1 A Systems Perspective on the Development of Coping

"We're Going to Need a Bigger Boat"

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This is the first Handbook dedicated to the development of coping. That situation represents something of a paradox, given two historical facts. First, there has been overwhelming scientific interest in the topic of stress and coping for almost 100 years and, second, an important branch of this work has always focused on children and youth (Frydenberg, 2014). Coping is of fundamental importance because it marks an adaptive process people use to deal with the challenges and problems they encounter in their everyday lives. It can protect individuals from the ravages of stress, contribute to resilience, and build resources for dealing with future challenges. It represents a topic of enduring empirical study, examined across the biological, psychological, and social sciences, accounting for thousands of investigations each year, starting even before it first appeared as a term in *Psychological Abstracts* in 1967.

A branch of this work focuses on coping in children and youth. Inspired by long-standing interest in the effects of stress on children, researchers have examined the impact of major life events, like maternal deprivation and exposure to wartime conditions, on children's development since the early 1900s. Seminal publications mapping this domain include the longitudinal studies undertaken by Lois Murphy and colleagues at the Menninger Clinic in the 1950s focused on vulnerability, coping, and growth from infancy to adolescence (Murphy, 1957, 1974; Murphy & Moriarity, 1976); the volume *Stress, Coping,*

and Development edited by Norman Garmezy and Michael Rutter (1983); the *Psychological Bulletin* paper by Bruce Compas, entitled "Coping with Stress during Childhood and Adolescence" (1987); the book by Carolyn Aldwin on *Stress, Coping, and Development* (2007); and our own annual review chapter, the first on the development of coping, and the book that followed (Skinner & Zimmer-Gembeck, 2007, 2016).

There is great interest in the coping of children and youth, stemming both from basic questions (such as its connection to psychopathology; Compas et al., 2017; Zimmer-Gembeck & Skinner, 2016) and from the realization that interventions to support coping can be a lever to help young people (Wolchik & Sandler, 1997). Moreover, there is complete consensus that development shapes every aspect of how people cope. The tools that infants, toddlers, children, adolescents, and adults have at their disposal to deal with stressful transactions – from appraisals to strategies to recovery from stress – differ fundamentally. A comparison between the neurophysiological reactivity of the infant and the metacognition of the emerging adult seems to reveal the operation of coping on different planets.

And yet, there is no thriving area of research on how coping develops. In this chapter and volume, we address the paradox intimated by this Handbook: How can there be immense interest in the coping of children and youth along with universal acknowledgment that development shapes every aspect of coping,

and, still, so little research examines the development of coping that this Handbook is the first to focus on the topic? We answer this paradox with a paradox of our own. We argue that there are two barriers to the realization of this rich and programmatic area of study.

The first barrier can be found in the conceptualizations of coping that dominate the field today. As explained later in more detail, these conceptualizations view coping as a transactional process (e.g., Lazarus & Folkman, 1984); they direct researchers' attention to the different ways people can cope (e.g., via problem-solving or escape) and their antecedents (e.g., social support, pessimism) and consequences (psychological functioning, distress). Such conceptualizations, focused on individual differences in how adults deal with stressful life events, were never intended as vehicles for understanding how children and youth learn to deal with everyday stressors in the contexts of daily life. The study of adults involves the deployment of responses from an existing repertoire of coping actions; the study of infants, children, and youth also involves the *construction* of a *new* repertoire of coping *capacities*. Transactional theories alone are not equipped to explain how children and youth get better (or worse) at coping as they traverse successive developmental tasks and stages.

We believe that "developmentally friendly" conceptualizations of coping are needed (Skinner & Zimmer-Gembeck, 2007) and the first goal of this chapter is to explain what such conceptualizations entail. At the most general level, they go back to definitions of coping as an adaptive process (e.g., White, 1974) and make clear that it is inherently intertwined with development. At its core, coping depicts how people detect, appraise, deal with, and learn from actual and anticipated stressful encounters. The processes used to accomplish these tasks arise from many levels, and so coping is an organizational construct that

includes a tightly integrated bio-psycho-social-cultural system incorporating neurophysiological, attentional, emotional, motivational, behavioral, cognitive, social, interpersonal, and cultural processes. From this perspective, it becomes clear that – paraphrasing the police chief's reaction the first time he saw the great white shark in the film *Jaws* – "We are going to need a bigger boat." In other words, we argue for a developmental systems view of coping that organizes this fundamental adaptive process according to multiple levels that are integrated to serve the functions of coping during transactions involving stressful events. From this vantage point, the successive age-graded reorganizations of this larger system start to become visible.

The second barrier to the developmental study of coping turns out to be the term "coping" itself. As we discovered while working on our book on this topic (Skinner & Zimmer-Gembeck, 2016), once a developmental systems perspective is adopted, it becomes clear that a wide range of developmental phenomena are directly relevant to this system, few of which are actually labeled "coping." So, for example, multiple neurophysiological systems subserve stress reactivity and regulation. All of them show age-graded changes and shifts (Engel & Gunnar, 2020; Lupien et al., 2009), and their developmental trajectories differ depending on the temperamental characteristics (Rueda & Rothbart, 2009) and interpersonal contexts in which they operate (Gunnar & Hostinar, 2015). These neurophysiological processes directly impact the functioning and development of the coping system; however, they are rarely referred to as "coping." A developmental systems view releases theorists from the constraints of research on coping proper, while also providing a clear map of the range of topic areas relevant to the organization and functioning of the coping system. Most importantly, it directs researchers to the

(sometimes thin) strands of work in each of these areas that look at their normative and differential development. These threads hold the keys to the development of coping.

Hence, the second goal of this chapter is to show how a developmental systems perspective on coping can provide a guidebook to identify work directly relevant to the development of coping that has not always been explicitly connected to its study (e.g., Compas, 1987; Skinner & Zimmer-Gembeck, 2016). We provide an overview of the primary areas we see as relevant to the development of the coping system, covering work from neurophysiology (Engel & Gunnar, 2020) and regulation (Compas et al., 2014, 2017; Eisenberg et al., 1997) to higher-order social contexts (e.g., Wadsworth, 2015; Wadsworth et al., 2020). This was the map we used to identify and invite authors for this volume, and we hope it can help answer the paradox of the missing research on the development of coping. There is no burgeoning literature called "research on the development of coping," but there *is* a burgeoning research literature on the development of coping. It has been there all along, but we need a broader more integrative developmental systems perspective to recognize the many rich and complex areas of study that can inform our understanding of coping and its development.

A Bigger Boat: Developmental Systems Conceptualizations of Coping

Because coping represents a fundamental adaptive process, designed to protect people from danger and help them engage effectively with demands and challenges, it is not surprising that it has been considered from a variety of perspectives, often reflecting the established paradigms of the day. From each of these iterations, the field has accumulated insights that inform the way we view coping today. For example, coping can trace its roots to psychoanalytic work on defenses (Freud, 1949). This perspective influenced several generations of ego psychologists (Haan, 1977; Valliant, 1986; see Cramer, 1998), who conceptualized coping as an outcome of personality processes ordered along a hierarchy of ego maturity. Lasting legacies of this approach include the notions that coping involves reactions, not only to external stressors but also to intrapsychic pressures, that some modes of coping are not conscious, and that the ego (or self) and its regulatory functions are key to how coping unfolds.

A second strand of theorizing about coping can be traced back to the biomedical research on stress, starting in the early 1930s. Parallel to the idea that exposure to toxins does not lead in any direct fashion to specific health outcomes, this branch gave us the idea of coping as a form of "host resistance" to stress. It also highlighted the notion of the active individual and the importance of examining specific stressors or demands when trying to make sense of coping. Over its history, coping has also been defined as a specific person-context transaction, an indicator of competence, personality in action under stress, a repertoire of strategies, fewer symptoms of mental or physical health problems, a function of emotion, an outcome of temperament, an expression of stress physiology, a quality of action regulation, and resilience. (For historical overviews, see Aldwin, 2007; Frydenberg, 2014; Lazarus, 1993; Lazarus & Folkman, 1984; Murphy, 1974; Parker & Endler, 1996; Snyder, 1999.)

Transactional Models of Coping

Today the field of stress and coping is dominated by transactional models (Aldwin, 2007). This perspective defines 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). Transactional approaches insist that individuals' responses can only be understood by considering the actual stressors they face as well as the social and personal resources available in the situation at the time (Folkman & Lazarus, 1985). One of their biggest contributions has been to underscore coping as a cyclical recursive process that unfolds over time, involving stressors, appraisals, coping responses, and outcomes. Central to this process are individuals' ever-changing appraisals of the significance and meaning of stressful encounters.

As depicted in Figure 1.1, transactional models hold that coping is initiated by psychological stress, defined as "a particular relationship between the person and the environment that is appraised by the person as taxing or exceeding his or her resources and endangering his or her well-being" (Lazarus & Folkman, 1984, p. 19). Based on the significance of the outcome and the resources available, individuals can appraise (an actual or anticipated) stressful encounter as, for example, a challenge, threat, harm, or loss. These appraisals, along with personal and social resources, influence the kinds of coping that will be employed, which in turn affects the outcome, for better or for worse. An individual's coping can resolve or exacerbate the stressful situation and calm or heighten psychological distress. These outcomes then feed into the next iteration. Such cyclical transactions continue until the stressor is resolved or the individual accepts the situation, escapes, or gives up. The arc of these transactional processes describes a coping episode.

Research on Coping during Childhood and Adolescence

Over the last 50 years, this framework has guided most of the research on coping across the lifespan. The field is anchored by "ways of coping," or the actual actions individuals show on the ground when dealing with stressors. A range of responses have been considered, such as problem-solving, escape, support-seeking, and distraction, and have been assessed using a variety of methodologies. For older children, adolescents, and adults, self-report questionnaires are most often employed, and young children's coping has
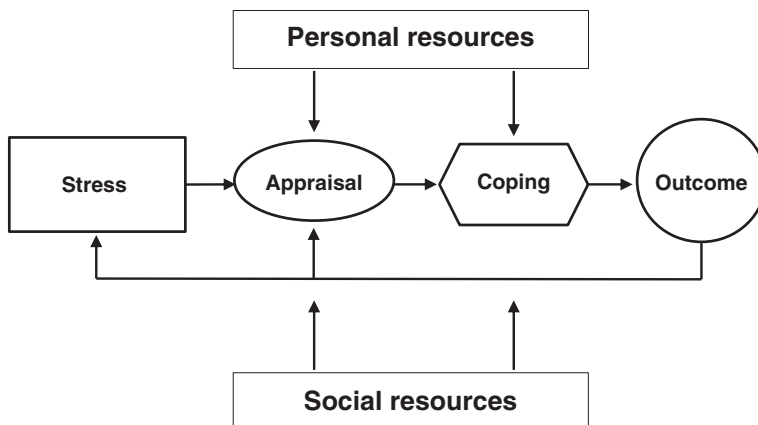
Figure 1.1 Coping depicted as a *transactional process* of appraising and dealing with demands.

been captured using direct observation and reports from parents and teachers. The bulk of this research targets individual differences in the links between steps in the transactional process. For example, to establish their valence and importance, studies examine the connections between different ways of coping and a range of indicators of functioning in children and youth, such as psychological adjustment, well-being, academic performance, peer relationships, internalizing and externalizing behaviors, and distress.

Over many years, these studies have identified ways of coping that seem to be productive in that they relate to positive functioning and well-being; these include effort exertion, problem-solving, negotiation, focus on the positive, and emotion approach coping. A second set of responses seem to be unproductive in that they are linked with psychological distress, disorder, and poorer functioning; they include escape, avoidance, helplessness, rumination, and opposition. A third set, which includes some relatively common ways of responding to stress, are inconsistent in their links to potential outcomes; they include help-seeking, support-seeking, and emotion-focused coping. These responses may be omnibus coping strategies that can be deployed in adaptive or maladaptive ways (e.g., seeking support to rejuvenate versus to co-ruminate) or they may be double-edged swords, in that they are used when distress is high (so are sometimes positively correlated with ill-being) but are also helpful in dealing with distress (and so are sometimes also linked with better outcomes).

Based on the idea that productive coping can protect children and youth from the otherwise negative effects of stressful events, researchers have also conducted studies to investigate interindividual differences in the resources that make adaptive coping more likely. Such studies have uncovered a range of coping resources, both personal (e.g., perceived control, intelligence, optimism, sociability) and interpersonal (e.g., warmth, provision of instrumental aid or emotional comfort from parents, siblings, teachers, and peers). The malleability and importance of coping have been demonstrated in programs designed to support, coach, or teach children and youth to cope more constructively. The study of such programs provides evidence that coping can be changed for the better and that such changes often result in improvements in well-being and functioning (e.g., Sandler et al., 1997; Wadsworth et al., 2020).

Much has been learned from these decades of research on individual differences in ways of coping. However, little of it directly pertains to coping's development. The study of individual differences can provide information about the current functioning of coping on the ground, but not about the developmental history that gave rise to it, nor about how the functioning of that system is enabled and constrained by the current developmental organization of the organism expressing it, nor about how coping transactions themselves may contribute to future development. For this, a developmentally friendly conceptualization is needed. To fill this gap, we favor a developmental systems approach.

Five Ideas from a Developmental Systems Conceptualization of Coping

An interesting feature of developmental systems perspectives is that they lead to a response of "yes and" to most views of coping. Systems approaches view different conceptualizations of coping the same way that the parable of the five blind men and the elephant views their different perspectives on the elephant – a leg as a tree trunk, a tusk as a spear, an ear as a fan, a side as a wall, the trunk as a snake. Different theories all perceive

important facets of the phenomenon, but there are two problems: Each perspective is incomplete, and no one recognizes the whole of the elephant. The construction of a developmental systems conceptualization of coping is organized around a simple question with a complex answer. The question is: "What is the elephant (i.e., the coping system)?." And the complex answer? "All those subsystems that make it up (the parts) and how they are organized (structured) and work together (operate) to serve their adaptive functions (the whole)."

So just as the elephant is not a tree trunk plus a spear, a fan, a wall, and a snake, coping is more than a list of appraisals, emotional reactions, and things people do in times of trouble. It is more than the sum of its parts. The coping described in transactional approaches is just the tip of the developmental system's iceberg. A developmental systems conceptualization can be explained in five big ideas, summarized in Table 1.1. We provide an overview of each of these ideas and show how, by contributing to a developmentally friendly view of coping, they identify other areas of research integral to coping and its development. We end by examining the implications of these big ideas for age-graded shifts in the organization and functioning of the whole coping system and for interventions designed to foster its development at different ages.

Idea 1. Coping as Action Regulation under Stress

The first idea is based on the recognition that coping is a fundamental adaptive process (White, 1974) designed to scaffold both defense and constructive engagement with challenging demands. From this perspective, coping is not just a series of things we do. It is part of an evolutionarily conserved process that allows us to guide and direct our actions so they will be more effective in keeping us alive while allowing us to learn from encounters with challenging and threatening events. What are we doing during these encounters that allows us to "deal with" or "manage" transactions that hold the potential for harm and loss, but also for learning and growth? Developmentalists have converged on one answer: We are regulating our actions. Our actions in all their multiplicity (e.g., fight, run, freeze, push, seek comfort, strategize, get help, work together) are the tools humans employ to fend off danger and build capacities for more effective action in the future. Adaptation under stressful conditions calls for the skillful deployment of actions, guided by goals, coordinated with others, exquisitely tuned to conditions in the organism and on the ground at the moment, and constantly changing as those conditions change. No one can do this at birth, yet most people have gotten much better at it by the time they reach adulthood.

