

Feature Article

Utilizing Principles of Life-Span Developmental Psychology to Study the Complexities of Resilience Across the Adult Life Span

Frank J. Infurna, PhD*

Department of Psychology, Arizona State University, Tempe, Arizona, USA.

*Address correspondence to: Frank J. Infurna, PhD, Department of Psychology, Arizona State University, 950 S. McAllister Avenue, Tempe, AZ 85287, USA. E-mail: Frank.Infurna@asu.edu

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Abstract

Life-span developmental psychology includes a broad array of principles that have wide application to studying adult development and aging. Three principles have guided my past, current, and future research: (a) development being a cumulative, lifelong process with no one period taking precedence; (b) multiple processes influence development (e.g., age-, pathology-, nonnormative, and mortality-related processes); and (c) development is multidirectional and multidimensional. This paper elaborates on how these principles have guided my research studying resilience to adversity across the adult life span and how my research aligns with guiding elements of resilience across definitions and literatures. I also discuss my current and future research of applying these principles to studying resilience in midlife, which emphasizes how the defining features of midlife lend themselves to examining resilience, midlife continues to not be well understood, midlife health foreshadows health in old age, and the experience of midlife will evolve in the context of an increasingly diverse society. The last section elaborates on additional directions for future research, such as the promise of intensive longitudinal research designs that incorporate qualitative approaches and examining historical changes in midlife health and well-being. In conclusion, a life-span developmental psychology framework has wide application for elucidating the nature of resilience across the adult life span through the integration of its principles with existing paradigms and research designs that blend contemporary methods with mixed methodology.

Keywords: Adult life span, Multidirectional and multidimensional, Opportunities and challenges of midlife, Resilience

Baltes (1987) outlines the theoretical principles that are characteristic of life-span developmental psychology. In this paper, I illustrate how I have used these principles to study resilience to adversity across the adult life span, and elaborate on fruitful avenues for future research in this area.

Utilizing Principles of Life-Span Developmental Psychology to Study Resilience

Three principles of life-span developmental psychology have guided my research: (a) life-span development, (b)

multiple processes influencing development, and (c) development is multidirectional and multidimensional. The principle of life-span development signifies that development is a cumulative, lifelong process with no one period in the life span being more important than others and the demands and tasks differing across periods. For example, development in midlife is influenced by early-life conditions (Ferraro et al., 2016) and present-life conditions of work, finances, and intergenerational relationships (Infurna et al., 2020; Lachman, 2004). Midlife health behaviors foreshadow health in old age (Lachman et al., 2015).

A second principle that has guided my research is the notion that development reflects a combination of age-, pathology-, nonnormative-, and mortality-related processes (Birren & Cunningham, 1985; Featherman & Petersen, 1986). Research on understanding developmental processes in metrics other than chronological age has been around for decades (e.g., terminal drop in cognitive changes; Kleemeier, 1962; Riegel & Riegel, 1972). This research signifies how development may be better reflected by the onset of a chronic illness, major life stressor, or the years leading up to death than by chronological age (Featherman & Petersen, 1986; Gerstorf & Ram, 2013). For example, Gerstorf and colleagues (2008) have demonstrated that developmental changes in subjective well-being may be better characterized by time-to-death than by chronological age. This research signifies that development is a complex and heterogeneous process that cannot be explained solely by chronological age. Realigning the time metric in relation to a major life stressor or mortality provides a clearer picture of a homogeneous change process. Studying groups of individuals who experienced the same adversity positions researchers to examine between-person differences in change and factors that promote better outcomes and could inform interventions.

The principle of multidimensionality refers to how pertinent domains consist of multiple facets that are interrelated. Multidirectionality includes the notion that developmental changes in outcomes may show differences in their timing or onset of change, direction, and rates of change, or some combination of timing, direction, and rates of change. In the instance of terminal drop, there are between-person differences in its year of onset prior to death and rate of change before and after onset with outcomes showing differences in these parameters (e.g., cognition vs well-being; Gerstorf & Ram, 2013; Kleemeier, 1962; Riegel & Riegel, 1972). Furthermore, subjective well-being consists of life satisfaction, positive affect, and negative affect. Infurna and Luthar (2017a) found cross-domain variability in change in each outcome before and after spousal loss with persons less likely to exhibit resilience in positive and negative affect as compared to life satisfaction. They also observed how positive and negative affect took longer to bounce back following spousal loss as compared to life satisfaction.

