

Personal Risk and Resilience Factors in the Context of Daily Stress

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Abstract

This chapter focuses on the role that personal risk and resilience factors play as adults of all ages cope with the stressors encountered in everyday life. Theorists have suggested that researchers should focus on the effects of daily stress and coping rather than focusing exclusively on major life events and chronic stress and have proposed that understanding how adults cope with daily stress is a key aspect of understanding long-term well-being and adaptation in adulthood. After presenting a conceptual model outlining the major components of the daily stress process, the chapter reviews the existing empirical literature on personal risk and resilience factors in the context of daily stress. This research clearly suggests that there is no universal generalization that can be made with regard to whether chronological age, in and of itself, confers greater vulnerability or resilience onto adults. Instead we argue that researchers should ask *when and under what conditions* is age associated with *greater vulnerability* to daily stress and *when and under what conditions* is age associated with *greater resilience* to daily stress. Age differences in reactivity to daily stress are clearly embedded within a complex system of factors – structural, individual, and situational – that influence stress reactivity and stress recovery in a number of ways. This complexity should not be taken to mean that stress reactivity and recovery cannot be charted or understood. Researchers, however, will need to approach this complexity with a great deal of theoretical, methodological, and statistical rigor to move our understanding of the importance of age in shaping risk and resilience to daily stress forward. The final section of the chapter outlines several directions for future research in the area of aging and resilience. In particular, we argue that a focus on personal risk and resilience factors in the context of daily stress, in combination with the application of sophisticated statistical methods (e.g., dynamic systems modeling), will contribute to a more dynamic and person-centered understanding of processes of resilience.

Key words: Daily stress; personal risk and resilience factors; adult development and aging.

Introduction

The role and effects of risk and resilience factors in coping with stress have traditionally been studied in the context of life events and life transitions (Ryff, Singer, Love, & Essex, 1998), or in the context of chronic conditions of disadvantage and adversity (Masten, 2001). However, as research on stress and coping has increasingly moved from the laboratory to real-life settings (Zautra, 2003), this focus has shifted toward the role that such factors play in coping with daily stress (Diehl & Hay, 2010). The focus on daily stress was first advocated by Richard Lazarus and his colleagues in their work on the effects of daily hassles on adults' health (DeLongis, Coyne, Dakof, Folkman, & Lazarus, 1982). Lazarus and Folkman (1984) defined daily hassles as "the little things that can irritate and distress people" (p. 13). Thus, daily stressors are different from major life events and chronic stress, such as the burden of caregiving (see the chapter by Kiecolt-Glaser) or the stress resulting from a chronic health problem (see the chapter by Lavretsky), in that they often happen unexpectedly and are time-limited in their occurrence and effect. Typical examples of daily stress are: Having an argument with another person, getting stuck in a traffic jam while running late for a meeting, or getting some bad news. Although daily hassles tend to be less dramatic than major life events or chronic stressors, researchers assume that daily stressors can pile up within and across days, and can turn into chronic stressors if no resolution is found (e.g., continuous discord with one's spouse). Therefore, Lazarus and Folkman (1984) proposed that daily stressors may be more important for a person's long-term adaptation, health, and well-being than major life events (see also Almeida, 2005).

This chapter provides a review of the theoretical and empirical literature on *personal* risk and resilience factors in the context of daily stress. Risk factors are those personal characteristics that increase the person's vulnerability to daily stress, whereas resilience factors protect the

individual against the negative effects of daily stressors. This review has three major parts. The first part presents a conceptual framework that places personal risk and resilience factors into an overall process model of coping with daily stress. The second part reviews the findings of empirical studies with a specific focus on personal risk and resilience factors, and the final section outlines recommendations for future research and applied work with adults.

Throughout this chapter, we propose that in the context of daily stress, resilience is most appropriately defined as an individual's ability to maintain optimal functioning and to preserve the capacity for growth and positive adaptation despite the onslaught of daily challenges that can threaten the person's physical and/or psychological well-being (Ryff et al., 1998; Zautra, Hall, & Murray, 2010). In the context of daily stress, resilience is specifically indicated by the ability to quickly *recover* from the negative effects of the stressful events (e.g., reducing the negative emotions caused by a stressor) and by the *maintenance* of positive adaptation in the face of recurring stressors, as indicated by long-term psychological well-being (Zautra et al., 2010). Thus, although we acknowledge that resilience can be defined in a number of ways (e.g., as a trait, a process, or an outcome), we advocate a person-centered approach and focus our attention on those *personal characteristics* that facilitate or impede (a) an individual's recovery from the negative effects of daily stress and (b) the maintenance of positive adaptation and well-being over time. Overall, this view is more dynamic than a strict trait perspective of resilience and focuses on an individual's personal and social resources as they are activated in response to the situational demands and challenges that occur in peoples' daily lives.

A Process Model of Daily Stress

One of the most challenging observations in stress and coping research has been the great heterogeneity in individuals' reactions to life stressors (Lazarus, 1999; Ong & Bergeman, 2004).

This heterogeneity in stress responses suggests that individuals' reactions to the same stressor are highly idiosyncratic and depend on a number of personal and contextual variables. A conceptual model that delineates the major personal and contextual variables involved in coping with daily stress was presented by Almeida (2005; see Figure 1).