Hence, to describe the full scope of how people manage or deal with stressful person-context transactions, developmentalists define coping as "action regulation under stress" (Compas, 1987, 2009; Compas et al., 2001; Eisenberg et al., 1997; Sandler et al., 1997; Skinner & Wellborn, 1994; Skinner & Zimmer-Gembeck, 2007, 2009). From this perspective, coping depicts how individuals initiate, mobilize, energize, channel, guide, coordinate, organize, modulate, dampen, and direct their actions (or how they fail to do so) under stressful conditions. Dual process models of regulation suggest two components – one depicting 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

Table 1.1 *Five big ideas in a developmental systems conceptualization of coping*

1. ***Coping as a balance between reactivity and regulation***. Coping can be defined as action regulation under stress.
   - Coping entails stress reactivity (or action tendencies) <u>and</u> action regulation.
   - Constructive versus unproductive (stress-affected) coping reflects the (im)balance between reactivity and regulation.
   - Both impulsigenic (reactivity) and regulatory processes develop.
     ◦ A crucial function of coping is to contribute to the development of constructive action tendencies, regulatory capacities, and everyday resilience.
2. ***Tasks of an adaptive process***. To protect individuals from threats and dangers while allowing them to interact constructively with challenges and demands, the coping system accomplishes five basic tasks.
   - These are (1) *radar* or threat detection and appraisal; (2) *readiness* or coordination of responses to threat or challenge; (3) *regulation* or adapting responses to changes in ongoing conditions; (4) *recovery* or re-setting and revitalizing coping resources; and (5) *re-evaluation* or learning from encounters with stress.
   - Each of these tasks can be accomplished with whatever equipment the infant, child, or adolescent has available to them at their particular developmental stage and current state.
3. ***Place and purpose of the study of coping***. The study of coping is located between regulation and resilience.
   - Coping as an *episodic process* corresponds to transactional models of stress, appraisal, coping, and outcomes. These depend on situational personal and interpersonal resources as well as previous coping episodes. Short-term, episodes produce coping assets and liabilities.
   - Coping as an *interactional process* overlaps with work on regulation, where coping can be a coordinating construct that provides an integrative platform for the operation of multiple impulsigenic and regulatory processes under "hot" stressful conditions.
   - Coping as an *adaptive process* overlaps with work on resilience, where coping can be a protective factor, explanatory mechanism, intervention lever, resource for everyday resilience, and site for building stress resistance and resilience.
4. ***Hierarchical structure of coping***. Coping can be organized as families of action types that serve adaptive functions within which are nested multiple ways of coping (as seen in subscales in coping measures), within which are nested a virtually infinite number of instances of coping.
   - Higher-order categories represent an action typology that classifies the tools individuals can use to coordinate their actions with environmental affordances during stressful transactions, according to their effectiveness, individuals' goals, and personal and social resources available.
   - Core categories of coping are a taxonomy of multi-functional regulatory packages.
   - Each of these families includes ways of coping that are graded by age. Infants, children, and youth have the means to express the coping functions depicted in each of these families, but the specific ways and instances of coping depend on age.
5. ***Coping emerges from an integrated multi-level system that is developing.*** Coping is a bio-psycho-social-cultural process, visible on the level of individual action, but the product of an integrated multi-level system that includes the neurophysiological and psychological subsystems that give rise to it and the interpersonal and societal contexts in which it is embedded. It can be organized in five levels.
   - *Level of action*. Coping unfolds on the plane of action as an episodic process that involves appraisals, reactivity (action tendencies), action regulation, coping outcomes, recovery, and learning under stressful conditions.

Table 1.1 (*cont.*)

- *Underlying processes*. Coping is shaped by underlying neurophysiology and psychological subsystems.
- *Overarching processes*. Coping is deeply social and contextual.
- *Processes at all these levels are developing*. Their development is reciprocally related to the development of coping.

(Metcalfe & Mischel, 1999); in work on motivation, "intrinsic" and "extrinsic" motivation (Deci & Ryan, 1985).

Action Tendencies and Action Regulation

In coping, these dual processes can be labeled "stress reactivity" (or more generally "action tendencies") and "action regulation." Both are adaptive. Stress reactivity is the product of a fast, emotionally driven, impulsive "hot" system that appraises and reacts to external stimuli or situations relatively automatically and with little conscious control. This hot system has strong temperamental, motivational, and emotional bases; however, it also incorporates experiences through conditioning and learning. Although reactivity or impulses are often portrayed as problematic, they serve an important adaptive function – to quickly bring the organism into a state of readiness to act. This hot system is adaptive in two ways: (1) it is more flexible and differentiated than reflexes, and yet (2) it triggers environmentally tuned actions faster than a more cognitively mediated system.

The second component comprises regulatory processes, which work with the hot system to channel, coordinate, and sequence the actions it urges. Regulation is sometimes considered the product of a "cool" system because some of the most effective regulatory strategies are cognitive and deliberate. However, this system has a range of processes at its disposal, including neurophysiological, habitual, attentional, and social processes, that operate

already in neonates and infants (e.g., Kopp, 1989). Regulatory processes are also adaptive: (1) by allowing actions to be more informed, deliberate, and flexible, they provide more options than externally triggered reactivity, and (2) they benefit from intentionality and so can be more attuned to individuals' higher-order principles and long-term priorities, goals, and values.

As in other areas, there is active discussion about how reactivity and regulation work together during coping. 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 (Metcalfe & Mischel, 1999). In terms of coping, this implies that maladaptive (or our preferred term "stress-affected," Wadsworth, 2015) coping is the product of a strong stress reaction and/or a weak (immature or disabled) regulatory system, whereas productive coping is the result of a mild stress response and/or a strong action regulation system. The effects of stress on the functioning of regulatory subsystems are studied widely (e.g., in work on hot executive functions; Zelazo & Carlson, 2012). Although high levels of stress may disrupt or overwhelm regulatory processes, moderate levels seem to create a zone of heightened regulation, during which subsystems become more

cooperative and regulatory capacities can be practiced and consolidated (e.g., Jamieson et al., 2018; Kopp, 1989; Repetti & Robles, 2016; Sapolsky, 2015).

Developmental Connections

Conceptualizations of coping as action readiness and regulation under stress are developmentally friendly because they build bridges to the rich developmental literatures on reactivity and regulation, including their temperamental and neurophysiological bases and the social forces that shape them. Most importantly, they connect coping to research on age-graded pathways and reorganizations of stress reactivity and regulation across successive developmental levels (Cole et al., 2019; Holodynski & Friedlmeier, 2006; Kopp, 1989; Nigg, 2017; Thompson, 2015). These theories and bodies of research lay out guideposts to chart the development of coping.

Idea 2. Coping Operates between Regulation and Resilience

The second big idea of a systems perspective is that any given system, like the coping system, can operate on multiple levels and over multiple timescales. Such a perspective allows coping to be integrated with the larger landscape of research focused on stress and the development of children and youth. As pictured in Figure 1.2, coping operates on three levels, each with its own timescale. At the middle level, coping functions as an episodic process. This is the level with which coping researchers are most familiar because it depicts the kinds of transactional models prevalent today (e.g., Figure 1.1), and connects them up with antecedents – previous coping episodes – and consequences, namely, resources and liabilities for coping with future stressful encounters.

Coping also operates at a lower-order level in real time, and so overlaps with work on *regulation*; and at a higher level over developmental time, and so overlaps with work on *resilience* (Chapter 7, this volume). The study of coping is located in between these streams of research. 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 brings into a child's life, but also has the potential to consider how these episodes unfold and accumulate across time, and so shape development. Such an analysis makes clear how coping fits with work on regulation and resilience: where they overlap with coping, how research on coping can contribute to them, and how the study of coping can be informed by them.

Coping and Regulation

As can be seen in Figure 1.2, episodes of coping (shown in the middle level) contain coping as an interactional process (shown in the lowest level). Here, coping depicts the actions of infants, children, and youth as they deal with specific demands (e.g., novelty, restraint, delay, noncontingency) during moment-to-moment exchanges on the ground in real time; this process overlaps with the primary concerns of research on regulation (Compas et al., 2014, 2017; Eisenberg et al., 1997; McClelland et al., 2015; Thompson, 2015). However, coping differs from specific kinds of regulation in three ways. First, it considers regulation only under a subset of conditions, namely, during stressful transactions. So, coping overlaps completely with that portion of regulation that is hot (e.g., hot executive processes), but also includes cool regulatory processes when they are deployed under stress.
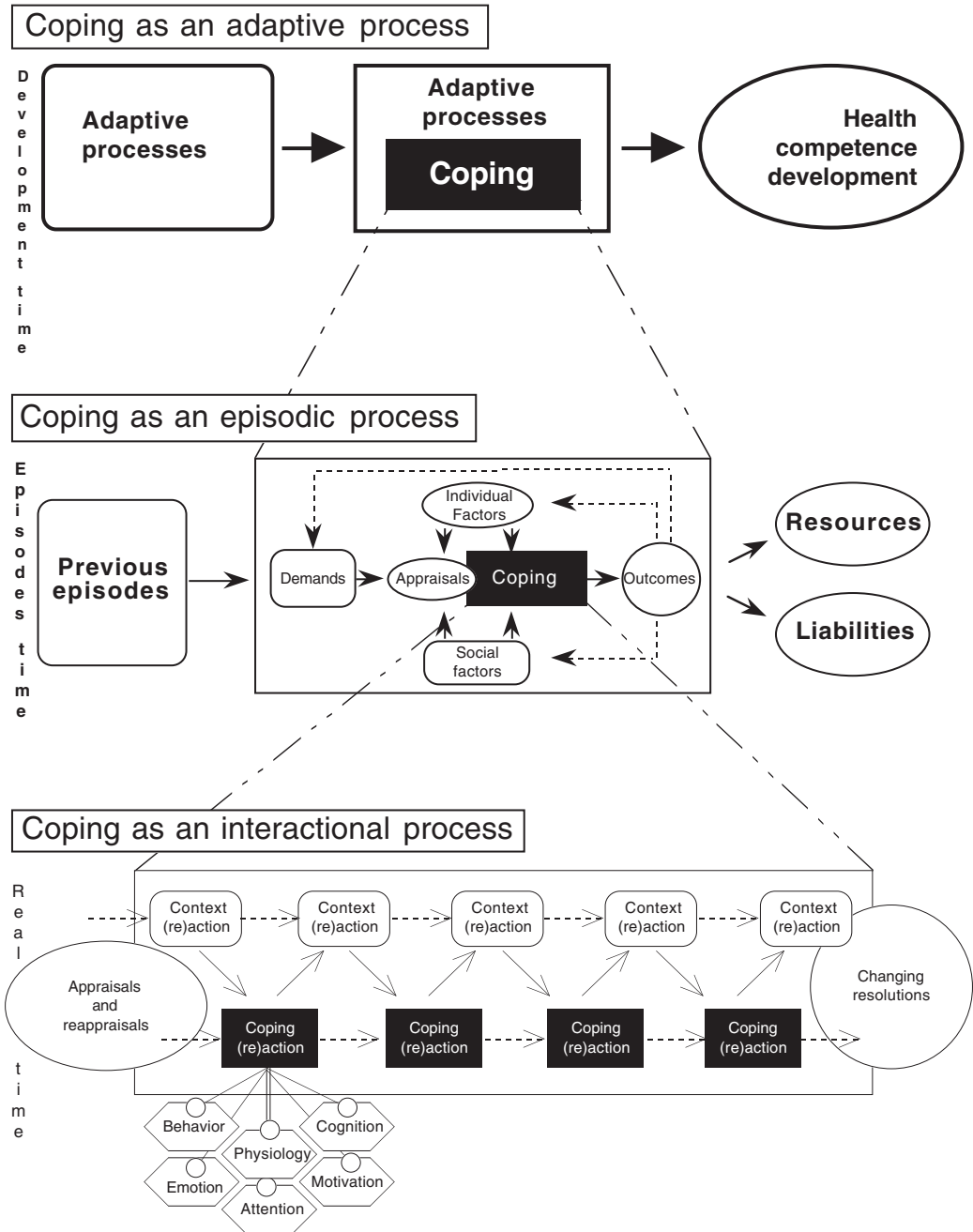
Figure 1.2 Multi-level conceptualization of coping as a *developmental* process, an *episodic* process, and an *interactional* process.

Integrated Models of Regulation: The second way coping differs from work on regulation is based on the targets of regulatory efforts. Researchers have made connections from coping to many kinds of regulation, including emotion regulation (Compas et al., 2014; Eisenberg et al., 1997; Kopp, 1989), behavioral self-regulation (e.g., Metcalfe & Mischel, 1999), attention deployment (e.g., Wilson & Gottman, 1996), ego control and resiliency (Block & Block, 1980), and self-regulation more generally (Aspinwall & Taylor, 1997). In research on regulation, these specific forms are typically studied separately. However, because stress can activate a variety of responses – physiological, emotional, attentional, behavioral, cognitive, and so on – coping includes efforts to coordinate and manage all of them. Hence, during stressful encounters, all these forms of regulation can be considered subsystems that work together to shape the actions described by coping (Compas et al., 1997; Holodynski & Friedlmeier 2006; Skinner, 1999). During coping, their combined regulatory effects can be positively synergistic (e.g., when planning calms emotion or comfort-seeking refreshes resources for problem-solving) or they can work at cross-purposes and show antagonistic effects (e.g., when motivational urges are so strong they derail cognitive processes or when actions are forced before emotions are consulted) or block each other (e.g., when strong approach and avoidance tendencies bring action to a standstill).

Hence, of greatest interest to coping researchers are integrative models that consider how multiple kinds of regulation work together. Until recently, such information was hard to come by because it was dispersed across a wide range of relatively siloed areas of study, each one focusing on a different target of regulation (e.g., emotion, attention, behavior) or different regulatory process (e.g., executive functions, delay of gratification,

effortful control). Only recently have researchers begun to propose syntheses that integrate these overlapping areas of study (e.g., Cole et al., 2019; Gagne, 2017; McClelland et al., 2015). Although most have focused on early development, some have also extended their conceptualizations to middle childhood (Nigg, 2017) and adolescence (Casey, 2015; Compas et al., 2017; Steinberg et al., 2018). These emerging perspectives are of great interest to coping researchers, especially because several of them are explicitly developmental (e.g., Cole et al., 2019; Nigg, 2017).