Resilience

The resilience literature has a long history, which has led to many concepts and definitions. Table 1 presents some of the prominent definitions used in the developmental and adult development and aging literatures. Six core elements of resilience emerge across the definitions: (1) exposure to risk or adversity, (2) the response or manifestation of positive adaptation despite encountering risk or adversity, (3) individual variations surrounding response to risk or adversity, (4) protective factors that predict positive adaptation, (5)

resilience is a dynamic process that requires methodology to match this notion (e.g., use of contemporary methods of analysis and longitudinal data), and (6) resilience is a multidimensional construct.

There are numerous types of risk or adversities that have been studied. Resilience research that originated in developmental psychology primarily focused on children's resilience in the context of poverty, divorce, maltreatment, or war (Luthar et al., 2000; Masten & Narayan, 2012). Adversities examined in the adult development and aging literature include adverse life events (e.g., bereavement, unemployment), chronic stressors (e.g., caregiving for a family member), and clinical trauma (e.g., being involved in a major accident; Jayawickreme et al., 2021). These life challenges are uniquely characterized by discrete and, in principle, observable environmental and social changes that precipitate the need for adjustment in identity or life routines (Dohrenwend, 2006; Gray et al., 2004). The wide range of adversities that have been studied within a resilience framework is one potential reason why numerous definitions exist.

The second element of resilience is manifestation of positive adaptation despite risk or adversity. Positive adaptation can take different paths or trajectories. Exploration of different pathways has been advanced with the advent of growth mixture modeling (GMM), which is a statistical method of analysis that allows researchers to illuminate discrete trajectories of change (Grimm et al., 2017). Figure 1 illustrates the most commonly observed trajectories, including resilience, recovery, chronic low, and growth (Infurna & Luthar, 2018). Resilience is considered a trajectory of stable, healthy levels of psychological functioning before and after adversity. Recovery is characterized by decrements in psychological functioning because of the adversity followed by a return to near-previous levels. Chronic low is characterized by individuals showing stable, low levels of psychological functioning before and after adversity. Growth encompasses enduring improvements as a result of the adversity (Infurna & Jayawickreme, 2019).

The third element of resilience involves individual variations in change following adversity. This is exemplified in Figure 2, which shows large between-person differences in the extent to which spousal loss impacts life satisfaction. The solid black line represents the model-implied average taken from the sample under study and the gray lines represent model-implied changes from a subset of participants. Figure 2 represents a microcosm of Rutter's (1987) broader consideration of resilience, stating that "Resilience is concerned with individual variations in response to risk. Some people succumb to stress and adversity whereas others overcome life hazards" (p. 317). Such individual variation offers an opportunity to study factors that promote positive outcomes.

Many protective factors have been studied, including adversity severity, sociodemographics, personality factors, control beliefs, and social support. My research has shown

Table 1. Core Definitions of Resilience From Developmental Psychology and Adult Development and Aging Literatures

| Authors | Definition of resilience |
|---------------------------|--|
| Luthar et al. (2000) | Resilience refers to a dynamic process encompassing positive adaptation within the context of significant adversity. Implicit within this notion are two critical conditions: (1) exposure to significant threat or severe adversity; and (2) the achievement of positive adaptation despite major assaults on the developmental process (p. 543). |
| Masten and Narayan (2012) | Capacity of a dynamic system to withstand or recover from significant challenges that threaten its stability, viability, or development. Resilience is a dynamic concept that can be applied to many systems across scales, including systems within a person (e.g., stress–response system, immune system, cardiovascular system), the whole person as a system, a family system, a community or communication system, or an ecosystem (p. 231). |
| Ong et al. (2009) | Resilience ... generally refers to a pattern of functioning indicative of positive adaptation in the context of significant risk or adversity. Underlying this notion are two fundamental conditions: (a) exposure to significant risks and (b) evidence of positive adaptation despite serious threats to development (p. 1777). |
| Rodin (2014) | Resilience is the capacity of any entity—an individual, a community, an organization, or a natural system—to prepare for disruptions, to recover from shocks and stresses, and to adapt and grow from a disruptive experience (p. 3). To be resilient is to be aware, adaptive, diverse, integrated, and self-regulating. These characteristics are all present, to different degrees and in different manifestations, in all resilient entities (p. 13). |
| Rutter (1987) | Resilience is concerned with individual variations in response to risk. Some people succumb to stress and adversity whereas others overcome life hazards (p. 317). |
| Rutter (2012) | ... insofar as resilience is concerned, there is the misleading implication that it requires generally superior functioning, rather than relatively better functioning compared with that shown by others experiencing the same level of stress or adversity (p. 336). |
| Ungar (2008) | In the context of exposure to significant adversity, resilience is both the capacity of individuals to navigate their way to the psychological, social, cultural, and physical resources that sustain their well-being, and their capacity individually and collectively to negotiate for these resources to be provide in culturally meaningful ways (p. 225). |
| Zautra et al. (2008) | Resilience is best defined as an outcome of successful adaptation to adversity. Characteristics of the person and situation may identify resilient processes, but only if they lead to healthier outcomes following stressful circumstances. Two fundamental questions need to be asked when inquiring about resilience. First is recovery or how well do people bounce back and recover fully from challenge. ... Second, and equally important, is sustainability, or the capacity to continue forward in the face of adversity (p. 42). |