Almeida's (2005) model incorporates aspects of life-span development as well as findings of the stress and coping literature. Similar to Lazarus and Folkman (1984), Almeida (2005) defined daily stressors as those challenges that disrupt established routines or challenge a person's physical, social or psychological resources. Daily stressors may arise out of routine situations, such as work or family life, or they may be unexpected events, such as an unanticipated argument with another person or having a piece of equipment break down. Daily stressors have characteristics that can be assessed objectively, such as their frequency, content, focus of involvement, and severity. These characteristics are also associated with *subjective appraisals* that people form in response to the stressor. The key aspect of daily stressors, however, is that daily stressors have an *immediate effect* on the person's emotional and physical functioning on the day they occur. In addition, they have the potential to carry over to following days and to turn into chronic stressors. Stress researchers theorize that how individuals cope with daily stress will, in the long run, have effects on their general physical and mental health and may affect their vulnerability to developing long-term problems, such as depression or anxiety-related disorders (Zautra, 2003). Thus, although Almeida (2005) did not address issues of resilience per se, in an all encompassing stress and resilience model, daily stressors might themselves also be conceived of as risk factors that are capable of eroding a person's long-term well-being and their capacity to recover from other kinds of challenges.

Almeida's (2005) model also includes *vulnerability and resilience factors* (in this chapter called risk and resilience factors) that affect how individuals respond to the occurrence of daily stressors. These risk and resilience (i.e., protective) factors include sociodemographic, psychosocial, and general health-related characteristics. As stated above, risk factors increase individuals' vulnerability to the negative effects of daily stress, whereas resilience factors help individuals master the challenges of daily stress. As several authors have pointed out (Almeida, 2005; Lazarus, 1999; Ong & Bergeman, 2004; Zautra, 2003), the relations among these factors are currently not well understood, especially in terms of their long-term interplay and long-term outcomes. Sociodemographic factors, for example, have been shown to be associated with differential rates of stress exposure and, over time, seem to contribute to disparities in resources and overall health outcomes (Robert & Ruel, 2006). Indeed, one could argue that many sociodemographic variables (e.g., age, income, education, occupation) can be either risk or resilience factors depending on an individual's specific circumstances. Personality characteristics, such as control beliefs or emotional stability, have also been shown to play a role in how individuals cope with stress and have been linked with health outcomes (Neupert, Almeida, & Charles, 2007; Mroczek & Almeida, 2004). Similarly, pre-existing health and life stress conditions (e.g., chronic health problems; chronic life stress; Serido, Almeida, & Wethington, 2004) as well as the availability of social resources, such as social support, has been shown to affect the coping process (Rook, 2003). Figure 1 shows that risk and resilience factors are postulated to affect the health and well-being outcomes indirectly through the path of *stress exposure* and directly through the path of *stress reactivity*. The model also specifies a feedback loop from the outcomes back to the risk and resilience factors. Notably, this feedback loop suggests that successful coping may increase an individual's resilience, whereas deficient coping

may further increase a person's vulnerability. Although these processes, in general, also apply to chronic stressors and the effects of life events, in this chapter we address them specifically in the context of daily stress. Daily stressors are unique and different from chronic stressors because they have an acute effect on a person's behavior and well-being, and often require an immediate response to prevent further escalation.

Overall, this model provides a reasonable framework that can guide further theorizing and empirical research on the role of risk and resilience factors in the context of daily stress. In this chapter and in the subsequent review of the empirical literature, we will focus on one specific sociodemographic variable, namely chronological age, and several personality characteristics, such as neuroticism, self-concept differentiation, or beliefs of control, as risk or resilience factors that have been studied in daily stress research. Although we recognize that these personal risk and resilience factors do not operate in a social vacuum, our research so far has not addressed the role of social resources, and a detailed discussion of the role of social risk and resilience factors is beyond the scope of this chapter (see Ong & Bergeman, 2010). We return to the role of social resources in the final section of the chapter.

Review of Empirical Research

A body of literature is emerging based on studies that have examined individual differences in reactivity to and recovery from daily stress. Due to theoretical developments, such as the model presented by Almeida (2005), this research is increasingly cast within a framework of risk versus resilience, and researchers have examined a variety of factors that may influence adults' reactivity to stress, including sociodemographic factors, as well as stable and variable individual and situational factors. For example, when examining reactivity to daily stressors, researchers have considered the importance of chronological age (Birditt, Fingerman, & Almeida,

2005; Diehl & Hay, 2010; Neupert et al., 2007), neuroticism (Mroczek & Almeida, 2004), general beliefs of control (Neupert et al.), and global stress (Stawski, Sliwinski, Almeida, & Smyth, 2008), among others. Indeed, theoretical work on resilience has emphasized that resilient behavior is characterized by multiple factors (Ong & Bergeman, 2010). Thus, daily stress research with its focus on how multiple factors (i.e., different types of stressors as well as characteristics that may enhance or erode resilience) work together to produce adults' developmental outcomes and well-being represents an important avenue in understanding the phenomenon of resilience.

At present, studies using daily diary and interview methods or ecological momentary assessment methodologies to examine daily stressors have shown that adults exhibit both positive and negative emotional reactivity (Smyth, Ockenfels, Porter, Kirschbaum, Hellhammer, & Stone, 1998; Uchino, Berg, Smith, Pearce, & Skinner, 2006) and physical reactivity to stressors (Neupert et al., 2007; Hay & Diehl, 2010). Such research, however, typically considers risk and resilience factors in isolation from one another and has yet to consider how, all together, they may promote or detract from resilience. Despite such limitations, in the following section we review the findings from these studies and what they suggest about adult development, aging, and resilience.

