responses to different demands (e.g., novelty, failure, delay, separation) and the integration of regulatory subsystems, potentially allowing coping to become more flexible, organized, cooperative, and autonomous across childhood and adolescence.

FUTURE ISSUES

1. How do ways of coping differ and change with age? Studies should use core families to organize ways of coping into more differentiated subscales and focus on certain ages as likely to mark developmental transitions. More fine-grained analyses within age groups should incorporate information on the normative development of emotion, attention, and behavioral self-regulation.

2. How does temperament shape the development of coping? Research can explore the many ways that individual differences in underlying constitutional differences (as well as developmental changes in these physiological processes) contribute to how children deal with stress.
3. How do social partners and social contexts shape the development of coping? Studies should continue to examine the role parents and other social partners play in the development of coping, including the ways in which this role changes as children develop new capacities (and liabilities).
4. How does coping change as a function of developments in specific underlying processes? Research would explore how changes in underlying developmental processes (such as cognition, communication, attachment) interact to produce quantitative and qualitative shifts in coping.
5. What are the different pathways of coping, and what contributes to their development? Research would examine how profiles of coping emerge as the long-term effects of different combinations of stressors and social relationships on children with differing temperaments. This research would include longitudinal studies tracing different pathways from early forms of coping to later forms.
6. What are the effects of coping on development? Research would examine how certain patterns of coping contribute to the accumulation of resources and liabilities that shape future stressful encounters. Eventually research may explore how coping marks a site of developmental significance, a zone of struggle, practice, or experience, that cumulatively shapes major developments.
7. How does coping (potentially) get better and how can it be promoted? Research will continue to refine interventions that promote more adaptive coping. To the extent that such programs take into account the constraints and opportunities created by children's dispositions and developmental levels and by the configuration of stressors and supports present in their daily lives, these interventions will be more effective in helping children develop their long-term coping resources and capacities.

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State-of-the-art review of theories and research on childhood and adolescent coping. Includes many insights on development although major focus is individual differences.

Provocative research-based essay on the implications of considering the basic motivational and attentional subsystems involved in temperament as constituting early coping mechanisms.

Empirical review, guided by a broad heuristic model, that examines roles of emotion regulation, temperament, and socialization in development of coping through adolescence.

Excellent review and integration of research, including age-group comparisons and links between coping and adjustment. Outstanding section on developmental differences.

Describes developmental and clinical perspectives on coping and summarizes an extensive body of empirical research on adolescents.

Shaped and foreshadowed research over subsequent decades in a seminal volume written by experts in subspecialties ranging from

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Describes the first comprehensive longitudinal study of the development of children's coping from infancy to adolescence.

A developmental and process-oriented review of how parents shape children's coping.

Good example of how to study coping as a developmental process. Reports on studies of a developmental model of stress, coping, and outcomes during adolescence.

Tackles the problem of constructing core higher-order families of coping.

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