Core elements of resilience

1. Exposure to significant risk or adversity
2. The response or manifestation of positive adaptation despite encountering significant risk or adversity
3. Individual variations surrounding response and positive adaptation to significant risk or adversity
4. Identification of protective factors that promote positive adaptation following significant risk or adversity
5. Resilience is a dynamic process that requires matching methodologies, such as the application of contemporary methods of analysis (e.g., multilevel modeling, growth mixture modeling) to longitudinal data
6. Resilience is a multidimensional construct: People can excel in some domains and struggle in others

Note: This list of definitions is not meant to be exhaustive but intended to provide an overview of core elements of resilience.

that younger age at the time of spousal loss was associated with stronger declines in life satisfaction, but better adaptation in the years thereafter, and in the context of disability, younger age was associated with poorer adaptation. Social support, cognition, and perceived control were key contributors to better adaptation to cancer diagnosis, spousal loss, disability, and unemployment (Infurna & Luthar, 2017a; Infurna et al., 2013, 2016, 2017; Infurna & Wiest, 2018).

The fifth component that cuts across definitions of resilience is that resilience is a dynamic process that evolves over time. This fact requires the application of

contemporary methods of analysis (e.g., multilevel modeling, GMM) to longitudinal research designs. The resilience literature focusing on adulthood and old age has overwhelmingly used GMM to discern resilience to a wide range of adversities (Infurna & Luthar, 2016). My research in this arena has revealed significant issues that question the validity of existing findings of resilience being the norm, due to an artifact of the methodological approach with research using GMM relying on two key methodological assumptions: homogeneity of variance (86%) and slope variances set to 0 (68%; Infurna & Luthar, 2018). These assumptions restrict how much