Age and Reactivity to Stress

A number of studies have considered the role of age in daily stress and researchers have varied in terms of whether they consider age, and age-associated factors, such as physical health, cumulative life stress, or marital status, to render adults more vulnerable to stress (e.g., Mroczek & Almeida, 2004) or to confer some degree of resilience upon adults (e.g., Uchino et al., 2006). Overall, research suggests that the rate of exposure to daily stressors tends to decline with age

(Almeida & Horn, 2004; Stawski et al., 2008). Thus, when it comes to daily stress, older adults tend to be at an advantage over younger adults simply in terms of the number of stressors they have to contend with.

Findings regarding the role of age in terms of *reactivity* to daily stress, however, are more equivocal. For instance, Mroczek and Almeida (2004) showed that daily stress, such as having had an argument with someone, stressful events at work or at home, or having had something bad happen to a relative or close friend, was more strongly associated with negative affect among older versus younger adults. This suggests older adults are more vulnerable to the detrimental effects of daily stress than younger adults. Other researchers, however, have found the opposite. Uchino et al. (2006), for example, reported that older individuals showed less of an increase in negative affect during episodes of daily stress compared to their younger counterparts. Still other research finds no age differences in emotional reactivity to stress (Stawski et al., 2008).

These mixed findings very likely reflect numerous factors. Studies differ, for example, in the kinds of outcomes they consider (e.g., physical versus psychological outcomes), in the age ranges of included participants, and in whether age differences in stressor exposure are considered. A closer look at the ages considered in recent studies, for example, reveals that participants in Mroczek and Almeida's (2004) study were adults who ranged in age from 25 to 74 years, whereas Uchino et al.'s (2006) sample ranged in age from 36 to 75 years of age. Both samples, therefore, did not include the oldest-old, a group that some researchers have argued may show lowered reactivity to stress as a consequence of (a) lowered physiological reactivity (Levenson, 2000), (b) less stress exposure (Stawski et al., 2008), and (c) more effective proactive coping (Diamond & Aspinwall, 2003). On the other hand, the oldest-old could potentially be an age group that is very vulnerable in terms of daily stress when it occurs. This may be especially

the case if daily stressors pile on to existing chronic stressors, such as a chronic health condition. Further data, preferably from longitudinal studies, are needed to address these open questions and to provide a clearer understanding of the role of age in coping with daily stress.

Research increasingly suggests that it is very likely that age differences in reactivity to stress are conditioned by other factors, including differences in adults' perceptions of personal control, personality traits and self-perceptions, and the types of stressors they are exposed to. To truly understand the role of age in resilience and reactivity to stressors, it is therefore necessary to consider age within the larger context of person-specific risk and resilience factors. Thus, we direct our attention to those studies that have examined the effect of age in the context of such person-specific risk and resilience factors.

Age, Perceptions of Control, and Reactivity to Stress

In keeping with a long history of work showing that personal control beliefs play an important role with regard to adjustment and well-being (Bandura, 1997), research on daily stress has begun to consider the role that perceptions of control play in reactivity to daily stressors. Perceptions of control develop and change as individuals navigate events that confirm, or disconfirm, their beliefs about control (Eizenman, Nesselroade, Featherman, & Rowe, 1997). Theory and research suggest that adults' general perceptions of control are relatively stable and trait-like, but that they are not completely invariant. Notably, adults' perceptions of control vary across life domains (Lachman & Weaver, 1998) and exhibit both long-term change and short-term variability (Eizenman et al., 1997). Research on daily stress has shown that greater trait-like perceptions of control are associated with lower reactivity to stressors in daily life. For example, Neupert et al. (2007) reported findings from the National Study of Daily Experiences showing that lower levels of perceived control were related to greater emotional and physical reactivity to

stressors in the interpersonal and work domain, and to greater emotional reactivity to network stressors.

A growing body of research also suggests that adults' perceptions of control vary from day-to-day and may influence health outcomes and be associated with reactivity to daily stress (e.g., Ong, Bergeman, Bisconti, & Wallace, 2006). For instance, Ong et al. (2006) showed in a daily diary study with bereaved women that the stress-anxiety association was significantly reduced on days of greater perceived control. As well, Hay and Diehl (2010) showed that daily perceptions of control were associated with reactivity to stress in varying ways depending upon the stressor type and age of the adults. For instance, data from this study showed that interpersonal stressors were not associated with increased psychological distress when adults perceived having high control on a given day; however, interpersonal stressors were associated with increased psychological distress on days that adults perceived having little control (Hay & Diehl, 2010; see Figure 2).

Research also suggests that the importance of perceptions of control for adults' reactivity to stress may vary across adulthood. For instance, Neupert et al. (2007) found that emotional reactivity to stressors in a person's social network (i.e., network stressors) depended on age and perceived control. In particular, young and middle-aged adults showed greater reactivity to network stressors when they perceived low control, whereas older adults' reactivity to network stressors was unrelated to their level of perceived personal control. Although these age differences in personal control have to be interpreted with caution because they are confounded with potential cohort effects, if they were indicative of true developmental change, then this would suggest that age-related changes in personal control positively affect older adults'

resilience in the context of daily stress (i.e., in that perceiving low control is no longer detrimental).