Impulsigenic Processes: Third, coping differs from typical work on regulation because it is focused not only on the development of regulatory processes, but also on the development of so-called impulsigenic processes (e.g., Duckworth & Steinberg, 2015); these are the processes that lead to action readiness and reactivity. As can be inferred from its name, most research on regulation focuses on regulatory processes. From this perspective, conceptualizations of impulses (see Sharma et al., 2014 for a review) typically consider them to be problematic because they interfere with self-control and socially appropriate behavior. Coping researchers, however, are very interested in subsystems that generate the *targets* of regulation, such as impulses or emotional reactions. They argue that anything that makes action tendencies more constructive also makes coping easier (e.g., Compas et al., 1999; Skinner & Wellborn, 1994). Hence, work on processes that affect stress reactivity and action readiness, like emotions, intrinsic motivation, impulsivity, and temperamental dimensions (like reactivity, exuberance, and sociability), are highly relevant to the development of coping.

Coping and Resilience

As shown in the top panel of Figure 1.2, the territory of coping also extends upward where

it functions as an adaptive process operating across developmental time; here it overlaps with work on *risk and resilience*, which trace the effects of adversity on the development of competence and psychopathology (Denckla et al., 2020; Masten et al., 2021; Chapter 7, this volume). Coping fits under the larger umbrella of resilience because it can help buffer the development of children and youth from the otherwise deleterious effects of stress, risk, and adversity. Coping depicts that slice of "big R" resilience that examines how adversity brings a range of actual stressful experiences into the daily lives of individuals, and how through their own actions and reactions, children and youth attempt to deal with them (i.e., everyday resilience; DiCorcia & Tronick, 2011; Spencer, 2006). At this level, the construct of coping serves many purposes for resilience (Zimmer-Gembeck & Skinner, 2016). It can be considered a protective factor itself, an explanatory mechanism (in that other protective factors may exert their positive effects by boosting adaptive coping), an intervention lever, a resource for everyday resilience, and a site where stress resistance and resilience are built. Hence, coping researchers look to work on resilience to bridge to the higher-order contexts of adversity (e.g., poverty, racism) and frame the long-term developmental outcomes and pathways that are at stake.

Developmental Connections

The view that coping operates on three levels (Figure 1.2) contributes to developmentally friendly conceptualizations of coping because it builds out from transactional views of coping as an episodic process to span the conceptual space from coping as an interactional process operating in real time, accumulating all the way up to coping as an adaptive process operating across developmental time. Systems perspectives identify the place and purpose of research on coping: It operates between and overlaps with regulatory processes below and resilience processes above. Both areas are inherently developmental and so they can inform coping theorists about how to construct developmental systems conceptualizations. The most important steps are listed in Table 1.2 (for more details, see Skinner & Zimmer-Gembeck, 2016, pp. 8–11). Coping, in turn, can provide important connections down to research on regulation and carry them all the way up to processes of resilience and development.

Idea 3. The Coping System Accomplishes Five Basic Tasks

The third big idea of a systems perspective is that by returning to a consideration of coping as a basic adaptive process, it is possible to see that the steps described in transactional models – including cognitive appraisals and intentional actions – are just examples of how the basic tasks of coping can be carried out during particular age periods (in the case of transactional models, the age period of adulthood). At its heart, the coping system comprises a set of adaptive processes designed to detect and respond to challenges and threats, which can be broken into a series of tasks. As superimposed on the transactional model in Figure 1.3, these include: (1) *radar*, or detection and appraisal of challenges and threats; (2) *reactivity and readiness*, or preparation and coordination of responses to threat or challenge; (3) *regulation*, or sequential adaptation of the complex actions urged by reactivity and readiness to changes in ongoing conditions during interactions with stressful events; (4) *recovery*, or deactivation and resetting of stress responses and replenishment of coping resources; and (5) *re-evaluation*, or processes through which coping episodes are debriefed and lessons are learned for future encounters.

Table 1.2 *Desiderata for developmental systems conceptualizations of coping*

1. Coping is an **episodic** (cumulative) process that:
   - gives traction with respect to the ways in which social contexts, settings, partners, and individual characteristics shape how it unfolds;
   - has a place to carry forward previous coping episodes; and
   - shows how short-term coping resources and vulnerabilities (both individual and social) accumulate over time.
2. Coping is an **interactive** (coordinating) process that:
   - is built on what we know about temperament and neurophysiology – particularly from a developmental perspective;
   - has a place for neurophysiology, behavior, emotion, attention, cognition, and motivation; and
   - explains how they are organized and change in response to changing demands, appraisals, and resolutions.
3. Coping is an **adaptive** (proximal) process that:
   - specifies its function in adaptation under stress and its role in the development of mental and physical health, problems, and disorder;
   - can be part of an iterative process of change in response to environmental and intrapsychic demands, including individual and social interactional processes; and
   - functions as a mediating process between adversity and resilience or vulnerability.
4. Coping is a **systemic, integrated, cumulative, coordinating, proximal developmental** process that:
   - applies across the lifespan but looks different at different ages;
   - provides an avenue for determining how coping is shaped by normative and differential developmental changes; and
   - operates as a mechanism of the development of coping capacities.

As can be seen in Figure 1.3, each of these functions is located on an arrow connecting two elements in the transactional model of coping. *Radar* (i.e., detection) comprises the connection between outside stressors and appraisals, depicting processes through which external events enter the coping system as interpretations of the meaning of stressful encounters. *Reactivity/readiness* comprises the link between appraisals and action tendencies, depicting processes through which these interpretations initiate preparation for managing upcoming encounters with stress. *Regulation* sits on the arrow between actions and their consequences, depicting how actions are repeatedly modified based on their effects in ongoing transactions with stressful events. *Recovery* depicts the connection between resolutions of stressful interactions and local conditions, including processes of downregulation, healing, and repair. Finally, *re-evaluation* comprises the link between resolutions and the future, as lessons are learned about the entire episode. These lessons can inform any subsequent step in the coping process, including stress generation, appraisals, readiness, or recovery. Such feedforward effects constitute one form of growth in the face of adversity and demonstrate that some of the most important transactions influencing the development of coping are produced by the coping system itself.

Developmental Connections

Breaking coping down into these basic tasks opens the door to the possibility that each task can be carried out at every age, as explained by
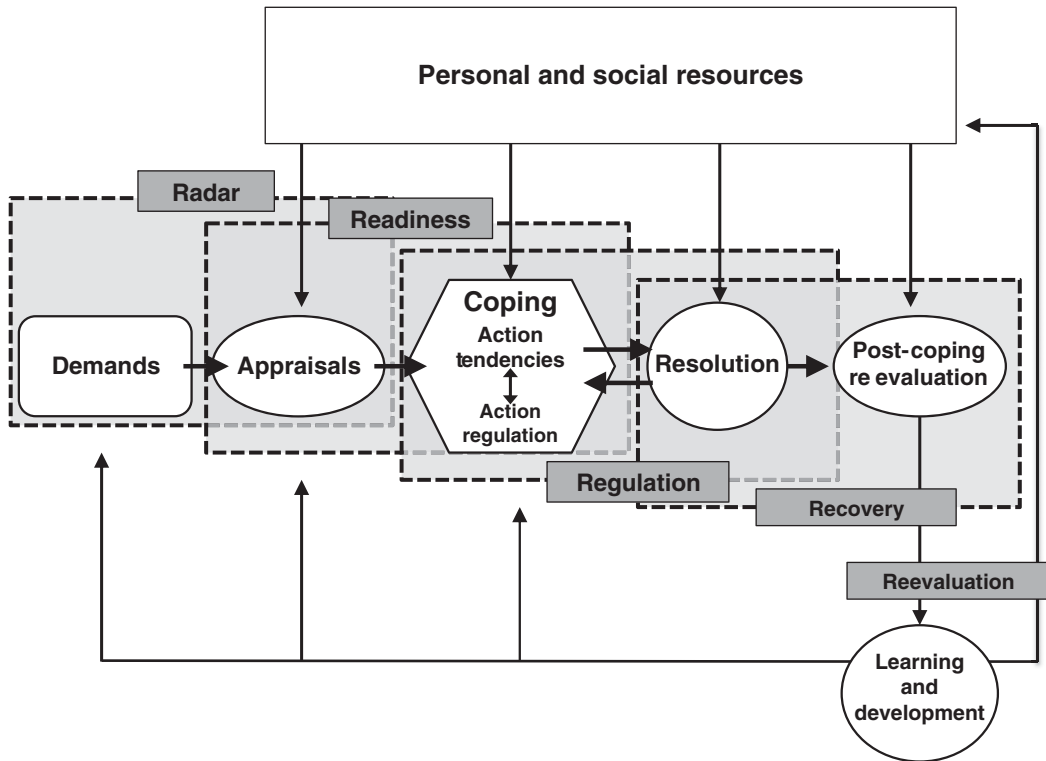
Figure 1.3 The coping system as a set of adaptive processes designed to detect and respond to challenges and threats, comprising five functions: (1) *radar* or threat detection and appraisal; (2) *readiness* or coordination of responses to threat or challenge; (3) *regulation* or adapting responses to changes in ongoing conditions; (4) *recovery* or deactivation and resetting of stress responses, repair, and revitalization of coping resources; and (5) *re-evaluation* or learning from encounters with stress.

Lois Murphy, the researcher who guided the first great longitudinal study of coping in children and youth, "with whatever equipment [the child] ha[s] at his developmental stage" (1974, p. 71). This big idea allows researchers to select a task, such as detecting threats or evaluating lessons learned, and to consider the attentional, motivational, emotional, cognitive, and/or metacognitive "equipment" that can be used to carry it out at different ages. For example, the "radar equipment" of neonates may involve the activation of sensory and attention systems in response to threats and distress, whereas by the end of the first year, radar may come to involve social

referencing. In the same vein, appraisal processes likely emerge as implicit expectancies over the first months of life, and only later are carried out by representational systems – still many years away from the full-blown conscious reflective appraisals familiar to coping researchers. These same considerations can be applied to the other tasks carried out by the coping system, leading to the realization, for example, that action readiness can be carried out by the emotion system during toddlerhood or by executive functions during early childhood. Regulation can be a cognitive activity during middle childhood or a metacognitive activity during adolescence. Recovery can be

falling asleep during infancy or losing oneself in songwriting during adolescence. Revaluation can be a conversation with Dad during early childhood or a diary entry during emerging adulthood. Adults have available to them the full range of tools they need to accomplish these tasks – as seen, for example, in their capacity to appraise the likelihood of future threats and to take preemptive coping action (Aspinwall & Taylor, 1997). Infants, children, and adolescents do not. They are discovering and building the tools they will need for these tasks as they grow.

Hence, each task shows normative age-graded developments (e.g., radar, instead of just reacting, begins to anticipate incoming stressors). Such an analysis may open connections between precursor or rudimentary coping capacities and multiple subsystems that show qualitative shifts with age. As summarized in Table 1.3, surfacing these tasks can contribute to developmentally friendly conceptualizations of coping because they can be used to sketch the developmental potentials of a coping system.

These developmental potentials depict a system that can increasingly monitor and appropriately appraise more (current and future) demands using its own and other's "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 (Skinner & Zimmer-Gembeck, 2007, p. 136).

Idea 4. Ways of Coping as Families in an Action Typology

The fourth insight from a developmental systems perspective focuses on "ways of coping" – the building blocks of the coping area. Conceptualizations of coping (and of regulation, which is basically plowing the same field) have found it challenging to translate the

Table 1.3 *Developmental potentials of the coping system*

Coping system that can:
1. increasingly monitor and appropriately appraise more (current and future) demands using its own and other's "radar";
2. maintain composure under higher levels of appraised threat with more capacity to withstand multiple demands and better "fallbacks";
3. respond increasingly in measured socially competent ways that reflect integration of ongoing emotional, attentional, and motivational reactions;
4. more flexibly adjust actions to meet changing environmental demands without losing sight of genuine priorities;
5. recover more quickly from setbacks; and
6. 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.

Source: Skinner and Zimmer-Gembeck (2007), p. 136.

"bewildering richness of behavior relevant to it" (Pearlin & Schooler, 1978, p. 4) into a set of core categories. As befits a fundamental adaptive process, literally hundreds of ways of coping have been identified and assessed, creating a thicket of partially overlapping category systems and measures. To bring some order to this confusion, researchers have suggested multiple higher-order categories that could be used to classify lower-order ways of coping based on single *functions* (e.g., problem- vs. emotion-focused coping), *orientations* (approach vs. avoidance), or *topological features* (e.g., cognitive vs. behavioral modes).

Taxonomies of coping, like all taxonomies, should contain categories that are mutually exclusive, functionally homogeneous, functionally distinct from other categories, and exhaustive. Hence, each of the distinctions suggested is problematic as a higher-order category of coping, but for different reasons: (1) categories created by single functions are not mutually exclusive, because all ways of coping serve multiple functions (e.g., problem-solving can also calm emotions); (2) categories like avoidance are functionally heterogeneous (e.g., one can move away from a stressor via terrified escape or via intentional distraction with a pleasurable activity); and (3) categories based on modes are not functionally distinct because all ways of coping can be enacted in multiple modes (e.g., one can seek comfort via behavioral responses, such as by going to find someone, or via cognitive ones, such as through prayer).

Families of Coping

Developmentalists, though conceptual and empirical means, have identified about a dozen core categories of coping that reflect its operation as a basic process of adaptation (Connor-Smith et al., 2000; Skinner et al., 2003; Walker et al., 1997). From this perspective, higher-order categories represent a taxonomy that classifies the tools individuals can use to coordinate their actions with environmental demands during stressful transactions. For example, problem-solving is an adaptive strategy because it allows people to find or create actions that are effective in the environments where stressful transactions are taking place. It is this *coordination* – in this case between actions and environmental contingencies – that is the hallmark of adaptation (White, 1974).

Core categories can be viewed as higher-order *families* of coping that sit at the top of a hierarchical structure (Skinner et al., 2003). Each family contains many members or *ways* of coping (as seen, for example, in subscales of coping measures). In fact, each family includes all the ways of coping that serve those same functions. So, for example, members of the *Problem-Solving* family include not only its corresponding lower-order way of coping (i.e., strategizing) but also other ways that serve to coordinate actions and contingencies, such as effort exertion, instrumental action, mastery coping, cognitive decision-making, positive self-instruction, primary control engagement, task orientation and preparation, task management, planning, and repair. For each coping family member, there are innumerable possible lower-order *instances* of how these ways of coping can be enacted in different circumstances by different people of different ages.

Coping families can be viewed as multifunctional categories of regulatory packages. They include ways of coping that have been commonly studied, like Problem-Solving, Information- and Comfort-Seeking, and Escape. They also hold places for other kinds of coordinating actions that have not always been included in measures of coping, like Accommodation, Negotiation, Helplessness, and Social Isolation. Each of these families is

both problem- and emotion-focused; is oriented toward either approach or avoidance; and can be enacted in a range of modes. Most importantly, these 12 families are relatively comprehensive, in that they can accommodate the vast majority of the over 400 different individual ways of coping included in measures of coping during childhood, adolescence, and adulthood (Skinner et al., 2003). As depicted in Table 1.4, Core categories represent an action typology that categorizes how individuals coordinate actions and affordances, according to (1) their effectiveness, (2) their goals, and (3) their personal and social resources (Skinner et al., 2003).