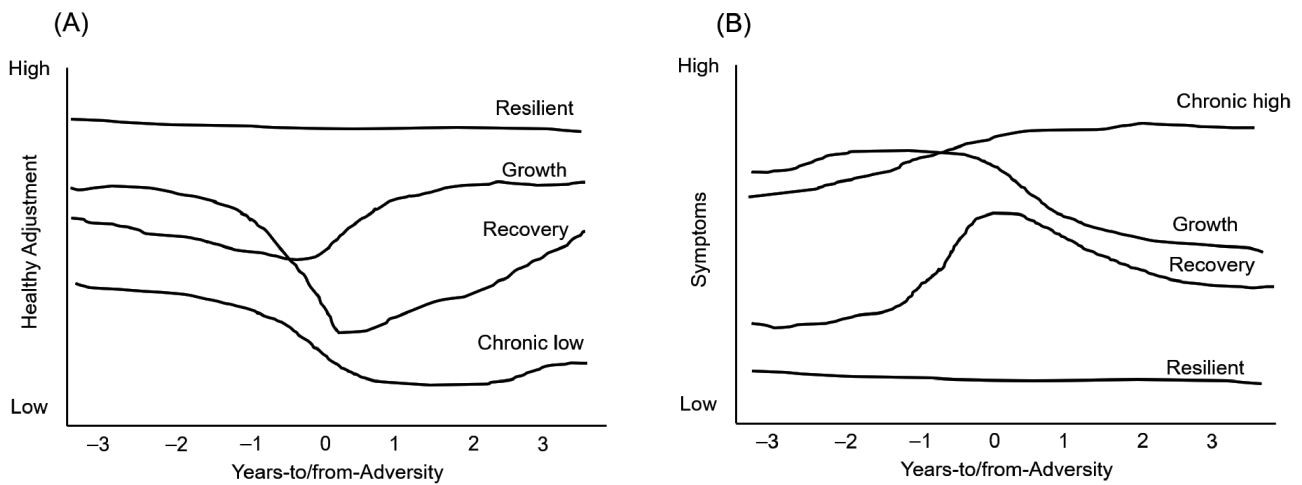


Figure 1. Graphical illustration of the most common trajectories or paths individuals may follow in the years leading up to and following adversity. (A) The four trajectories that have commonly been observed for outcomes centered on psychological functioning where higher levels are indicative of better adjustment, including life satisfaction, positive affect, physical functioning, and perceptions of general health. (B) The four trajectories that have commonly been observed for outcomes centered on symptoms where higher levels reflect poorer adjustment, including depressive symptoms, anxiety, negative affect, and posttraumatic stress symptoms. These trajectories are not exhaustive; other trajectories that have been observed in the literature. Reprinted with permission from Infurna and Luthar (2018).

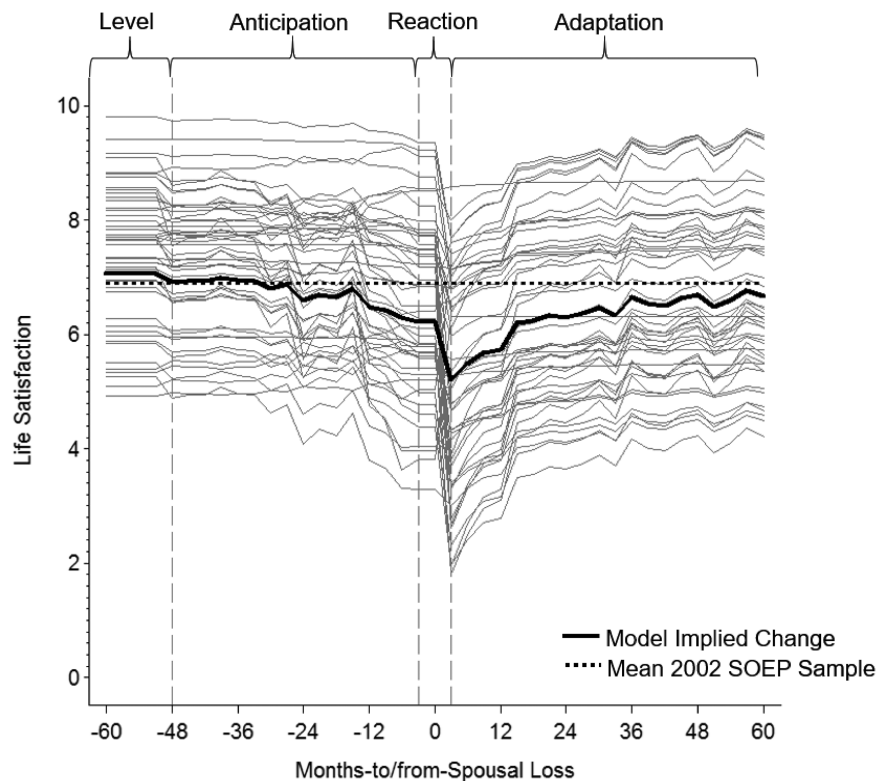


Figure 2. Between-person variation in within-person changes of life satisfaction before and after spousal loss. The solid black line represents the model-implied average taken from the sample under study and the gray lines represent model-implied changes from a subset of participants. One can observe that there is a great deal of between-person variation in the extent to which life satisfaction changes before and after spousal loss. Reprinted with permission from Infurna et al. (2017). SOEP = German Socio-Economic Panel Study.

persons' trajectories differ from one another and variations in how much they change over time. Infurna and Luthar (2016) found that these a priori assumptions

inflate the number and percentage of individuals who exhibited a resilient trajectory (for simulation studies, see Diallo et al., 2016). The take-home message from our

studies was that by applying more justifiable assumptions, estimates of resilience are much lower than that have been reported previously.

A last element to studying resilience is the importance of taking a multidimensional approach. The resilience literature in adulthood and old age has overwhelmingly focused on single outcomes, which inhibits researchers from examining whether pertinent outcomes within and across domains display differential trajectories of change following adversity. Following the principles of multidirectionality and multidimensionality, we used GMM to examine changes in life satisfaction, negative and positive affect, physical functioning, and general health before and after spousal loss (Infurna & Luthar, 2017a). Most individuals exhibited a resilient trajectory for life satisfaction (66%), whereas for positive affect (26%) and negative affect (19%), far fewer individuals exhibited resilience. Similarly, fewer individuals showed a resilient trajectory for general health (37%) and physical functioning (29%).