Taken together, findings from these studies suggest that beliefs of personal control do not only matter as an individual difference variable (i.e., between-person characteristic), but that they also play an important role as a *within-person characteristic* when individuals cope with daily stress (see also Eizenman et al., 1997). Next, we will discuss research that has examined the effects of age in the context of other person-specific characteristics, such as personality traits and self-representations.

Age, Neuroticism, Self-Representations, and Reactivity to Stress

Several studies have examined the role of personality traits and the self-concept with regard to reactivity to daily stress. Notably, early work showed that individuals high in neuroticism were more emotionally reactive to stressors than individuals low in neuroticism (Marco & Suls, 1993). Adults with high neuroticism scores appear to be particularly vulnerable to interpersonal stressors compared to adults who score low on neuroticism (Bolger & Schilling, 1991).

Several studies have also considered the importance of adults' self-representations, or self-concept, for stress reactivity. The terms "self-representations" or "self-concept" are here used interchangeably to refer to those attributes that are (a) part of a person's self-understanding and self-knowledge, (b) the focus of self-reflection, and (c) consciously acknowledged by the person through language or other means of communication. In general, research has focused on two features of adults' self-representations, namely their *content* and *structural organization*. First, there are several studies that have focused on the content of adults' self-representations, such as individuals' sense of self-esteem. Kernis (2003), for example, has examined the

association between self-esteem stability and psychological functioning in young adults (i.e., college students). Kernis' studies have shown that young adults whose self-esteem was unstable responded to daily stressors with greater fluctuations in depressive symptoms and also showed higher levels of overall depressive symptomatology (Kernis, 2003). To date, similar research does not exist for older adults and it remains an open question whether self-esteem stability serves as a similar resilience factor in later life when individuals' well-being is challenged by the occurrence of certain daily stressors (Brandtstädter & Greve, 1994).

The second line of research has focused on how adults' self-representations are structurally organized (e.g., Rafaeli-Mor & Steinberg, 2002). Researchers have focused on the structural organization of individuals' self-representations because it has been assumed that different self-concept organizations are associated with different ways of processing self-relevant information, which, in turn, are associated with either adaptive or maladaptive outcomes (Rafaeli-Mor & Steinberg, 2002; Diehl & Hay, 2010). Research on a variety of different, but related, aspects of adults' self-concepts suggests that self-concept organization is associated with stress reactivity. For instance, Zeigler-Hill and Showers (2007) showed that individuals who described their self-concepts using both positive and negative attributes within roles (i.e., integrated organization) were less reactive to daily stress than individuals who used primarily positive or negative attributes to describe themselves within roles (i.e., compartmentalized organization). Similarly, McConnell, Strain, Brown, and Rydell (2009) found that individuals low in self-complexity (i.e., who described themselves as being relatively similar across the different domains/roles of their lives) were more reactive to negative life events than individuals high in self-complexity. Irrespective of negative life events, however, McConnell et al. also

found that adults high in self-complexity had poorer psychological well-being than adults low in self-complexity.

Building on work in the area of self-concept development, our research team has considered the role of *self-concept differentiation (SCD)* in stress reactivity (Diehl & Hay, 2010; Hay & Diehl, 2010). SCD reflects the extent to which individuals see themselves differently across different roles and domains of life and fits within the larger literature on how self-knowledge is associated with processes of self-regulation and psychological well-being (Rafaeli-Mor & Steinberg, 2002). Two main perspectives exist on the adaptive value of SCD and related constructs. Some authors (Gergen, 1991; Linville, 1987) have argued that greater self-complexity is adaptive because the negative effects of stressors experienced in one role are less likely to “spill over” into other roles. This perspective is consistent with the view that individuals who are specialized within social roles can respond more flexibly to role-specific demands (Gergen, 1991). In contrast, the second perspective argues that individuals with a highly differentiated self-concept lack a coherent sense of self and show a fragmented identity that may undermine their sense of biographical continuity and meaningfulness (Brandtstädter & Greve, 1994). Based on this perspective, individuals with a highly differentiated self-concept would therefore be expected to show poorer coping with daily stress and, over time, maladaptive outcomes.

At present, research on the role of SCD in stress reactivity is somewhat limited and study findings are mixed. This seems to reflect the fact that the role of SCD in stress reactivity appears to be moderated by additional risk and resilience factors, including individuals’ chronological age. Indeed, in our research, we have found that self-concept structure moderated age differences in adults’ reactivity to stress (Hay & Diehl, 2010). For instance, we showed that older adults with low SCD (i.e., high self-concept coherence) were particularly resilient to daily stressors that

occur within the home domain (e.g., home demands and family responsibilities) when compared to younger adults. In contrast, possessing low SCD did not confer any degree of resilience on young adults coping with home stressors. For older adults, therefore, having a particular self-concept structure, such as having a highly differentiated self-concept, may be particularly maladaptive when they are confronted with certain types of stressors. These findings are consistent with some theorists' propositions that individuals' self-representations may be particularly important in old age when negative age-related changes, such as cognitive decline or losses of friends and family, challenge a person's self-concept (e.g., Brandtstädter & Greve, 1994; Freund & Smith, 1999).