Coordinating Actions and Contingencies: As can be seen in Table 1.4, the first four coping families are organized around the adaptive process of coordinating actions with contingencies, and so regulate engagement and disengagement in the face of stress. Besides *Problem-Solving*, described previously, productive families include *Information-Seeking*, where an individual pauses in their efforts to deal with a stressor in order to obtain "fresh intelligence," that is, to secure instrumental information about current contingencies and new actions that could potentially be effective. The families organized around this adaptive function – focused on how to deploy one's actions to be efficacious in a given environment – have a long history of study in research on mastery, perceived control, self-efficacy, and learned helplessness (e.g., Dweck, 1999; Folkman, 1984; Maier & Seligman, 2016; Skinner, 1995, 1996; Thompson et al., 1993). Problem-Solving and Information-Seeking are both scaffolded by perceptions of control and competence; individuals who hold these beliefs are more likely to problem-solve and seek information about existing contingencies and how to operate them more effectively (e.g., Raftery & Grolnick, 2015).

Developmental conceptualizations focus on coping transactions as sites for learning and growth, and so tend to highlight constructive coping families. But if stress reactivity is too high or regulatory systems are overwhelmed, individuals show stress-affected ways of coping. When it comes to the coordination of actions and contingencies, two families signal that a coping system is overtaxed: one oriented to avoidance and one to approach. The avoidance family is *Escape*, which includes multiple family members, both behavioral (e.g., leaving) and cognitive (e.g., denial). These responses serve to remove the individual from the stressful encounter, but they do so in ways (e.g., through panic or fear) that heighten distress and undermine subsequent engagement. The approach family is *Helplessness*, and it includes continued engagement with the threatening stressor even though the regulatory system is no longer functioning effectively. These forms of engagement – like confusion and mental exhaustion – are not productive. They amplify the feeling of powerlessness and magnify distress. Ways of coping from both these families are made more likely by histories of experience with objective noncontingency and subjective beliefs that events are out of one's control. Escape under a variety of different names (see Table 1.4) is one of the most common subscales on measures of coping; and helplessness has its own productive area of study active over the last 50 years (Maier & Seligman, 2016).

Coordinating Reliance and Social Resources: The next four coping families depicted in Table 1.4 are organized around the adaptive function of coordinating reliance on others with the social resources available, and so regulate cooperation and self-reliance during stressful transactions. The key constructive family here involves *Support-Seeking* and its family members, all of which serve to bring individuals into contact with trusted others in times of danger (for examples, see Table 1.4).

Table 1.4 *Core categories of coping as families of action types that serve adaptive functions*

Adaptive process	Family function in adaptive process	Family of coping	Definition of coping family	Ways of coping that are family members
Coordinate repertoire of actions with contingencies in the environment	Adjust actions to be effective	1. ***Problem-Solving***	Attempts to figure out what to do to solve problems, repair mistakes, or prevent them in the future	Strategizing, approach, instrumental action, effort exertion, mastery, planning, repair
	Find additional strategies or contingencies	2. ***Information-Seeking***	Collecting instrumental information about what is happening and how to deal with it more effectively	Social referencing, help-seeking, study, observation, consulting, instrumental aid, reading, internet search
	Find limits of action	3. ***Helplessness***	Stress reaction in which thoughts or next steps become unclear or disorganized	Confusion, flailing, cognitive interference, cognitive exhaustion, resignation
	Evade noncontingent environment	4. ***Escape***	Attempts to avoid or remove oneself from difficulties or undesired outcomes	Flight, mental avoidance, physical avoidance, denial, wishful thinking, disengagement
Coordinate reliance on others with social resources available	Find own strengths Protect social resources	5. ***Self-Reliance***	Attempts to regulate one's flagging emotions and behaviors by bolstering confidence and optimism	Self-encouragement, emotion regulation, behavioral regulation, emotional expression, emotional approach
	Use available social resources and replenish own resources	6. ***Support-Seeking***	Turning to others for emotional reassurance, consolation, encouragement, or cheer	Contact-seeking, comfort-seeking, spiritual support, social emotional support

	Find limits of resources	7. *Delegation*	Attempts to get other people to do the work, solve the problem, or take the consequences	Executive help-seeking, self-pity, dependency, complaining, whining, entitlement
	Withdraw from unsupportive contexts	8. *Isolation*	Attempts to avoid others or prevent them from finding out about the occurrence of negative events	Freeze, concealment, social withdrawal, avoiding others, abandonment, loneliness
Coordinate hierarchy of preferences with available options	Choose to adjust preferences to options	9. *Accommodation*	Attempts to authentically appreciate and fit one's goals and preferences into existing conditions	Acceptance, distraction, cognitive restructuring, focus on the positive, concession, self-encouragement, endorsement
	Find and create new options	10. *Negotiation*	Attempts to work cooperatively with current power structure to create better choices	Bargaining, standing up, persuasion, cooperation, priority setting, compromise
	Give up preferences	11. *Submission*	Preoccupation or capitulation to negative features of a stressful situation	Rumination, self-blame, rigid perseveration, intrusive thoughts, anxiety, amplification
	Remove constraints	12. *Opposition*	Blaming other people for the negative outcome	Fight, blame others, projection, aggression, venting, explosion, revenge

Notes: Adaptive processes in light gray are considered "stress-affected" in that they are more likely under conditions of threat, whereas adaptive processes in white are more likely under conditions appraised as challenges.

This family is one of the most common sub-scales in measures of coping, the focus of research on social support (e.g., Taylor, 2011; Taylor & Stanton, 2007), and a core construct in attachment theory under the label "proximity seeking" (Bowlby, 1969/1973). Support-seeking is a productive way of coordinating reliance with social resources because it provides respite, recovery, and an opportunity to build resources for re-entering the fray (e.g., experiences of comfort and encouragement can bolster emotion and motivation).

The second productive family serving these adaptive functions involves *Self-Reliance*, or individuals' attempts to regulate their own behaviors (e.g., via self-encouragement), emotions (e.g., via self-soothing), or motivation (e.g., via determination). This process is adaptive because it allows people to discover their own strengths, protect others, and conserve social resources. Such a functional analysis is consistent with research on the role of perceived social support (e.g., when individuals know that supports are available but do not call on them) as well as with research on attachment showing that a secure base scaffolds both proximity seeking and greater exploration and self-reliance in children (Ainsworth, 1979; Bowlby, 1969/1973).

Stress-affected families organized around reliance on others include an avoidance and an approach version. When the coping system is overwhelmed, it can lead to avoidance via *Social Isolation*, in which individuals attempt to protect themselves by withdrawing socially and preventing others from finding out about the stressful situation. Members of this family, like concealment and social withdrawal, are unproductive because they both prevent the individual from accessing needed resources and can escalate feelings of loneliness and abandonment (Gardner & Zimmer-Gembeck, 2018; Zimmer-Gembeck et al., 2016). The core category involving approach is *Delegation*, in which individuals try to offload the job of dealing with stressors onto other people. Members of this family, like dependency, entitlement, or executive help-seeking, are unproductive because they not only prevent individuals from building their own coping capacities but also amplify feelings of victim-hood and self-pity; they can also exhaust social resources and alienate potential supporters.

Coordinating Preferences and Options: The final four coping families depicted in Table 1.4 are organized around the adaptive processes involved in coordinating one's genuine preferences with the options available in the environment, and so regulate concession and defense. The prototypical family here is *Accommodation*, in which individuals attempt to flexibly adjust their preferences to fit into current situational constraints (Chapter 15, this volume). This coping family has been discussed under many names (e.g., Morling & Evered, 2006), and its members include ways like acceptance and focus on the positive (see Table 1.4). This family is adaptive because it allows people to "get into it if you can't get out of it," maintain integrity despite losses or constraints, and focus on the positive features of stressful situations (Brandtstädter, 2009; Brandtstädter & Renner, 1990). These strategies are complemented by the family *Negotiation*, in which people attempt to create new options through bargaining, persuasion, and selection of goals to prioritize (Chapter 21, this volume). These ways of coping are constructive because they can uncover new possibilities on the ground, and help people act in ways that defend their high-priority goals (Baltes & Baltes, 1990).

Central to these families are autonomy and self-determination. These psychological resources allow people to take ownership for their coping and to act in ways that are consistent with their true preferences and priorities (Ntoumanis et al., 2009; Skinner & Edge, 2002; Van Petegem et al., 2017, 2019). The

hallmarks of the constructive coping families of Accommodation and Negotiation are flexibility, authenticity, and choice. Unlike perceived control and support-seeking, which represent well-established pillars in coping research, discussions of ownership and self-determination in coping have not been as well developed, and have even sometimes been labeled "secondary control," which makes no sense because accommodative processes are not secondary, and they are not control (Skinner, 2007).

When coping systems are overrun, the two unproductive coping families organized around concession and defense involve the nonautonomous responses of Submission and Opposition (Chapter 21, this volume). Ways of coping in the *Submission* family, like capitulation, resignation, and rumination, are not autonomous because they are not willingly endorsed and so amplify internal pressure (e.g., through negative emotions like anxiety, self-blame, or guilt); they can also interfere with effective action and undercut social support. *Opposition*, which can involve aggression, blaming others, or revenge, is also nonautonomous because its goals are determined by outside forces; actions are recruited to oppose the agenda of others – without guidance from internal preferences and priorities. It is not adaptive because it tends to amplify anger, undermine coping from more constructive families, and repel other people (Carver & Harmon-Jones, 2009).

Developmental Connections

The identification of a dozen hierarchically organized families of coping forges connections to development in at least three ways. First, it creates bridges to other action-oriented topics, like perceived control, helplessness, attachment, and self-determination, that have long been implicated in children's coping (Compas, 1987; Zimmer-Gembeck et al., 2015) because they focus on how individuals and their social partners face important classes of stressors (such as noncontingency, separation, or coercion). These theories are near-neighbors that help elaborate the substance of coping: They explain how cognition, emotion, and motivation are organized (or disorganized) under stress, and how they are coordinated in the service of action at different ages. They also explain how specific belief systems, like perceived control, internal working models, and autonomy orientations, develop and can shape coping appraisals and action; and why certain social resources, like responsiveness, scaffolding, and autonomy support, should make a difference to how children and youth experience and learn to cope with challenges and threats.

Second, a hierarchical structure of coping connects ways of coping to the development of both regulation and resilience. At the bottom of the hierarchy are instances of coping; these overlap completely with instances of regulatory efforts that take place under stressful conditions. In fact, regulation researchers have always borrowed heavily from the catalogue of coping categories to classify regulatory attempts (e.g., Compas et al., 2014; Eisenberg et al., 1997; Gross & Thompson, 2007). At the top of the hierarchy, core coping categories are connected to basic adaptive processes – those that coordinate actions and environmental affordances, social resources, and personal values and goals. This connection helps to highlight the functional significance of coping and link it to the development of resilience and vulnerability. In some fundamental sense, the coping system has the potential to both preserve the organism and shepherd its development during stressful encounters – to bring it to safety, to extract an outcome from the environment, to connect with others, to reach its goals. And in the
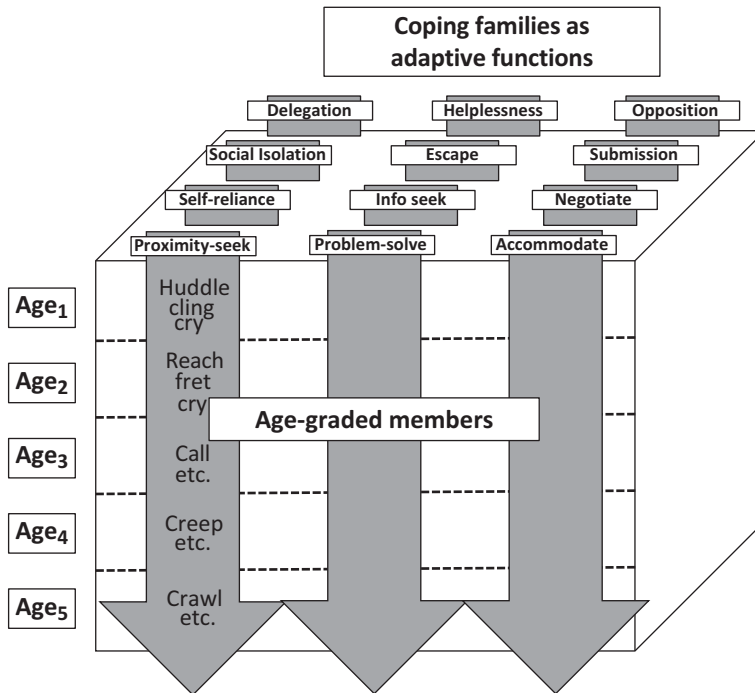
Figure 1.4 A view of families of coping as adaptive functions that allows researchers to identify developmentally graded ways of coping within a family by mapping how those same functions can be achieved through different means at different ages.

process, coping creates learning in its broadest sense, about the qualities and actions of the organism, its genuine priorities, the trustworthiness of social partners, and opportunities in the context.

Developmentally Graded Family Members: Third, this idea – that coping categories are a taxonomy of action types that serve multiple functions in dealing with stress – allows researchers to identify age-graded ways of coping. Functional analyses of each coping family can be used to identify how those combinations of functions can be achieved through different ways of coping based on the equipment available to individuals at different developmental levels, as depicted in Figure 1.4. For example, before the prototypical actions of problem-solving emerge during early

childhood, infants can be seen trying to coordinate their actions with the physical contingencies in the environment (e.g., Watson, 1966; Watson & Ramey, 1972). At even younger ages, infants begin to coordinate their actions with social contingencies. Initial expressions of distress turn into communications, when neonates start to intentionally direct their signals to caregivers, waiting after a bid to see whether a response is forthcoming before they signal again (e.g., Paavola et al., 2005). Since these actions are used when the infant is distressed, they can be considered early members of the Problem-Solving family of coping. In fact, they are integral to the problem-solving and instrumental actions of "external coping" provided by caregivers in response to infants' signals (Skinner & Zimmer-Gembeck, 2016).

Support-seeking provides another clear example of developmental progression. Its prototypical family member proximity seeking has been used as an organizing construct in work on attachment to provide an umbrella for the myriad ways that infants and young children can get to caregivers when they are distressed (Chapter 3, this volume). The means that infants use to accomplish this function change with age. They start with cries, signals, and reaching – which bring caregivers to them – and later develop more active means like crawling and walking – which bring them closer to the caregiver. Family members extend all the way up the age range, for example, as an adolescent phones home or a young adult comforts themselves with thoughts of their late grandmother. The identification of age-graded members of coping families paves the way for the documentation of developmental trajectories and transformations in coping from birth to emerging adulthood – as new equipment comes online that creates new ways to carry out each set of functions (Skinner & Zimmer-Gembeck, 2016).

## Idea 5. Coping Emerges from an Integrated Multi-level System

The fifth and final big idea of a systems perspective is, of course, about the complexity of the system itself. The key idea is that coping, although manifest at the level of individual action, is the product of a multi-level system, including the neurophysiological and psychological subsystems that give rise to it, and the interpersonal and societal contexts in which it is embedded. As depicted in Figure 1.5, this perspective anchors coping to the level of action, where it is visible in the episodic processes depicted by transactional models. Definitions of coping as action regulation under stress differentiate the intertwined processes of stress reactivity, action tendencies,

and regulation that emerge on that level. The repeated operation of this system results in the accumulation of episodes involving both adaptive and maladaptive responses, and so creates a developmental signature of coping, as depicted in Figure 1.5 by a trail of slices of coping.