To further examine the multidimensional nature of resilience, a composite total score was created across the five outcomes. We outputted the trajectory membership for each individual and quantified the percentage of individuals who exhibited a resilient trajectory. Only 8% of the 421 participants were resilient in all five outcomes, whereas 20% were not resilient in any of the five outcomes (see also Infurna et al., 2017b; Luthar et al., 1993). These results demonstrate that resilience coexists with deficits across pertinent domains. Infurna and Luthar (2018) observed that over 80% of studies included a single outcome to assess resilience, but this has not prevented researchers from declaring that resilience is the common response to adversity. Mental health and well-being are the most widely studied domains, but other domains, such as physical health, are likely impacted and should be explored further (Infurna & Luthar, 2018).

Focus on Midlife

My research interests have shifted towards applying principles of life-span development to studying resilience in midlife. The age range of midlife is typically 40–65 (± 5 –10 years; Lachman, 2004), with individuals likely spending most of adulthood in midlife. The theory of midlife that immediately comes to mind is Erikson's (1963) psychosocial stage of generativity versus stagnation. Generativity involves leaving a legacy for others and the need to create or nurture things that will outlast them, which could be pursued through one's family (raising children and grandchildren), work (mentoring colleagues), or community (volunteering). Stagnation signifies an individual's failure to achieve these goals or objectives, leading to a sense of being unproductive, not giving back, and being self-centered (McAdams et al., 1993). A lesser discussed stage theory of adult

development was developed by Levinson (1986), who detailed that as individuals transitioned into midlife, their attention shifted to investment in one's career, family, and other central components, such as friendships, leisure, and community. Midlife was considered a point in the life span where individuals reflected on what they have done and ways to live that best combined their current desires, values, talents, and aspirations (Levinson, 1986).

The late 1990s and early 2000s saw increased interest in the study of midlife as reflected by several edited volumes and burgeoning research through the availability of longitudinal panel surveys. Lachman and James' (1997) edited volume on multiple paths of midlife development included chapters that covered a wide range of topics, such as development of self and identity, how the experience of midlife differs between men and women, crisis and challenges that are confronted, as well as stability and change in social networks, well-being, and health. The early 2000s saw additional edited volumes on midlife, such as an overview of the Midlife in the United States Study (MIDUS) that has since and continues to provide researchers with a plethora of data to address research questions on midlife development (Brim et al., 2004). The edited volume by Willis and Martin (2005) on applying a life-span perspective to midlife contained important chapters focusing on early life antecedents of development in midlife and how one's health, well-being, and self/identity in midlife can foreshadow functioning in old age. Whitbourne and Willis (2006) organized an edited volume that focused entirely on the Baby Boomer generation. In the opening preface, the authors highlight how the Baby Boomers are the largest cohort ever to enter midlife in Western society. The various chapters showcase their imposing nature because of their sheer number and ways they will challenge existing norms and policies pertaining to work, family, and health care. An emphasis of this volume was on demographic and theoretical perspectives, physical and mental health changes, psychosocial issues pertaining to self/identity and cognition, and the importance of social relationships and employment.

Another reason for the increase of research on midlife is the number of longitudinal panel surveys that are publicly available. Examples include MIDUS, the Health and Retirement Study, English Longitudinal Study of Ageing, Survey of Health, Ageing, and Retirement in Europe, and the German Socio-Economic Panel. Access to a wealth of cross-national data on persons in midlife makes it easier than ever for researchers to study this period of development. There are several additional reasons why it is important to study middle-aged adults: (a) the defining features of midlife lend themselves to examining resilience, (b) midlife continues to be not well understood, (c) midlife health foreshadows health in old age, and (d) the experience of midlife will evolve in the context of an increasingly diverse society.