Currently, relatively little research examines *how* the structural organization of adults' self-representations influence reactivity to stress. Indeed, some researchers in this area have begun to call for a greater focus on examining the precise mechanisms through which self-concept attributes and structures influence reactivity to stress (Hay & Diehl, 2010). It is clear, nonetheless, that the ways in which adults think about themselves influence their reactivity to daily stressors and theoretical and empirical work increasingly suggests that the structural organization of these self-representations may be a particularly important source of resilience when older adults are faced with stressors.

Age and the Importance of Stressor Domain in Influencing Reactivity to Daily Stress

Similar to research in the laboratory, research on daily stressors has shown that not all stressors are created equal, and investigators have examined reactivity to various stressors, including interpersonal, work, network, and home stressors (e.g., Bolger, DeLongis, Kessler, & Schilling, 1989; Hay & Diehl, 2010; Neupert et al., 2007). Research clearly suggests that interpersonal stressors are more relevant to daily well-being than other stressors (Bolger et al.,

1989; Neupert et al., 2007). Age differences in reactivity to stressors may, therefore, depend upon the stressor under consideration and the importance of age for stress reactivity may look quite different when stressors are considered overall versus within specific life domains or social roles. Indeed, in analyses that aggregated multiple types of stressors, Mroczek and Almeida (2004) found that a higher age was associated with increased reactivity to stress. Subsequent studies drawing on the same sample, however, showed that age was associated with reduced reactivity to *interpersonal* stressors (Birditt et al., 2005; Neupert et al., 2007) and unrelated to reactivity to *home, work, or network* stressors (Neupert et al., 2007) when a domain-specific approach was taken. These latter findings suggest that older adults seem to respond to certain stressors differently than younger adults. Especially in the interpersonal domain older adults seem to apply more proactive coping strategies (Diamond & Aspinwall, 2003), which is consistent with other research on age differences in coping strategies (Diehl, Coyle, & Labouvie-Vief, 1996) and with the major propositions of Socioemotional Selectivity Theory (Carstensen, Isaacowitz, & Charles, 1999). However, longitudinal data are needed to draw more definitive conclusions and to rule out that these observed age differences are indeed due to age-related changes and not due to cohort differences.

Compared to younger adults, older adults experience fewer interpersonal stressors and may be less reactive to them (Birditt et al., 2005; Neupert et al., 2007), although not all research shows such age differences (Hay & Diehl, 2010). Older adults may be more resilient to the detrimental effects of interpersonal stressors because of improvements in emotion regulation with age (Carstensen, Pasupathi, Mayr, & Nesselroade, 2000), more proactive coping in the interpersonal domain (Diamond & Aspinwall, 2003), or as a result of other risk and resilience factors that interact with age, or as a combination of all three processes. For instance, Neupert et

al.'s (2007) research suggests that when young adults perceive low control they are particularly reactive to interpersonal stressors. In contrast, older adults' reactivity to interpersonal stressors does not appear to be heightened when they perceive low control. Such a pattern suggests that risk factors that heighten vulnerability to stress at younger ages may no longer exert the same effect in later adulthood.

Adults, of course, are not just exposed to interpersonal stressors but also experience a variety of other stressors including home stressors, family demands, and social network stressors. Research shows that although these stressors do not have the great impact of interpersonal conflicts and stressors, they can still have detrimental emotional and physical effects (e.g., Hay & Diehl, 2010; Neupert et al., 2007). Furthermore, as noted above, understanding how stressors and challenges accumulate in the context of risk and resilience factors may be key to disentangling why some adults appear more resilient than others. However, research on the effects of stress pile-up from different life domains and within and across days is currently very limited (see, for example, Grzywacz & Almeida, 2008). Thus, additional research is very much needed in order to gain a better understanding of the short- and long-term effects of cumulative risk resulting from stressors in adults' daily lives in general and in old age in particular.

Interestingly, despite the fact that older adults are at greater risk of experiencing health-related stressors, Hay and Diehl (2010) found that younger adults were actually more physically reactive to health stressors than older adults. Such a pattern may reflect that older adults perceive a certain degree of health stress as being normative (Leventhal & Crouch, 1997) and such a perception may offer a certain degree of resilience to health stressors, particularly if they are relatively mild. Alternatively, age differences in reactivity to health stressors may reflect age differences in the types of health stressors individuals encounter, with older adults experiencing

higher rates of chronic conditions and younger adults experiencing more acute illnesses and accidents (National Safety Council, 2006; Manton, 1997).

Research also suggests that younger and middle-aged adults experience more *home stressors* than older adults (Almeida & Horn, 2004). At first glance, research suggests that there are few, if any, age differences in reactivity to home stressors (e.g., Neupert et al., 2007).

However, Hay and Diehl (2010) showed that older adults with lower SCD (i.e., a more coherent self-concept) were particularly resilient to home stressors when compared to younger adults. In contrast, having a more coherent self-concept did not confer any resilience on young adults who reported home stressors.

Stressors that happen to close friends or family members, called *network stressors*, also influence adults' daily mood and physical symptoms. Research by Neupert et al. (2007) suggests emotional reactivity to network stressors depends upon both age and perceived control.

Specifically, Neupert et al. (2007) showed that younger and middle-aged adults were more reactive to network stressors when they perceived having little control. Interestingly, however, the same association did not hold for older adults. Instead, older adults with high levels of mastery were equally reactive to network stressors as older adults with low levels of mastery.