Underlying Neurophysiological and Psychological Processes

A focus on reactivity and regulation on the plane of action dictates the *psychological* processes underlying coping; these include the attentional, emotional, motivational, behavioral, cognitive, and metacognitive subsystems that jointly generate action tendencies and regulate them under stress. At the *neurophysiological level* are the biological subsystems used to detect and react to stress, to regulate stress reactivity, and to recover and learn from stressful transactions. Most centrally, these involve the sympathetic-adrenal medullary axis (SAM), the parasympathetic nervous system, the hypothalamic-pituitary-adrenocortical (HPA) axis, the amygdala, the hippocampus, and the prefrontal cortex (PFC), especially the anterior cingulate cortex because it subserves both cognitive and emotional processing (Compas, 2006).

Developmental Connections: A multi-level conceptualization of coping is developmentally friendly in that it pinpoints many neurophysiological and psychological subsystems that change and develop, both normatively and differentially, all of which can influence the development of coping on the level of action. At the neurophysiological level, all these subsystems show age-graded changes that can impact how the coping system is organized and functions (e.g., Engel & Gunnar, 2020; Lupien et al., 2018; Mulkey & du Plessis, 2019; Porges, 2018). For example, a history of caring and responsive interactions
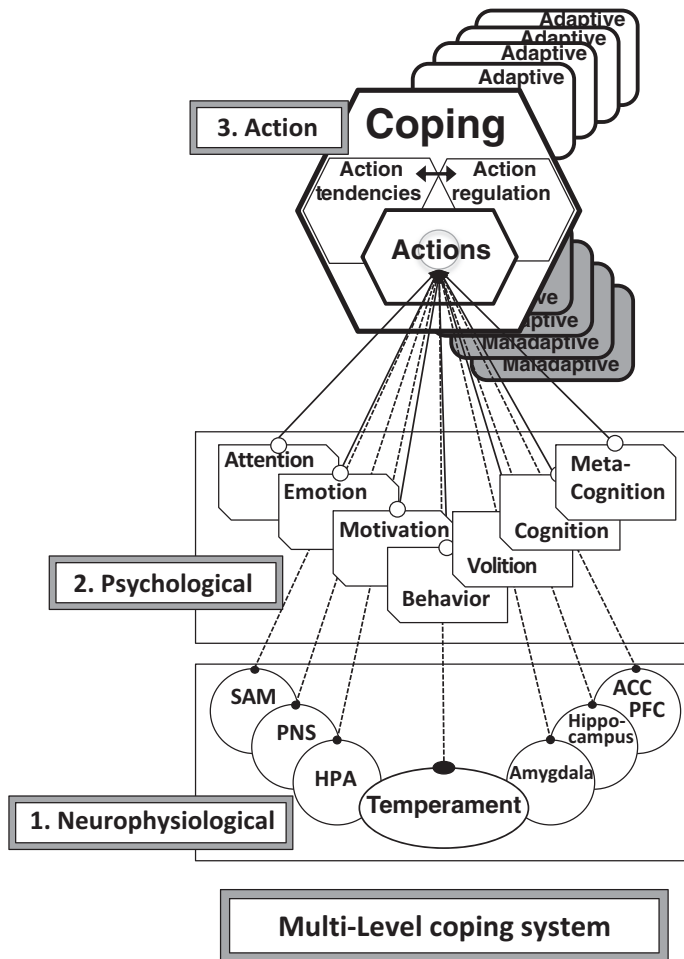
Figure 1.5 An integrative multi-level conceptualization of coping as a biopsychosocial process that includes: (1) the *neurophysiological level*, including psychobiological subsystems used to detect and react to stress and to regulate stress reactivity, most centrally, the sympathetic-adrenal medullary (SAM) axis, the parasympathetic nervous system (PNS); the hypothalamic-pituitary axis (HPA), the amygdala, the hippocampus, and the prefrontal cortex (PFC), especially the anterior cingulate cortex (ACC); (2) the *psychological level*, including the attentional, emotional, and motivational subsystems involved in stress reactivity and regulation; and (3) the *level of action*, including the behavioral, cognitive, and metacognitive subsystems that jointly generate action tendencies and that integrate and regulate them.

with caregivers typically opens the neonate's stress neurophysiology to comfort from social others and normatively leads many of these systems to go into a period of hyporesponsivity by about the age of 3 months (Gunnar & Hostinar, 2015). This shift establishes the neurobiological foundations for support-seeking as an omnibus coping category; it also reduces stress reactivity, improves stress recovery, and supports more constructive engagement and coping with all manner of demands and challenges. The same principle holds for

the development of coping-relevant processes at the psychological level. For example, the development of cognitive processes opens the way for appraisals to move from implicit to explicit expectations, and eventually to emerge as fully reflective and metacognitive processes.

Not all normative developmental changes signal progress, however. At the neurophysiological level, early life stress can produce changes that exacerbate stress reactivity and undermine regulation (e.g., Engel & Gunnar, 2020; Lupien et al., 2009) in ways that make stress-affected coping more likely at subsequent stages. Or at the psychological level, age-graded changes in motivation, such as those found in the academic domain, typically comprise declines in many features (e.g., intrinsic motivation, self-efficacy, engagement) as students negotiate school transitions (Wigfield et al., 2015). These motivational losses correspond to age-graded changes in the deployment of academic coping over the same developmental periods (e.g., Skinner & Saxton, 2020; Chapter 27, this volume). At every age, coping on the level of action emerges from the integration and balance among the developmental forces acting on it, some of which reflect advances (e.g., in coping capacities) and some of which reflect constraints (e.g., in performance factors that influence its deployment).

Overarching Social Forces

As depicted in Figure 1.6, coping and the reactivity and regulation it entails are deeply social phenomena, and so are decisively shaped by *interpersonal relationships* and other social forces (Compas, 1987; Garmezy & Rutter, 1983; Skinner & Zimmer-Gembeck, 2016; Chapters 3 and 17, this volume). As the steps in coping episodes unfold, other people (especially caregivers, but also extended family, friends and other peers, teachers, mentors, and so on) can participate directly in these transactions (Chapters 3, 18, 19, 20, and 22, this volume). Social partners can reduce or amplify demands, corroborate or question appraisals, suggest or prevent ways of coping, offer interpretations of coping transactions that consolidate learning or escalate distress, and create or prevent short- and long-term consequences. Some of these interpersonal processes can even be called co-coping or co-regulation, as for example in co-problem-solving or co-rumination (Waller et al., 2014; Chapters 17 and 22, this volume). At the same time, interpersonal relationships and interactions scaffold individuals' coping, as depicted in processes of parenting, emotion and coping coaching, and socialization (Bradley, 2007; Eisenberg, 2020; Howe & Zimmer-Gembeck, 2022; Kliewer et al., 1994; Power, 2004; Zimmer-Gembeck & Locke, 2007; Chapter 18, this volume). At its most general, this level includes the relationships, social interactions, and local contexts that create the interpersonal matrix within which the structure and functioning of coping's many neurophysiological, psychological, reactive, and regulatory subsystems develop.

Finally, a systems perspective highlights the role of higher-order factors at the *cultural* and *societal level* that shape processes of coping in multiple ways (e.g., Chun et al., 2006; Clauss-Ehlers, 2008; Kuo, 2011; Chapter 23, this volume). Such forces operate directly, by driving differential risks and resources into the niches occupied by children and youth from subgroups who sit on different rungs in the ladder of society's status hierarchy (Spencer, 2006; Chapter 24, this volume). Societal factors influence the stressors that are allowed to make their way into the lives of children and youth, and the resources they can access to deal with them. These forces also impact coping indirectly by shaping the societal stressors and resources that influence their
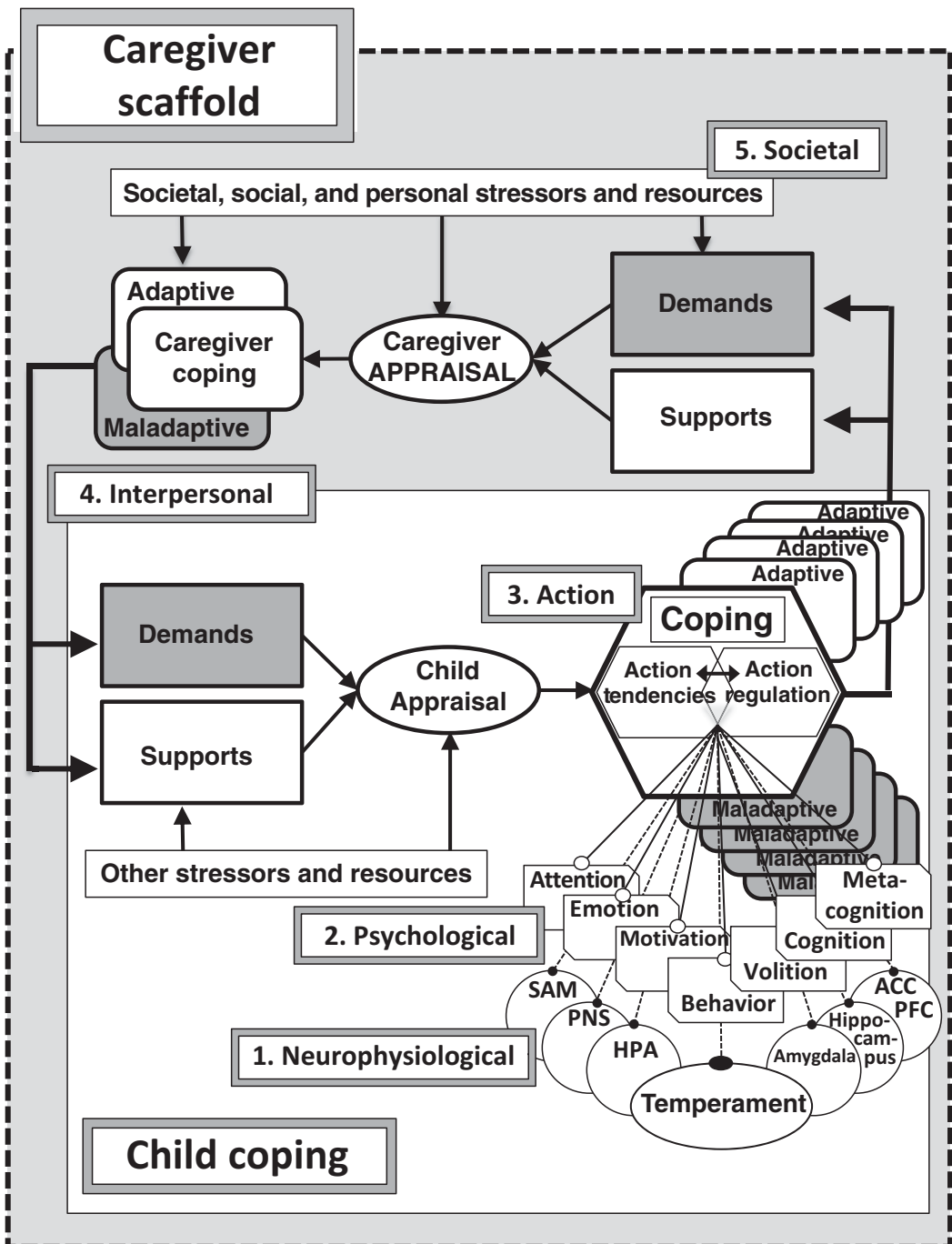
Figure 1.6 An integrative multi-level conceptualization of coping as a biopsychosocial process that adds: (4) the *interpersonal level*, including participation in coping by social partners as well as interpersonal relationships (such as with caregivers, extended family, friends, peers, and teachers) that create the interpersonal matrix within which the structure and functioning of coping's many subsystems develop; and (5) the *societal level*, including the demands that specific niches within society allow to impinge on children and adolescents as they develop and the supports that are available to them, as well as the societal stressors and resources that influence their social partners and contexts, like neighborhoods, homes, and schools.

social partners and contexts, like neighborhoods, homes, and schools (Tolan & Grant, 2009; Wadsworth et al., 2018). Moreover, the cultural communities in which children and adolescents are embedded also offer higher-order collective coping strategies, focused, for example, on mutual support, cooperation, collective efficacy, spirituality, sense of purpose, strong positive cultural/racial/ethnic identities, and fighting for social justice (e.g., Hope & Spencer, 2017; Kuo, 2013; McNamara et al., 2013; Spencer et al., 2003; Wadsworth et al., 2018).

Integrated System

A multi-level perspective lays out the complex system that comprises the coping of infants, children, and youth, and shows the many constructs and areas of research that need to fit inside this "bigger boat." At the same time, it highlights the *integration* of all these processes in service of the functions of coping. So, for example, the neurophysiological subsystems that underlie threat detection, stress reactivity, regulation, and recovery can be thought of as a single multi-level integrated neurovisceral "super-system" (Koenig, 2020; Smith et al., 2017; Thayer & Lane, 2009; Chapter 9, this volume) that, when working optimally, supports flexible functioning that is well-calibrated to internal and external conditions. When stress is low, it supports constructive goal-directed engagement with social and physical environments. If uncertainty or novelty appear, it instigates an observant and cautious readiness for action. In the face of challenge, it can marshal short-term energetic resources and enhanced regulation. If transactions become threatening, it can trigger automatic stress reactions that activate fight or flight behaviors; if these fail, it can initiate the shutdown of a "freeze" response (i.e., immobilization). When danger has passed, it can

rapidly switch off resource-expensive reactions and then more slowly reset the entire system to homeostatic functioning, allowing a return to productive social and physical interactions or, if needed, a pause for rest and recovery.

In the same vein, the psychological processes that underlie stress reactivity and action regulation, including emotional, attentional, behavioral, motivational, volitional, and cognitive subsystems, can be thought of as an integrated "super-system" that subserves adaptations to environmental challenges, threats, and dangers (e.g., Cole et al., 2019; Nigg, 2017). In other words, action readiness and regulation – coping – comprises a unitary holistic system that is hierarchical, dynamic, and flexible, with first lines of defense and fallbacks. This system is adaptive because it continuously attunes itself to changing neuropsychological, social, and external affordances and demands (Lupien et al., 2018; Smith et al., 2017; Thayer & Lane, 2009), allowing up- and downregulation of attentional and energetic resources needed to deal effectively with goal-directed action under stress.

All the processes studied as parts of stress reactivity, action readiness, and regulation (e.g., executive function, cognitive control, attention regulation, emotion regulation) can be considered parts of a biopsychosocial system that can be (re)assembled into a wide variety of functional units in response to patterns of internal and external demands. Paraphrasing Joëls and Baram's (2009) apt description of stress, all of these "coping instruments" can be considered parts of the "biopsychobehavioral symphony of coping." By focusing on the ways that coping systems can be organized and function, it may be possible to glimpse the development of this system as the sequential emergence of these levels and their successive integration (e.g., Loman & Gunnar, 2010; McEwen et al., 2016; Porges, 2018; Skinner & Zimmer-Gembeck, 2016).