Defining Features of Midlife

My colleagues and I recently published a conceptual review of midlife (Infurna et al., 2020) where we conceptualize that midlife consists of four defining features: simultaneous involvement in roles, life transitions, opportunities, and challenges. Involvement in a number of roles symbolizes how middle-aged adults are simultaneously trying to balance commitments in work/career, family, community, and social network engagement, among others. Ahrens and Ryff (2006) found middle-aged adults could be involved with up to eight roles, with the average person engaged in four. A key finding from this study was that more roles were associated with higher well-being. Role engagement likely leads to positive well-being through enhancing one's resources, social connections, and emotional gratification (Thoits, 1983). The range of significant life transitions in midlife includes career/workforce (e.g., promotions, changing companies, and beginning a new career different than one's training), marital (e.g., divorce, remarriage), family (e.g., parenthood and grandparenthood), and caregiving responsibilities for an aging family member or spouse/partner, in addition to changes in one's physical health (e.g., onset of chronic illness) and cognitive abilities (Lachman et al., 2015). Opportunities in midlife include potential peak in career development and earnings, heightened well-being and emotional experiences, control beliefs, and crystallized cognitive abilities (Galambos et al., 2020; Lachman et al., 2015).

The core challenges that individuals in midlife are encountering include changing nature of intergenerational dynamics (e.g., raising children, caregiving for aging parents or relatives, and the upsides and downsides of grandparenting) and financial vulnerabilities. One drawback of the tremendous gains in life expectancy seen in the twentieth century is the increasing likelihood of middle-aged adults needing to take on caregiving roles and responsibilities for their aging parents or other relatives. The needs of the aging parent can strain relationships, financial resources, and mental and physical health (Aneshenshel et al., 1995). The nature, pressures, and involvement of raising children have changed due to trends to excel in the classroom and overinvolvement in extracurricular activities (Ebbert et al., 2019). Difficulties in finding long-term stable employment and excessive student loan debt have also led to young adult children moving home in record numbers and potentially being a source of relationship strain (Fingerman et al., 2020).

Financial vulnerabilities refer to how U.S. middle-aged adults are facing a shrinking social and health care safety net that can strain one's mental and physical health and social network engagement/relationships. For middle-aged adults who are caregiving for an aging parent or relative, there are no paid options for family leave at the federal level; eight states and District of Columbia have paid family leave for caregiving for an aging relative, which can include up to 70% of paid leave for 12 weeks (Reinhard

et al., 2019). Oftentimes this is not enough because people who cannot afford to leave work are more likely to be caregivers and may need to decide between caregiving and work. Rising health care costs, coupled with labor market volatility strains household budgets, can further exacerbate mental and physical health declines (Grande et al., 2013).

Midlife Is Not Well Understood

Midlife is considered an ambiguous time in the life span, with no established set of uniform developmental milestones. This has led to views of midlife being a period of stability and developmental inactivity. Much of what is typically discussed about midlife in the general public are myths, such as the midlife crisis or empty nest syndrome; research shows no consistent evidence for these phenomena (Infurna et al., 2020). The myth of the midlife crisis remains because of research on the supposed U-shape curve in well-being. Galambos and colleagues (2020) illustrated that this U-shape curve is a function of cross-sectional data that finds age differences in well-being and confounds age and cohort; when studied using longitudinal data, such a trend no longer remains, with well-being being relatively high and stable across midlife. Without a firm set of milestones, this makes it difficult for researchers to know what to pinpoint in their research on middle-aged adults. The edited volumes and conceptual review discussed above signify that midlife is a developmental period rife with activity where individuals are engaged in numerous roles and may encounter various life transitions, challenges, opportunities, and milestones.

A second reason for midlife continuing to be not well understood is difficulties with recruitment of middle-aged participants. Age-comparative studies often contrast undergrad samples who receive course credits with older adults (aged 65 and older) who are likely retired and have the time to participate. Conversely, individuals in midlife are balancing multiple roles that make it difficult to find time and energy to participate in research studies. Third, middle-aged adults are typically studied in other literatures. For example, there are rich literatures on parenting styles shaping development in childhood and adolescence (Ebbert et al., 2019), intergenerational dynamics (Fingerman et al., 2020), the consequences of parental divorce (Amato, 2010), and career development and workplace influences (Moen, 2016). As discussed above, the advent of publicly available longitudinal panel surveys has been instrumental in bringing to light the importance of explicitly studying individuals in midlife across self/identity, social relationships, cognitive, and health developments, the dynamics of daily life, and physiological and neurological correlates (see Brim et al., 2004).