It is not obvious why perceptions of control should play a role in younger, but not older adults' reactivity to network stressors. Indeed, research by Hay and Diehl (2010) found no evidence that age or perceptions of control influenced psychological reactivity to network stressors. Hay and Diehl (2010) speculated that because network stressors, by definition, happen to other individuals, adults' own repertoire of coping strategies and their own perceptions and characteristics (e.g., age, perceived control, SCD) may be less relevant in determining resilience and may, therefore, not be as likely to mitigate the distress arising from such stressors.

Overall, therefore, research suggests that adults' reactivity to stress is shaped by a variety of personal risk and resilience factors that interact in different ways across stress domains and the course of adulthood. This complexity means that relatively simplistic studies that only consider the main effects of personal risk and resilience factors or conceive all stressors as being equal will be unlikely to move our understanding of resilience to daily stress forward in substantial ways. Indeed, researchers are increasingly moving towards more complex models of stress reactivity (e.g., Almeida, 2005; Diehl & Hay, 2010). Notably, researchers are increasingly calling for studies that draw on the work we have reviewed in this chapter and also incorporate the large body of work on physiological aging and stress (e.g., see the chapter by Kiecolt-Glaser in this volume). Drawing on both of these literatures, researchers need to make a more concerted attempt to understand how psychosocial risk and resilience factors and physiological processes together shape age differences in reactivity and resilience to daily stressors and the long-term consequences of stress (Piazza, Almeida, Dmitrieva, & Klein, 2010; Segerstrom, 2007).

Recommendations for Future Directions

The focus of this chapter was on the role and effects of personal risk and resilience factors in the context of daily stress across the adult lifespan. Although the past ten years or so have seen a good deal of progress--including both theoretical and empirical knowledge--in understanding stress and coping processes as they unfold in individuals' everyday lives, there are still many unanswered questions that need to be addressed in future research. Therefore, we will close this chapter with a section that focuses on recommendations for future directions in research and practice.

Investigating Multiple Risk and Resilience Factors and their Potential Interactions

One of the major recommendations for future research is that investigators need to examine the effects and dynamic interactions of multiple risk and resilience factors *simultaneously* rather than in isolation. With few exceptions (Diehl & Hay, 2010; Montpetit,

Bergeman, Deboeck, Tiberio, & Boker, 2010), studies on risk and resilience factors in the context of daily stress have largely adopted a single-variable approach. That is, studies tend to focus on one aspect of risk or resilience at a time, without considering potential interactions with other variables of interest. For example, the effect of trait resilience in the context of daily stress was examined in one study (Ong, Zautra, & Reid, 2010) and the effect of negative affectivity was examined in another (Neupert, Mroczek, & Spiro, 2008). Although these studies made valuable contributions to the literature, they are limited in elucidating how resilience is expressed in the interaction of multiple personal characteristics, and how multiple personal and contextual features contribute to the successful recovery from the negative effects of daily stress (Zautra et al., 2010). Ideally, such a study would require following an age diverse group of adults over a lengthy period of time while attempting to sample the full universe of stressors they experience (i.e., daily stressors, chronic stressors, and any acute high-impact stressors, such as critical life events) as well as evaluating the multiple risk and resilience factors they may possess both at the individual level and within their wider social networks (i.e., social support and community-based social resources). Moreover, such a study would also combine measurement bursts (e.g., within and across days) within a long-term longitudinal framework (e.g., across months and years), thus permitting the modeling of the short-term effects of daily stressors and the modeling of the long-term processes of resilience and adaptation. Thus, future research needs to adopt a more *dynamic perspective* with regard to coping with daily stress and needs to examine how multiple risk and resilience factors interact with each other in the context of daily stress (Lee-Flynn, Pomaki, DeLongis, Biesanz, & Puterman, 2011). Moreover, risk and resilience factors representing *different and multiple levels* of human behavior (i.e., from the physiological to the psychological level) need to be studied to understand the complex connections between day-to-day processes

and long-term outcomes, as well as the complex associations between physiological, psychological, and behavioral variables (Segerstrom, 2007).

Modeling the Dynamics of Coping with Daily Stress

To gain a better understanding of the dynamics of coping with daily stress, emphasis also needs to be put on three additional areas of research. First, more refined theoretical models and the application of more sophisticated statistical methods are needed to describe processes of *stress accumulation* (i.e., how stress may pile up over multiple days) and processes of *stress recovery*. So far, studies have focused on the effect of daily stress on affect, mood, or physical symptoms on the same day, or the lagged effect on the next day. However, to date few studies have considered the accumulating effect of stress on affect or other outcomes (for exceptions, see Bolger et al., 1989; Marco & Suls, 1993), and none have considered how different risk and resilience factors may contribute to this process either individually or jointly. For example, when a person experiences stress for five days in a row, how may the effects of the same or different stressors build up from day 1 to day 5? What does the individual's affect experience look like within and across those five days? Are the effects of the stressors that occurred on day 1 diminished because the individual has to deal with new stressors on the next few days? Or does the effect of the stressors grow exponentially across the five stressful days? Does it make a difference whether the stressors arise from the same problem/life domain or whether they arise from situations in different life domains? All of these questions are currently insufficiently addressed and require more attention. Recently, studies have emerged that have used *dynamical systems modeling* to describe the process of stress recovery in real time (Bisconti, Bergeman, & Boker, 2004; Montpetit, et al., 2010). Dynamical systems analysis techniques enable researchers to model (a) how adults' emotional states oscillate around their own overall trend and how they

are amplified or dampened over time in response to daily stress (i.e., recover from daily stress); (b) how individual difference variables (i.e., risk and protective factors) alter adults' recovery patterns in response to specific stressors and their overall trajectories of adaptation; and (c) how features of patterns of oscillations and trends are linked with outcomes (e.g., resilience or maladaptation). Thus, this analytical approach holds a great deal of promise for understanding processes of coping with daily stress and how personal risk and resilience factors may shape individuals' resilience and adaptation over time (Montpetit et al., 2010). Further development in the application of dynamical systems modeling to the area of stress and coping research can also be applied to research on how the effects of stressors accumulate over time (i.e., stress pile-up) and how individuals recover from stressor pile-up.