Such analyses may begin to explain how coping systems show qualitative age-graded shifts as infants, children, and adolescents develop.

How Does the Coping System Develop?

A systems perspective specifies two ways in which coping develops: (1) it develops according to parts, that is, the system changes as each part develops; and (2) it develops according to wholes, as the organization and functioning of the entire system undergo qualitative shifts. In previous sections, we provided a few examples of the development of the coping system's parts by following the five big ideas and examining how they create entry-ways into age-graded changes in coping. Each idea forges theoretical links to developing subsystems, thus guiding investigation of how the development of component processes underlying coping combine to influence the emergence of new coping abilities at successive ages. In this section, we focus on reorganizations of the whole. We consider the development of coping to be a lifelong process (Aldwin, 2007), beginning at or before birth, that proceeds through multiple qualitative reorganizations, and is influenced at every step by the participation of social partners, interactions, relationships, and contexts (Skinner & Zimmer-Gembeck, 2007, 2016). In fact, it can be argued that the roles played by social partners also show qualitative shifts in organization as infants, children, and adolescents develop.

Perhaps the easiest way of understanding the organization of each of these developmental periods is that the *means* of coping – the coping equipment available to individuals – changes with age. For example, the emergence of language brings new means of appraising stressful situations and of seeking help.

Qualitative shifts in the coping system coalesce to produce new kinds of appraisal and action tools that can, with scaffolded practice, be successively applied to deal with stressful transactions. From this perspective, general appraisal and action mechanisms of coping accumulate developmentally, starting with stress responses guided by reflexes that fuse "coping" actions to the sensory system during the neonatal period; and adding implicit appraisals and regulation via action schemes during infancy; supplemented by explicit appraisals and voluntary coping through direct action during preschool age; coping appraisals and actions using reflective cognitive means during middle childhood; and metacognitive means during adolescence. At every age, these shifts allow coping appraisals and actions to become more effectively calibrated to internal capacities and external affordances, better coordinated with other people, and guided by increasingly autonomous values and goals. So far, evidence suggests that new means do not *replace* old means, they *augment* them, creating a broader and more differentiated repertoire of coping tools as children develop (Rochat, 2015), such that individuals can always use earlier means of coping (e.g., interpersonal instead of individual coping or behavioral instead of cognitive coping) as back-ups if stress is high or capacities are diminished (Zimmer-Gembeck & Skinner, 2011).

Qualitative Reorganizations in the Coping System from Birth to Emerging Adulthood

Given definitions of coping as reactivity and action regulation under stress, its development closely follows the development of stress reactivity and regulation (Engel & Gunnar, 2020) and of integrated executive regulatory processes (Cole et al., 2019; Nigg, 2017). Like

all regulation, the coping system develops from external modes of coping, carried out largely by caregivers during the first year of life, to increasingly internal and autonomous forms as children and adolescents develop (e.g., Ryan & Deci, 2017; Sameroff, 2010). These normative developments unfold in coping systems that differ even before birth in their neurophysiological and temperamental underpinnings, and in the interpersonal contexts provided by caregivers and other social partners. From birth, infants are also active participants in coping processes, communicating their emotional reactions and preferences, expressed initially through undifferentiated behaviors, and then communicated and acted on intentionally as development continues. All of coping's subsystems are also shaped by objective stressors, that is, the actual challenges, adversities, threats, and losses children and their families encounter daily. We offer our current working model of the development of coping, comprising six age-graded reorganizations. These six periods are outlined in Table 1.5, along with the changing role of social partners. Each is described here only briefly to provide a sense of how the coping system undergoes qualitative changes over development (for details, see Skinner & Zimmer-Gembeck, 2016).

Neonatal Period: Stress Reactivity and "External Coping" via the Caregiver

The development of coping starts before birth, as underlying neurophysiological and temperamental foundations are laid down that will eventually make the tasks of coping easier or harder to accomplish (Engel & Gunnar, 2020). The first coping system, like all subsequent systems, is both neurophysiological (rooted in temperament; Derryberry et al., 2003) and social (based on attachment; Sroufe, 1996). At birth, neonates' coping equipment starts as reflexive reactions fused to a vigilant and reactive sensory and neurophysiological system. This system produces a diffuse set of undirected emotional expressions, to which caregivers respond, using increasingly more effective strategies for repair and comfort (Sroufe, 1996). Adult actions can be viewed as "external coping," because they fulfill all the functions of a coping system, such as monitoring and detecting threats, protecting, removing stressors, soothing, comforting, and learning how to deal with stress more effectively (Engel & Gunnar, 2020; Holodynski & Friedlmeier, 2006).

Two major reorganizations take place in the coping system during the first 3 months of life – one neurophysiological and one social. The first starts at birth. Until then the neurophysiological systems subserving coping are accustomed to operating *inside* the mother's body so, following birth, a qualitative reorganization is needed so these systems can develop the capacity to establish stable homeostatic functioning outside such a protective environment (Lupien et al., 2018). In the context of a secure attachment relationship, the neurophysiological systems subserving stress reactivity (e.g., the HPA axis) go into a period of hyporesponsivity (Gunnar & Hostinar, 2015). This shift reduces stress reactivity and frees resources for practicing the up- and down-regulation needed to move the neonate from homeostatic functioning (e.g., digestion and sleep) to constructive engagement (i.e., alert participation) to coping with stress (i.e., regulation), and back again (i.e., recovery; Engel & Gunnar, 2020).

The second reorganization during this period involves a shift from strictly neurophysiological reactivity, regulation, and recovery to the beginnings of interpersonal regulation of these systems by caregivers. Based on a history of caring and responsive interactions, infants' neurobiological systems

Table 1.5 *Broad outlines of possible developmental shifts in the means of coping from birth through adolescence*

Developmental period	Approximate ages	Nature of coping appraisals	Nature of coping actions	Role of social partners	Nature of regulation
1. Neonate	Birth to 3 months	Sensory systems	Reflexes; stress reactivity	Carry out coping actions based on neonate's emotional expressions	External regulation
2. Infancy	First year	Implicit appraisals	Coordinated action schema	Carry out coping actions based on infant's intentional communications Social buffering	Interpersonal co-regulation
3. Toddlerhood	Second year	Explicit appraisals	Emotional action regulation	Participate in demands and coping responses Social buffering	Cooperative self-regulation
4. Early childhood	Ages 2–5	Inferential appraisals	Coping using voluntary direct actions	Available for direct help and participation Peers added	Intrapersonal self-regulation
5. Middle childhood	Ages 6–8	Cognitive reappraisals	Coping using cognitive means	Cooperate with and support child's coping efforts Friends added	Coordinated self-regulation
6. Adolescence Early	Ages 10–12	Reflective reappraisals	Reactivity increases Coping using metacognitive means	Reminder coping Social buffering decreases	Proactive self-regulation
Middle	Ages 14–16		Coping based on personal values	Back-up coping	Identified self-regulation
Late	Ages 18–22		Coping based on long-term goals; Emotion- and problem-focused coping integrated	Monitoring coping	Integrated self-regulation

develop the capacity to be up-regulated (i.e., engaged) and down-regulated (i.e., comforted) by caregivers, thus opening them to regulation from social partners (Feldman, 2017) and creating a sheltered venue for neonates to practice their own burgeoning regulatory capacities. This development also paves the way for the introduction of a crucial omnibus coping strategy, namely, proximity seeking (Bowlby, 1969/ 1973), upon which future coping will be built. This coping family is well-integrated with neonates' actual emotions, motivations, and neurophysiological states because responsive caregiving is based on infants' genuine preferences as they are expressed in real time (Sroufe, 1996).

Hence, by about 3 months of age, infant coping has become an integrated stress reactivity and regulatory system that is tuned to safety and thus hyporesponsive – capable of both supporting homeostatic functions and dispatching energetic resources for responding to external demands. As part of the developmental tasks of this period, dyads build out from newborns' stress neurophysiology to create a stable biobehavioral platform for infants on the level of reactivity and regulation that will support the subsequent development of coping systems that children can (eventually) operate for themselves.

Infancy: Implicit Appraisals, Intentional Action Regulation, and Co-regulatory Coping

The fundamentals of regulatory coping processes, such as attention and working memory, are present in newborns but undergo qualitative transformations as infants develop (Kopp, 1989; Posner et al., 2014). The healthy progress of these biobehavioral subsystems, such as the emergence of executive attention and the expansion of working memory capacity, is dependent on safe and rich social and physical worlds, including dependable care, secure attachments, and opportunities for stimulating interactions (Pallini et al., 2018). Three developments, important to reorganizations in the coping system during the first year, involve advances in coping appraisals, coping actions, and the capacity to coordinate coping with social partners.

First, stress reactivity and regulation are lifted off relatively automatic neurophysiological subsystems and come to be triggered and guided by infants' implicit appraisals of challenging and stressful encounters; as studied, for example, in research on internal working models (Bretherton, 1996; Sherman et al., 2015) and generalized expectations of contingency (Watson, 1966). Implicit appraisals are constructed from the running total of infants' cumulative experiences in interactions with the interpersonal and physical environments, so they are tightly integrated with transactions on the ground. Such appraisals likely work outside of conscious awareness to identify and decipher the meaning of challenging and threating transactions, and so open the door for the practice of intrinsic coping responses based on fundamental emotional and motivational processes (Barrett & Campos, 1991).

The second major development of this period involves infants' coping actions. They become more robust and goal-directed as sensorimotor intentionality emerges and is consolidated (Zeedyk, 1996), thus readying intrinsic action systems for authentic expression, exploration, interaction, and tenacity. These advances systematically convert preferences to purposes, and so are utilized to guide goal-directed actions and communications aimed at dealing with and overcoming challenges and problems. The onset of locomotion brings a range of new means of coping (Campos et al., 2000).

Third, the interpersonal nature of the coping system is transformed, moving away from

largely external coping carried out by caregivers (under the supervision of infant preferences) and toward a co-regulatory system created by both caregiver and baby where infants learn to help negotiate stressful transactions (Evans & Porter, 2009; Gianino & Tronick, 1988). Within this dyadic system, infants' newly constructed appreciations and goal-directed actions increasingly participate in "coping packages" that are co-generated and co-enacted by caregiver and infant and stored as action schema for use in future stressful encounters (Holodynski & Friedlmeier, 2006). Together, these social relationships and coping capacities (and their feedback in reprogramming developing stress neurophysiology toward higher tipping points and faster recovery) may lead to improved biobehavioral stress resistance and stress resilience by the end of the first year (DiCorcia & Tronick, 2011).

Toddlerhood: Explicit Appraisals, Emotional Action Regulation, and Cooperative Coping

Three important developments underlie age-graded shifts in coping during the second year of life. As during previous age periods, these involve transformations in the tools used for coping appraisals and actions as well as the reorganization of the interpersonal system. First, representational capacities emerge (e.g., as seen in language). This transforms the "radar" of coping so that implicit appraisals become explicit belief systems that interpret the experience of potentially stressful interactions and shape subsequent reactivity and readiness for action. This emerging appraisal system, because it is still tied to actual transactions on the ground, continues to provide a stream of realistic information to the coping system. At the same time, the experiences of most toddlers are taking place in the protected environment of a secure attachment relationship, so these beliefs are positively biased,

creating a psychological buffer that positively colors explicit interpretations of challenging and threatening experiences.

Second, the development of emotion and self-systems, as seen in burgeoning self- and emotional awareness, understanding, and regulation (Thompson, 2015), integrates intrinsic motivational and goal-directed action systems with emotion, and converts "emotional action regulation" to coping efforts guided by an increasingly agentic self. This transformation generates more durable intentions and coping actions. It also creates new sources of potential stress (e.g., experiences of self-conscious emotions like guilt and shame; interpersonal goal conflicts) that produce new venues where coping can be practiced.

Third, when the capacity for shared intentionality emerges (Tomasello & Carpenter, 2007), this advance transforms the nature of the interpersonal coping system, which up until now was co-regulatory. It increasingly becomes a cooperative "triadic" system; in addition to the toddler and caregiver, it now includes the problems faced by the child as an object of their joint attention, which they can face as a united front (Tomasello, 2007). In this emerging system, children's stressors and problems, as well as their coping appraisals and actions, can now become topics of joint conversation. As children learn to "use their words" to express desires and feelings, they can discuss and reflect on these motivational and emotional states, consider alternative goals suggested by others, and employ words to take on those goals and to encourage themselves to focus on and enact these new behaviors.

Crucial to the development of this cooperative coping system is the caregiver's continued support for genuine communication and productive regulation of emotions and emotionally inspired actions, sometimes called emotion or coping coaching (Gus et al., 2015;

Morris et al., 2017) or socialization (Eisenberg, 2020; Zimmer-Gembeck & Locke, 2007; Zimmer-Gembeck et al., 2022). Although these transformations can be somewhat "bumpy" (Brownell & Kopp, 2007; Lewis et al., 2004), toddlers begin to become reciprocally concerned about the emotions and problems of their caregivers, forming a relationship characterized by a mutually responsive orientation (An et al., 2021; Kochanska et al., 2008). Just as a secure attachment opened neonates' stress neurophysiology to the regulation of caregivers during the first months of life, a secure attachment during toddlerhood opens the child's volition to the regulation of caregivers, promoting young children's willingness to cooperate with the caregiver in dealing with conflicts and problems.

Early Childhood: Inferential Appraisals, Voluntary Action Regulation, and Individual Coping

Three crucial developments contribute to qualitative shifts in coping during early childhood, when coping undergoes the transformation from an *inter*personal to an *intra*personal process. First, regulation evinces perhaps its most important qualitative shift – it becomes truly voluntary. For researchers who define coping as entailing voluntary efforts (e.g., Compas et al., 1999), this transition marks the beginning of coping proper. The emergence of voluntary coping, like all other developments in the coping system, is a biopsychosocial process. Neurocognitive executive capacities, like attention, working memory, and inhibitory control, improve but also become more differentiated and better coordinated during early childhood (Nigg, 2017), shaped by the quality of home and preschool contexts. Young children exercise regulatory capacities when they have structured opportunities to follow routines and rules,

respond to adults' requests for appropriate behavior, and constructively negotiate interpersonal interactions with peers (Laursen et al., 2001; McClelland et al., 2015). The transactions most relevant to coping are those, like emotion regulation, that take place in hot situations, involving young children's desires and goals (e.g., Thompson, 2015). Increased integration among regulatory subsystems enables a range of new coping responses, such as the intentional generation of alternative action options (Keen, 2011).

Second, advances in theories of mind and affect allow young children to appraise conflicts and difficulties using increasingly more complex mental models that, through the incorporation of inferential concepts, begin to grant others a range of understandings, emotions, and desires that differ from oneself and from reality. Especially important to coping are conversations with social partners about everyday problems and dilemmas – discussions that take others' perspectives and consider alternative causal interpretations and possible actions in the face of stressful events. Interestingly, at this same age, relationships with friends and other peers supplement those with adult attachment figures and begin to take on the role of buffering children's neurophysiology from the effects of stressful transactions (Engel & Gunnar, 2020).