Midlife Health Foreshadows Health in Old Age

Studying midlife positions researchers to effectively study development as a cumulative, lifelong process. An

abundance of literature has shown how early-life adversity is associated with health and well-being in midlife and into old age (Ferraro et al., 2016). Empirical evidence also demonstrates that better health in midlife—as indexed by health-promoting behaviors (e.g., physical activity, sleep) and physiology (e.g., blood pressure)—foreshadows better health in old age (Launer et al., 1995; Sabia et al., 2021). A long-term consequence of middle-aged adults approaching old age in poorer health in the form of chronic illness, disability, and physical inactivity may be greater health insurance expenses and reliance on family members for caregiving duties (Infurna et al., 2020).

Analogous to this are alarming trends in the health and well-being of middle-aged adults. Recent research from MIDUS shows that U.S. middle-aged adults following the Great Recession are, on average, reporting more health symptoms, daily stress, and poorer psychological well-being than previous cohorts of middle-aged adults (Almeida et al., 2020; Kirsch et al., 2019). Several studies using cross-national data from 2002, 2004, and 2012 have shown that compared to middle-aged adults in European and Asian nations, U.S. middle-aged adults, on average, exhibit higher rates of chronic illness and disability (Avendano et al., 2009; Banks et al., 2006; Lee et al., 2018).

Numerous avenues exist for promoting resilience in midlife and optimizing successful aging. These include interventions focusing on improving physical activity, reducing caregiving-related stress, and improving mental health through social engagement, as well as policy changes that enhance paid family leave and workplace flexibility (for discussion, see Infurna et al., 2020). There is great need in nurturing and cultivating the health and well-being of middle-aged adults for the benefit of larger society because they constitute large segments of the workforce, are caregiving for adult and younger children and aging parents/family relatives, on top of balancing work and their own health and well-being.

The Experience of Midlife Will Evolve in the Context of an Increasingly Diverse Society

Within the context of research on midlife, most of what is known comes from research on U.S. samples that mirror traditional family structures of middle-class people who are White, married, and have children. Population estimates reveal that in addition to the U.S. population graying, it is becoming more racially and ethnically diverse (Vespa et al., 2020). This trend coincides with changes in the structure and function of families through greater rates of remarriages, blended families, and cohabiting families (Antonucci et al., 2011). Therefore, concerted efforts are needed to better understand diversity in how midlife is experienced across race/ethnicity, socioeconomic status (SES), gender, and sexual orientation. A large buzz has surrounded the research by Case and Deaton (2015), who observed that deaths of despair have been rising in middle-aged non-Hispanic White

males who solely attained a high school education. What has received much less attention is how these findings pale in comparison to the health inequities that have long existed across population subgroups (Muennig et al., 2018; Roux, 2017). Research has documented how Hispanic and Black Americans are more likely to report poorer mental and physical health (Weden et al., 2017), and report more disability, depressive, metabolic, and inflammatory risk relative to Whites (Boen & Hummer, 2019). Across indicators of SES, low-SES individuals typically exhibit poorer mental and physical health (Adler & Rehkopf, 2008). Women are more likely to report psychological distress and low well-being in midlife, compared to men (Blanchflower & Oswald, 2020). Lesbian, gay, bisexual, and transgender adults show higher risk for poorer mental and physical health (Fredriksen-Goldsen et al., 2013, 2018).

The coronavirus disease 2019 (COVID-19) pandemic has exacerbated inequalities in the United States. For example, women have left the workforce at rates far higher than that of men, in addition to racial disparities in COVID-19 infection and mortality rates (van Dorn et al., 2020). These impacts may exacerbate concerns about risk and magnify disparities across population subgroups in midlife.

Population-level changes, existing disparities, and the COVID-19 pandemic have made clear the importance of explicitly studying race/ethnicity, SES, gender, and sexual orientation because they convey meaning in the experience of midlife. Future research is warranted that better understands how the challenges confronting middle-aged adults and the opportunities made available to them will differ across population subgroups.

Future Research

Now that I have outlined the various reasons why it is important to explicitly study middle-aged adults, the next step is to discuss methodological approaches for doing so. Longitudinal panel surveys have the advantages of large samples, the ability to detect longitudinal trajectories of change following adversity, and simultaneously examining multiple domains. However, there are disadvantages, which include the inability to examine the processes underlying development and resilience. More frequent and closely spaced assessments are needed that have the advantages of examining more immediate responses to adversity and how the accumulation of adversities impacts developmental processes (Infurna & Luthar, 2018). Intensive longitudinal research designs have been around for a long time. Nesselrode (1991) discussed how they permit studying two core features of human development: intraindividual change and intraindividual variability. Intraindividual change refers to enduring changes that are construed as developmental by virtue of the nature of their antecedents, consequences, and correlates (Baltes, 1987), whereas intraindividual variability refers to relatively short-term changes that are construed as more or less