Second, research on daily stressors has so far considered how protective factors may confer some resilience on adults as they cope with daily stress (e.g. Ong, Bergeman, Bisconti, & Wallace, 2006). However, as Zautra and colleagues (2010) noted, resilience may also be appropriately defined as an *outcome* of successful adaptation to adversity. Resilience therefore may be seen as a dynamic process whereby resilience can be enhanced (or eroded) in both short- and long-term ways by a variety of stable and variable characteristics of the individual, their social network, their environment, etc. Within the context of daily stress, it is therefore essential to ask questions such as: To what extent might overall resilience be built through individuals' experiences with daily stress? How do individuals become more resilient as they cope with adversity and gather experience on how to best cope with stressors? There is, for example, research suggesting that certain individuals may experience post-traumatic growth from major life events, such as surviving cancer (Cordova, Cunningham, Carlson, & Andrykowski, 2001; Park, Mills-Baxter, & Fenster, 2005). Could exposure to and successful coping with daily stress

perhaps have a similar effect (i.e., “steeling effect”; see Rutter, 2005) and contribute to the development of resilient behavior (see also Diehl, 1999).

At present such questions remain mostly unanswered. Indeed, research on daily stress has focused on understanding the negative consequences of daily stress exposure and has clearly demonstrated that daily stress is negatively associated with emotional and physical well-being. Little research, however, has considered whether daily stressors – experienced in an amount that is not unrelenting or overwhelming to the individual – may be adaptive, perhaps by offering adults a chance to exercise their coping skills and develop a sense of mastery and self-efficacy (Bandura, 1997) within the context of stressors that are typically short-lived and of low-to-moderate intensity. At present, therefore, little is known about whether or how individuals may experience growth from daily stress, or from being exposed to certain types of daily stressors (e.g., stressors that are experienced as positive because they challenge a person’s competence and sense of self). At the same time, empirical evidence suggests that daily stress is prevalent and plays an important role in health and psychological well-being (Almeida, 2005). Thus, there is good reason to speculate that under certain circumstances individuals with certain characteristics may learn and gain resilience from coping with daily stress.

Third, although space constraints prevent us from discussing in any detail the importance of considering physiological processes in stress (see the chapter by Kiecolt-Glaser, this volume), future research on risk and resilience factors in daily stress also needs to incorporate markers of the physiology of stress. Age is clearly associated with profound changes in adults’ biological systems. Consequently, a full understanding of age differences and age-related changes in risk and resilience to stress necessitates that researchers consider how processes of physiological aging and stress reactivity influence one another across adulthood (Piazza et al., 2010).

Translating Findings from Basic Research into Intervention Programs

Another challenge for future work is to apply findings from basic research studies to the development and implementation of translational intervention programs. That is, from an applied perspective it is increasingly important to ask which findings may lend themselves to the translation into community-based intervention programs with the objective to prevent stress-related disorders and to enhance adults' resilience to the negative effects of daily stress. Some of the key questions that need to be addressed in this context are: Can resilient behavior in the context of daily stress be taught to adults? What are the personal and contextual preconditions that facilitate adults' motivation to critically examine their existing coping strategies and to acquire more effective ones, if indicated? How can stress-related resilience in older adults be built and maintained in their communities?

Whether such efforts of translational work are successful will, to some extent, depend on the view that researchers take with regard to the concept of resilience. For example, researchers who view resilience as a trait assume implicitly that it is a relatively stable and enduring feature of the person and, hence, may not be easily modified. Such a view therefore also suggests that resilience-enhancing interventions may be best achieved through attempts to modify adults' environmental conditions. In contrast, the resilience-as-process approach implies that a person's resilience may be built and enhanced in ways that can benefit the individual across many domains of his or her life (Kent & Davis, 2010). Indeed, research on the effects of therapeutic interventions has shown that training in life skills and adaptive coping strategies have beneficial effects in individuals with psychopathologies (Joy & Vaillant, 2010; Kent & Davis, 2010). The next crucial step is to gain a better understanding of the feasibility and effectiveness of translational (therapeutic) interventions in non-clinical older adults.

Is there a Specific Ecology of Resilience in Late Life?

Finally, because of the increased uncertainties and vulnerabilities that adults experience in very late life (Baltes & Smith, 2003), researchers also need to address the potential threats to the maintenance of resilient behavior in late life. In the context of daily stress, there is emerging evidence that older adults report more health-related stressors than young and middle-aged adults (Hay & Diehl, 2010). Whether health-related stressors have a particular potential to undermine individuals' coping strategies and beliefs of control, however, is currently an open question and will require further investigation. On the surface and at first glance, it seems quite reasonable to assume that health-related stressors, especially if they are severe and chronic in nature, may take on a particular meaning for an individual and may therefore gain a particular status with regard to threatening that person's resilience, both in terms of personal as well as social resources.