Third, the emergence of a moral compass, as depicted in research on the development of conscience (Kochanska et al., 2010), offers young children a set of tools to coordinate the goals and actions of the self with those of others using increasingly internalized moral values and principles. As capacities for voluntary self-regulation develop, social partners (e.g., family members and preschool teachers) create "problems" for young children by demanding increasingly more mature and socially appropriate rule-governed behavior. Such problems occasion episodes of coping

where children must coordinate their actions and emotions according to these demands.

The emergence of voluntary coping actions can be considered a shift from self-control or compliance based on co-regulation with adults to genuine self-regulation, initiated by an increasingly mastery-oriented self. Throughout this period, involvement of caregivers is essential, but they must figure out how to scaffold young children as they test-drive their own self-regulated coping systems. This inevitably involves the construction of "redemption routines" and debriefing conversations following coping fails. Together, these developments again shift the coping system's center of gravity to an increasingly more autonomous self, as young children can appraise and deal with problems and stressors using their own interpretations and actions as a first line of defense, with direct participation of caregivers now relegated to a second-line back-up.

Middle Childhood: Cognitive Reappraisal, Mental Modes of Coping, and Coordination with Demands

The "five-to-seven-year shift" (Sameroff & Haith, 1996) marks the beginning of a new developmental period for the coping system. Although children's regulatory capacities have undergone multiple reorganizations by this age, they are still relatively basic (McClelland et al., 2015). Important advances are occasioned by the "cognitive revolution" (Case & Griffin, 1990; Case et al., 1988), when self-regulatory strategies that were previously expressed as actions on the ground increasingly become "cognitivized," that is, reconstructed as a psychological inventory of action options (Holodynski & Friedlmeier, 2006). Three key changes underlie reorganizations of the coping system during this age period, involving appraisals, coping actions, and coordination with others.

First, "cognitivization" results in the emergence and consolidation of new representational capacities that permit children to deliberately reappraise stressful events in ways that influence their emotional responses and coping actions (Davis-Kean et al., 2009). This allows them to integrate their executive processes with motivational and emotional impulses (now also stored as cognitive reflections), enabling regulation to become more autonomous and so require fewer resources to enact. These developments also give children the capacity to intentionally track their own emotional and motivational states and begin to modulate them through coping strategies like cognitive reframing and positive self-talk (Band & Weisz, 1990; Davis et al., 2010).

Second, regulatory capacities are exercised, strengthened, and consolidated into more advanced executive processes like goal-directed problem-solving. Studies of the development of regulation reveal a hierarchy of such processes that continue to grow throughout this period (Nigg, 2017), becoming more differentiated, context independent, and complex. These new mental means are incorporated in problem-solving and emotion regulation, contributing to the emergence of more complex executive processes, like strategizing, sequencing, and planning. This leads to improvements in children's abilities to identify, negotiate, and enact constructive solutions, even under demanding conditions, such as interpersonal conflict. Across this age range, children are increasingly able to differentiate and deploy a wider range of coping options. During early childhood, coping shows little differentiation: young children primarily seek support from caregivers, intervene directly in stressful situations, withdraw, or use behavioral activities to distract themselves. During middle childhood, however, all these strategies become more differentiated as a host of mental means are added. For example, problem-

solving and distraction become more diverse and flexible as children increasingly draw upon both behavioral and cognitive tactics.

Third, as executive functions continue to grow, children can more intentionally and appropriately coordinate ways of coping with changing internal and external affordances and constraints. For example, children not only rely on additional sources of support (such as teachers, peers, and extended family members), but also become more selective and attuned to stressor- and context-specific information when seeking advice, help, or comfort. Together, these emerging capacities allow children to employ a wider range of behavioral and cognitive coping tools for productively dealing with stressors from both the instrumental (e.g., academic; Skinner & Saxton, 2020) and interpersonal (e.g., peer conflict; Seiffge-Krenke & Pakalniskiene, 2011) domains, while at the same time becoming better able to tune into internal emotional and motivational states and intentionally work to restore well-being, recover, and learn from stressful encounters.

Such coping transactions, when supported by caring social partners (both peers and adults), contribute to the continued development of pragmatic and constructive self-systems during middle childhood (as seen, for example, in increasing feelings of coping efficacy, sense of belonging, and autonomous orientations) that will anchor children's subsequent efforts to manage the challenges and stressors they encounter. During middle childhood, these developments collectively produce a system that seems to be particularly sturdy and resilient. At this age, children have a wider range of flexible appraisal and action tools than at younger ages, but do not yet have to deal with the increasing stress reactivity and social sensitivity that will challenge the coping systems of early adolescents.

Adolescence: Heightened Reactivity, Proactive Regulation, and Increased Coping Flexibility

The development of coping during adolescence covers many years and seems to be even more extended today with longer periods between puberty and becoming established in work, forming long-term relationships, or having children. Thus, this topic could fill its own chapter (Skinner & Zimmer-Gembeck, 2016) and even its own book (Frydenberg, 2018; Seiffge-Krenke, 2013). The shift to adolescence begins around ages 10–12, with the onset of puberty and other neurophysiological developments, which are accompanied by changing patterns of thinking and feeling about the self, relationships, and society (Spear, 2000). In addition, the social worlds of youth expand, bringing a greater range of potential social supports and stressful experiences. Three important developments underlie transformations in the coping system during this age period, including notable changes in stress reactivity systems, richer tools for social and emotional understanding, and advances in metacognitive processes.

First, neurophysiological stress reactivity systems generally come out of their period of hyporesponsivity during adolescence, just as encounters with actual stressful events are normatively on the rise and the power of attachment figures to physiologically buffer stress appears to be waning (Engel & Gunnar, 2020). The onset of puberty seems to bring with it greater motivational and emotional sensitivity to some hot events, especially threats, rewards, and interpersonal interactions. Such reactivity may outstrip the developing capacities of the regulatory system, producing what appear to be setbacks in regulatory functioning despite normative advances in executive processes (e.g., Casey, 2015; Steinberg et al., 2018; Chapter 11, this volume). Some researchers suggest that such

elevated stress reactivity creates repeated opportunities for youth to practice and grow their developing regulatory and coping "muscles" in these emotionally and motivationally hot situations (Casey, 2015; Skinner & Zimmer-Gembeck, 2016). In fact, researchers even hypothesize that the reopening of the neurophysiology subserving stress reactivity and regulation that accompanies puberty allows for a recalibration of those systems, including reorganization and repair following early life stress (DePasquale et al., 2019).

Second, adolescents' tools for appraisal are enriched by normative advances in empathy, understanding of emotions, and affective theory of mind, allowing youth to generate richer and more accurate depictions of the complex factors in play during stressful transactions. The continued development of self-system processes during this period also influences adolescents' appraisals and reevaluations of distressing experiences. For example, important transitions may take place between ages 14 and 16, when autonomy and identity become increasingly salient (Côté, 1996; Van Petegem et al., 2018; Zimmer-Gembeck & Skinner, 2010; Zimmer-Gembeck et al., 2018).

Third, beginning in adolescence, metacognitive capacities emerge, allowing more sophisticated future-oriented executive processes that can proactively anticipate problems, and consider both long-term goals and effects on others (Case et al., 1988; Davis et al., 2010). These burgeoning capabilities enable youth to more intentionally and flexibly use executive processes to coordinate their actions with changing internal and external conditions, such as the demands and resources available in specific situations. Normative improvements in the flexibility of regulatory systems can result in some unreliability in actions on the ground, but they also foster the capacity to better align (and realign) coping strategies with specific stressors as these encounters unfold.

Toward the middle and end of adolescence, this emerging complex of self-regulatory skills allows adolescents to integrate problem-focused and emotion-focused coping, as youth are increasingly able to use the developmentally more demanding skills of hot executive functions to maintain access to their higher-order cognitive capacities under increasingly challenging conditions of risk and reward. Despite overall developmental trends that indicate normative improvements, it is important to underscore that the hot regulatory processes so crucial to coping are harder for children and adolescents to deploy at every age and develop more slowly across the entire age range (Cohen et al., 2016).

Heightened focus on peers and then romantic partners during this period contributes to improved interpersonal coping, and adds supplementary, increasingly important, layers of support and protection for coping. Additional important transformations may take place from middle to late adolescence (about ages 20–22), when significant social transitions motivate better coping, as well as ushering in potentially stressful new experiences, such as leaving home (Arnett, 2000). Neurobiological developments continue, further integrating decision-making (Reyna & Farley, 2006) with the processing of emotions (Spear, 2000). In terms of coping, improvements in metacognitive and emotion regulation capacities enable adolescents to better manage their stress reactions, select and structure their environments, and consider long-term consequences, thereby becoming more able to deal with local stressors without losing sight of future goals and priorities. By the beginning of emerging adulthood, these burgeoning "meta-capacities" enable young adults to construct a reflective representation of the entire coping system. With practice and support, their coping becomes increasingly autonomous and responsible; they get help when needed and learn from their mistakes. In other words, they

increasingly take ownership for the development of their own coping.

Building Up from Neurophysiology and Down from Social Contexts

To end this section, we offer a picture of what we think is developing as the coping system undergoes successive transformations. One way of looking at this process, pictured in Figure 1.7, is that from birth to emerging adulthood, the multi-level coping system pictured in Figure 1.6 is sandwiched between the neurophysiological layer below and the inter-personal and societal layers above. At birth, coping equipment consists only of reflexes at
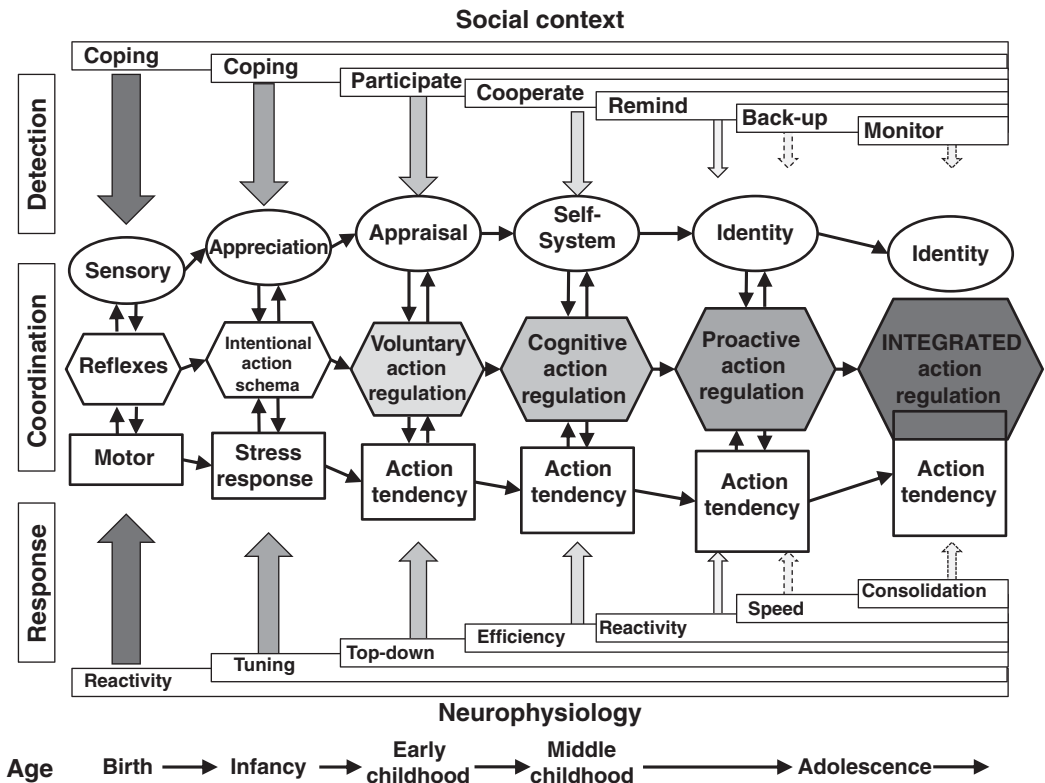
Figure 1.7 Broad developmental phases in the development of coping. Age-graded shifts in the implementation of the basic tasks of coping are scaffolded by (1) the development of neurophysiological subsystems and (2) changes in the demands and supports provided by social partners, and especially caregivers. The balance of influence between biological systems and environmental provisions shifts over time, such that biological tendencies and social forces are more prominent influences on coping in the early years, but the normative development of coping progressively entails a larger and larger role for the active individual in shaping stress responses and regulatory activities with increasing age, as represented by the smaller and smaller arrows that emanate from neurophysiology and the social context as development proceeds. The boxes that contain "coordination" are represented as growing larger and larger as these functions are successively accomplished first by reflexes, then by an intentional infant, an agentic toddler, and finally by a deliberate young child capable of volitional self-regulation, who becomes more reflective and proactive over middle childhood and all during adolescence.

the level of action and fused sensory, attention, emotion, and motivation systems at the psychological level. The task of the caregiver and the neonate is to begin building out an increasingly more complex and effective appraisal and action system, slowly creating a larger and larger role for the active individual in carrying out the tasks of radar, readiness, regulation, recovery, and re-evaluation. These new coping tools will function more effectively to the extent that they are tightly coordinated with neurophysiological layers below and social layers above. Close cooperation with neurophysiological subsystems allows coping to be continually updated with accurate information about the organism's genuine states, emotions, goals, and preferences. Close coordination with social partners allows these systems to co-regulate, cooperate, and work together to carry out coping tasks.

As shown in Figure 1.7, in many ways the development of the coping system is the progressive expansion of the appraisal and action systems as infants, children, and adolescents grow and change. The role for the active individual in shaping stress responses and regulatory activities expands with increasing age. These transformations are represented by the boxes that contain "coordination": They grow larger and larger as these functions are carried out first by reflexes, then successively accomplished by an intentional infant, an agentic toddler, and finally by a deliberate young child capable of volitional self-regulation, who becomes more reflective and proactive over middle childhood and all during adolescence. The balance of influence between biology and environmental provisions shifts over time, such that biological tendencies and social forces are more prominent influences on coping in the early years, but their influences become less central as they are successively incorporated into developing psychological and action subsystems with increasing age.

These changes are represented by the smaller and smaller arrows that emanate from neurophysiology and the social context as development proceeds. This pattern is the same one described by many developmentalists for age-graded changes in regulatory processes (e.g., Sameroff, 2010).

Translation to Practice: Supporting and Repairing the Development of Coping

We end with a few thoughts about the important work of practitioners, clinical researchers, and prevention scientists in supporting the development of coping, as they use foundational research to design prevention and intervention programs to improve the way that children and youth react to and deal with stress, either directly or via those who support them (e.g., Compas et al., 2010; Lewis & Frydenberg, 2002; Pincus & Friedman, 2004; Sandler et al., 1997; Wadsworth et al., 2018; Chapters 26 and 28, this volume). While examining the effects of such programmatic efforts, some researchers have been moved to ask whether interventions really change anything (e.g., Seiffge-Krenke, 2004). We think that a developmental systems perspective has the potential to help explain why coping can be resistant to change, why it is such an important target for intervention, and where some effective levers for fostering its development may lie.

Why the Coping System Is Challenging to Change

A developmental systems approach may help explain why it can be difficult to change the ways that children and youth cope (e.g., Seiffge-Krenke, 2004). Such difficulty makes more sense if coping is not seen primarily as a "strategy" to be taught, but instead as a mode of adaptation that reflects a history of thousands upon

thousands of transactions that have created an individually and developmentally organized system. To paraphrase Ross Thompson's (1991) apt description of the development of emotion regulation: "Psychologically, [coping] is a painstaking developmental process because it requires intervening into phylogenetically deeply-rooted [stress reactivity] systems with psychologically complex control mechanisms" (p. 271).

The same can be said of coping interventions. From a developmental systems perspective, coping actions are not just things that children and adolescents happen to do. They emerge from an "apparent reality" (Fridja, 1988) created by a history of actual transactions with demands and stressors. This system also acts as a set of reality-generating processes through its effects on seeking out or avoiding challenge, making stressful situations better or worse, and deciding what such transactions reveal about the self and the world (Conway et al., 2012; Liu, 2013). The longer these processes have been operating, the more consolidated the system becomes. A developmental systems perspective (see Figure 1.6) makes visible the complex, integrated, self-sustaining system that interventionists are up against, and highlights the challenges inherent in making qualitative shifts to improve or repair its functioning.

Moreover, because of the cognitive demands involved in learning new strategies, most programs to improve coping target older children, in late middle childhood or adolescence (i.e., about 10 years old or older; e.g., Cunningham et al., 2002; Frydenberg et al., 2004). On the one hand, as can be inferred from the discussion of age-graded reorganizations of the coping system, the focus on this age makes sense. The cognitive means that can be used for appraisal and coping actions at this age create a pathway for children to benefit from direct instruction. On the other hand, however, middle childhood and early adolescence are very late in the developmental game. Just as the building blocks of coping emerge and develop, starting even before birth, interventions to support the healthy development of coping can also be initiated prenatally and continue across the lifespan (Lupien et al., 2009, 2018). A developmental systems perspective suggests two approaches – one focused on parts and one on wholes – to help identify the levers that can orchestrate transformations in coping systems, both of which suggest age-graded strategies for intervention.

Where the Levers to the Development of Coping Lie: Parts

A systems perspective identifies an almost infinite number of pathways through which practitioners and interventionists can reach the coping system. Figure 1.6, which outlines many of the essential parts of this system, can be used as a menu: Interventionists can walk up its levels for program ideas, starting with support for stress neurophysiology (e.g., strengthening the parasympathetic nervous system), psychological processes (e.g., increasing motivation), appraisals (e.g., inducing optimism), reactivity (e.g., downplaying threat), regulatory capacities (e.g., boosting executive attention), or interpersonal relationships (e.g., increasing social skills; e.g., Larose et al., 2019). A developmental view of the coping system sends interventionists back to the previous sections on age-graded reorganizations, so that program designs can be informed by detailed information about when different subsystems successively come online, dictating the periods during which each subsystem shows its most active development, and what each needs to scaffold the healthy negotiation of the tasks central for each age. For example, developmental models, like polyvagal theory or the life-cycle model of stress, can provide blueprints for the timing and

experiences expected by each of the neurobiological systems involved in reactivity and regulation (Engel & Gunnar, 2020; Gee & Casey, 2015; Lupien et al., 2018; Porges, 2018).

Programs can use this information as a guide to suggest the focus of coping interventions at different ages. For example, at birth, programs could help establish the kind of secure attachment that allows the neonate's multi-level stress neurovisceral physiology – like the hippocampus, amygdala, HPA axis, SAM, vagal circuits, or PFC – to sequentially develop along healthy lines (Cooke et al., 2019; Lupien et al., 2009, 2018; Pallini et al., 2018). Or, when language emerges, programs could work with caregivers so they can nurture their toddlers' clear and accurate communication about feelings and desires, and coach their constructive expression and regulation (e.g., England-Mason & Gonzalez, 2020). Or, during early childhood, programs could show parents how to foster authentic and willing self-regulation, even in the face of frustration and setbacks (Boldt et al., 2020; Grolnick et al., 2019). Complementary school-based programs involving socio-emotional learning (Corcoran et al., 2018) or sports (Waters et al., 2022) are also likely to support the development of coping, since they focus on core competencies (i.e., self-awareness, self-management, social awareness, relationship skills, and responsible decision-making) and provide guided practice to help children deal constructively with their own and others' emotions, goals, and conflicts. All approaches have in common that they target the hot reactivity and regulatory capacities so crucial to coping, can focus on children younger than those typically included in coping interventions, and work to change the ways adults in children's lives (primarily caregivers, families, and teachers) socialize and coach reactivity and regulation during demanding episodes.

Each of these age-graded approaches also represents a gift that keeps on giving. For example, the initial focus on establishing a secure attachment not only supports the healthy development of stress neurobiology during infancy, but also allows it to open up so it can subsequently benefit from the co-regulation of caregivers (Gunnar & Hostinar, 2015); the same secure attachment later fosters a mutually responsive orientation that facilitates the socialization of emotion and self-regulation (Kim et al., 2015). In the same vein, early efforts to quiet stress physiology and emotional reactivity make subsequent self-regulation easier; and parent emotion socialization may also reach down and reprogram some of the neural substrates of emotional reactivity and regulation (Tan et al., 2020).

Prevention and Remediation

Practitioners rightly focus on prevention, given that the effects of early life adversity on the development of the neurobiological systems involved in stress reactivity and coping can be epigenetic, structural, and permanent (e.g., Engel & Gunnar, 2020; McEwen et al., 2016). Researchers seeking to discover remediation strategies are guided by the fact that the effects of early life stress follow two principles (Lupien et al., 2018): Effects are cumulative (Sameroff, 2010) and they seem to be concentrated on the neurobiological systems that are developing at the time that adversity is experienced (Gee & Casey, 2015; Lupien et al., 2018; Chapter 10, this volume).

If prevention is not possible, then the ideal scenario is to detect and intervene on a time frame that is very close to the adverse experiences, so that brain systems are still plastic. This insight has led to routine screening for adverse experiences during pediatric visits, followed by two-generation interventions that target both caregiver and infant for services and treatment (Ford et al., 2019). However, once nonnormative structural or functional

changes have taken place, their effects cannot always be reversed, so interventions focus on reprogramming systems that are still open, creating compensatory processes, and focusing on strengthening the next developmental layers that are laid down (Lupien et al., 2018; Maier, 2015). The search for remediation strategies ranges from bottom-up interventions, such as pharmacological regimens, to higher-level top-down programs, such as physical exercise (Boparai et al., 2018; McEwen & Gianaros, 2011). Despite the specificity of problems with stress reactivity and regulation created by early exposure to adversity, however, the strongest counterweight to these early adverse experiences seems to converge on the same antidote: massed experiences in safe and enriched environments, but – perhaps surprisingly– not ones that are stress-free (Crane et al., 2019; Masarik & Conger, 2017; Repetti & Robles, 2016). Instead, growth, recovery, and potential reprogramming are especially likely in high-quality social contexts (homes and schools) that offer active social, cognitive, and physical stimulation, exploration, and manageable challenge.

Where the Levers to the Development of Coping Lie: Wholes

Hence, to the list of programs designed to support the development of coping and all its underlying parts, we would add one more key intervention lever: coping transactions themselves. If a developmental history of experiences with stress created the coping system, it is a new history of experiences with stress that will transform it. A wholistic view of the coping system highlights multiple crucial points of entry for interventions, focused on coping actions themselves, but also on the neurobiology, appraisal processes, and social contexts that shape them. This perspective reinforces lessons learned from coping

interventions, that improving coping not only requires new coping actions that solve problems and support emotional expression and regulation, but also necessitates changes in both individuals' ways of viewing themselves and the world and in the social context itself – including the stressful demands and interpersonal supports involved in children's coping (e.g., Compas et al., 2010; Kovacs & Lopez-Duran, 2012; Spencer et al., 2003).

As befits a systems approach, all these features – neurophysiological reactions, coping appraisals, coping actions, and social contexts – will have to be shifted simultaneously to transform the system. Each level of this system is important, but as children develop, the relative emphasis may change, from neurophysiological to social to actions and finally appraisals. In fact, across childhood and adolescence, appraisals take on a bigger role and offer a bigger handle to adults wishing to support and rework coping. To be effective in creating developmental shifts in both coping and emotion regulation, interventions take on ever more hyphenated names, like cognitive-behavioral (Mennin et al., 2013) or contextual emotion-regulation (Kovacs & Lopez-Duran, 2012) therapies, in recognition of the bio-psycho-social-cultural processes inherent in coping appraisals and actions (Compas et al., 2014; Goldin et al., 2013).

Coping Transactions as Important Sites for the Development of Coping

Descriptions of the successive reorganizations of the coping system highlight a crucial developmental process: Infants, children, and adolescents learn to cope by coping. That is, the equipment children and youth need to cope well (i.e., the tools used in radar, readiness, regulation, recovery, and reevaluation) are built, an episode at a time, during encounters with stress. These interactions are the grist from which integrated stress reactivity and

flexible regulatory capacities (and all the other components of the coping system) are made. Coping transactions reprogram stress neurophysiology (Gee & Casey, 2015; Maier & Watkins, 2010; Ortiz & Conrad, 2018), strengthen regulatory muscles, sculpt attachment relationships, build implicit appraisals and action schema used to deal with challenge and threat, contribute to the development of emotion regulation and understanding, and enable the internalization of moral rules used to guide conscience. It is during interactions with demands and difficulties that coping tools are assembled, tools like problem-solving, negotiation, cooperation, self-reliance, concession, and defense. It is clear, for example, that the primary way children learn to problem-solve is by encountering problems.

Coping is a complex, recursive dynamic system in which top-down and bottom-up processes are shaped by their workings together during stressful transactions. Such transactions comprise thousands upon thousands of episodes whose experience, described using the inverted-U function of the stress response, range from understimulated to engaged to challenged to threatened to overwhelmed and back again (Sapolsky, 2015). The entire coping system – its parts and its organizations – are cumulatively shaped by the processes of coping themselves. Hence, constructive coping is an important target of intervention. It not only helps protect children and youth from the harmful effects of daily stressors, but it also promotes their development, strengthening and consolidating processes from stress neurophysiology to reactivity/readiness to regulation to social relationships.

Coping Transactions in the Zone of Just Manageable Challenge

A primary task of adults is to ensure that the stressors children face in the major domains of their lives are tackled in a zone of "just manageable challenge," where events are demanding but within the child's capacity to deal with effectively (e.g., Crane et al., 2019; Jamieson et al., 2018; Masarik & Conger, 2017; Repetti & Robles, 2016; Sapolsky, 2015). These experiences promote stress resistance and resilience, but this zone represents a moving target, requiring continual monitoring and readjustment of both demands and supports. Social contexts face a "Goldilocks" dilemma, balancing between challenge and threat (Dhabhar, 2018; Sapolsky, 2015). Coping capacities need to be exercised and stretched to grow, but if the system is overwhelmed, it shuts down and produces patterns of stress-affected coping.

Development complicates this equation. On the one hand, as infants, children, and youth acquire new competencies, these provide new resources for coping. As a result, individuals are more able to deal effectively with new demands and are more likely to seek out new opportunities to exercise developing capacities. On the other hand, however, developmental advances also provide new avenues for experiencing threat and harm. For example, the emergence of locomotion brings with it a range of new coping tools, but it also increases the probability that an infant will fall down the stairs. This dual developmental progress, of expanding resources *and* risks, continues throughout all the years of childhood and adolescence. For example, during adolescence, close peer relationships become an important source not only of support and satisfaction but also of conflict and heartache (Clarke, 2006). In fact, it might be possible to argue that the emergence of new risks and dangers is as important to the development of the coping system as is the emergence of new competencies since risks provide age-graded opportunities to learn to cope with ever more demanding challenges.

From this analysis, it becomes clear that the roles of social partners and social contexts in the development of coping are as complex as the coping system itself. In fact, as pictured at the top of Figure 1.6, it might even be possible to consider social partners' ways of participating (proactively and reactively) in children's coping as a form of coping with someone else's coping. It seems possible that caregivers (and others responsible for development) use an individual's changing signals of distress versus engagement (made visible on the level of action as coping responses themselves) as information to calibrate the demands made and resources offered in helping them deal with stressful situations.

It is important for those attempting to change the course of coping to keep in mind the many strategies available to them, especially at higher levels of the social context. For example, socio-emotional learning programs can transform classrooms and school contexts and help children develop caring relationships with teachers, peers, friends, and classmates. These relationships and climates support children as they attempt to deal productively with everyday stressors inside and outside school. Or, for children and youth who are confronted every day by stressors stemming from racism, discrimination, and poverty, communal experiences of civic engagement and social action may create a context for collective coping (Rodriguez et al., 2019). Of greatest interest may be multi-level or multi-systemic interventions that address actions, identities, interpersonal, and societal contexts all at the same time (Hope & Spencer, 2017; Wadsworth et al., 2020).

Conclusion

If coping does indeed represent a force in development, then the goal of parents, teachers, and those who work on prevention or intervention is not merely to increase or decrease the use of a given coping strategy. Instead, they are attempting to induce a qualitative shift that transforms the coping system itself. The end game is to create a stable growth dynamic, that is, to adjust the processes of coping so that the entire system continues to create interactions that allow coping capacities to grow. This means attending not just to the surface characteristics of families of coping, such as problem-solving and negotiation, but also understanding their role in guiding development. Problem-solving is not just a "good" way of coping; it allows individuals to bring their actions in line with their own goals and the actualities of the current context for achieving them. Negotiation is not just a "good" idea; it permits individuals to identify their genuine priorities and discover and create options for realizing them.

Supporting "good coping" is like helping children and adolescents build tools they can use to shape their own development. Good coping allows people to seek optimally challenging contexts, to avoid or escape from overwhelming situations, to negotiate unavoidable harms and losses, to foresee stressful events, and to proactively take protective measures. Good coping permits individuals to listen closely to their own genuine desires and emotions, even when distressed, to appraise realistically yet optimistically, and to take the perspectives and wishes of others into consideration when trying to construct a causal account of stressful situations. Good coping enables people to respond autonomously and intentionally – to problem-solve and seek information so actions are more effective; to cooperate and shoulder responsibility so efforts are well coordinated with others; and to negotiate and accede in ways that are true to authentic values and priorities. Good coping deploys actions that are effective now and aligned with long-term goals, incorporates

respite and recovery, and coaxes growth from mistakes, failures, and unbearable losses. That idea – that the tools of coping have the power to influence development (e.g., Brandtstädter, 2009; Skinner & Edge, 1998) – has been an inspiration in our continued interest in unlocking the secrets and understanding the development of coping.

In the original proposal for this Handbook, we had intended to write a concluding chapter, entitled something like "An Emerging Agenda for the Study of the Development of Coping," where we would draw together threads from all the chapters into an organized and enumerated list. However, after the honor of reading all of these inspiring chapters, we have changed our minds. In keeping with the idea of the "bigger boat" called for by a developmental systems view of coping, we now understand that this whole book, embodied in every chapter, is the emerging agenda for the study of the development of coping. Generative and messy and mysterious – the agenda is the whole damn boat.

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