Similarly, little is currently known about how some of the *normative cognitive and interpersonal changes* (e.g., loss of family members and friends) that can be observed in very late life may undermine and threaten an individual's resilience. Thus, the overall question that needs to be addressed in the future is whether the specific conditions of very late life (i.e., the "Fourth Age") create a specific ecology that is not friendly to older adults with regard to maintaining the behaviors and resources necessary for resilience.

Concluding Remarks

The concept of resilience has received increasing attention in the adult development and aging literature (Greve & Staudinger, 2005; Reich, Zautra, & Hall, 2010; Ryff et al., 1998). This increased attention serves as an acknowledgment that adults possess considerable reserve capacity that they can bring to bear "when life gets tough" and challenges their adaptive capacity and well-being. In fact, several authors have argued that middle-aged and older adults may be particularly well suited to study processes of risk and resilience (Ong & Bergeman, 2004). Although, in principle, we agree with these general

arguments, the review of the literature provided in this chapter also challenges us to reflect on the concepts of risk and resilience in innovative and creative ways.

For example, we would argue that research now clearly suggests that there is no universal generalization that can be made with regard to whether chronological age, in and of itself, confers greater vulnerability or resilience onto adults. Indeed, we would like to argue that researchers should move away from the relatively simple question of whether age is associated with greater risk or resilience among adults in the context of daily stress, but rather ask *when and under what conditions* is age associated with *greater vulnerability* to daily stress and *when and under what conditions* is age associated with *greater resilience* to daily stress. Age differences in reactivity to daily stress are clearly embedded within a complex system of factors – structural, individual, and situational – that influence stress reactivity and stress recovery in a number of ways. This complexity should not be taken to mean that stress reactivity and recovery cannot be charted or understood. Researchers, however, will need to approach this complexity with a great deal of theoretical, methodological, and statistical rigor to move our understanding of the importance of age in shaping risk and resilience to daily stress forward.

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Figure 1. Daily stress process model proposed by Almeida (2005). Reprinted by permission.

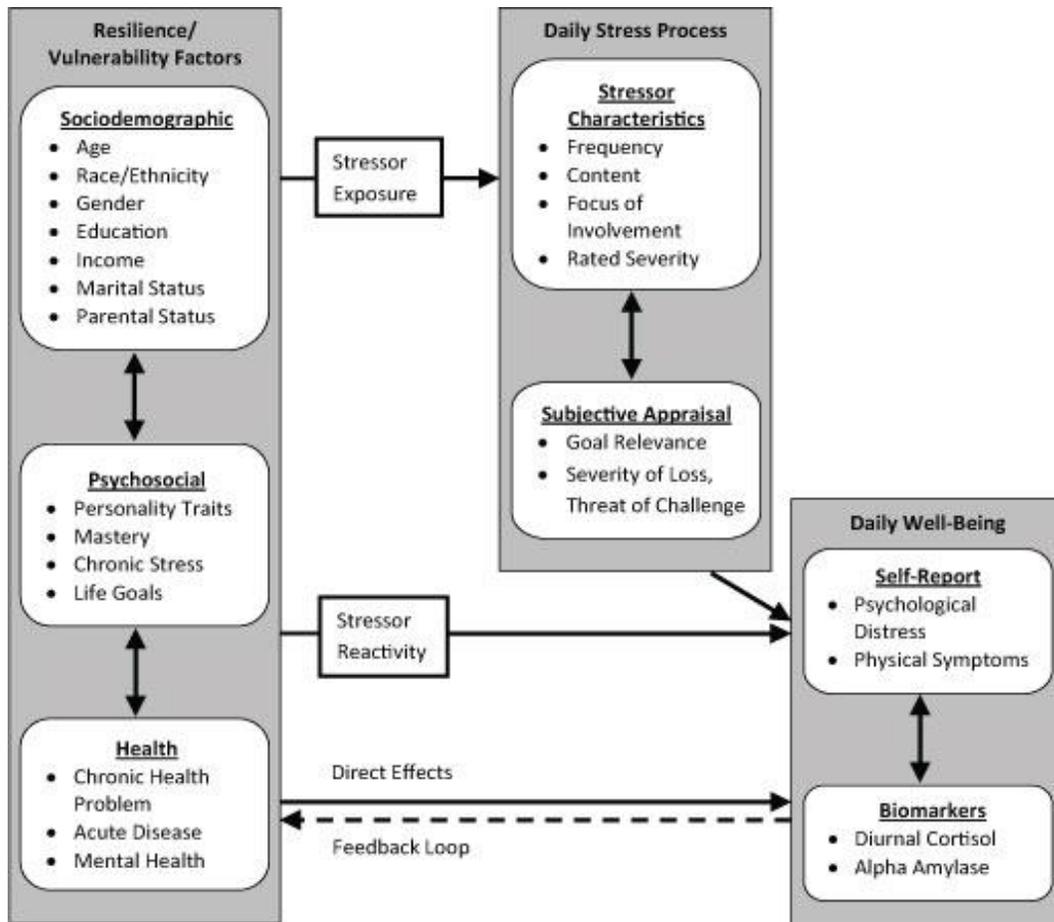


Figure 1. Daily Stress Process Model

Figure 2. The influence of level of control on adults' reactivity to daily interpersonal stress.