reversible and that occur more rapidly than intraindividual changes. Intraindividual change focuses on developmental trajectories of self/identity, well-being, cognition, social networks, and health in midlife (Galambos et al., 2020; Lachman et al., 2015). Focusing on intraindividual variability allows for studying processes that transpire at a more dynamic time scale of days, weeks, or months and can thereby be linked to intraindividual change over years and decades (Ram & Gerstorf, 2009). An advantage of intensive longitudinal research designs is the ability to study ways episodes of continual stress contribute to pertinent outcomes. For example, Schilling and Diehl (2014) have applied such an approach to daily survey data, revealing that the accumulation of stressors over a 6-day period was associated with reporting higher levels of negative affect, above and beyond concurrent levels of stressors.

Intensive longitudinal research designs can be implemented to study life transitions and the impact of intergenerational dynamics and financial challenges in midlife. Intergenerational dynamics is a rich area of study. For example, Huo and colleagues (2019) have shown how daily support exchanges between younger and older generations are associated with daily well-being and health for middle-aged adults. A recent review by Fingerman and colleagues (2020) discussed how the Great Recession and accompanying financial strains altered the nature of many parent/child ties, and events such as divorce, addiction, and physical health problems greatly impacted intergenerational support. Middle-aged adults constitute large segments of the workforce. DePasquale and colleagues (2016) found that double- and triple-duty caregiving disrupts work performance, well-being, and sleep. The COVID-19 pandemic has led to middle-aged adults finding themselves in challenging life circumstances, such as job loss, financial strain, loss of or disruptions in health care, and having to balance work with overseeing school for their children (Settersten et al., 2020). Ultimately, the use of intensive longitudinal designs offers the opportunity to study the nature and processes of how these challenges play out over the course of days, weeks, and months and monitoring their long-term impact on development over years and decades.

Qualitative approaches have the potential to reveal important insights into the opportunities and challenges confronting middle-aged adults. Adler and colleagues (2017) elaborate on the advantages of such techniques in the context of research on narrative identity, such as detailing motivational and affective themes, themes pertaining to meaning and structural elements to the broader questions at hand. Heid and colleagues (2021) embedded open-ended questions into an existing longitudinal panel survey to explore the consequences of COVID-19 on older adults. In the context of midlife, qualitative approaches can help get in-depth insights into life transitions and challenges they are confronting and effective strategies and resources individuals are relying on to overcome them. By embedding these questions into a longitudinal research design,

quantitative measures can be used to examine overlap with health and well-being indicators.

Examining historical trends of (declining) mental and physical health in U.S. middle-aged adults is another promising area of research that is in line with life-span developmental principles of exploring how historical embeddedness and cultural contextualism influence developmental processes (Baltes, 1987). Research on cohort effects has primarily focused on older adults. Empirical evidence suggests that recent cohorts of older adults are performing better than early-born cohorts across multiple indices of mental and physical health and psychosocial functioning (for overview, see Gerstorf et al., 2020). The importance of studying cohort effects in middle-aged adults is how they foreshadow health in old age; if today's middle-aged adults are doing more poorly than previous cohorts/generations, this can potentially transfer into old age. As mentioned above, research from MIDUS revealed that U.S. middle-aged adults nowadays are reporting poorer mental and physical health than earlier-born cohorts of middle-aged adults (Almeida et al., 2020; Kirsch et al., 2019). The important question is to expand these findings by identifying whether historical declines in midlife mental and physical health are similarly transpiring across other nations beyond the United States.

We studied historical changes in midlife mental and physical health across the United States, Australia, Germany, South Korea, and Mexico and observed differences across the nations studied (see Infurna et al., *In press*). Later-born cohorts of middle-aged adults in the United States and Australia showed historical declines in mental health and slight improvements in physical health. Conversely, later-born cohorts of middle-aged adults in Germany, South Korea, and Mexico exhibited historical improvements across mental and physical health. A hallmark of previous research identifying these historical trends is that low-to-middle SES individuals are showing stronger historical declines (Almeida et al., 2020; Case & Deaton, 2020; Kirsch et al., 2019). We found that the effect of educational attainment differed across nations. For U.S. middle-aged adults, the protective effect of education diminished in later-born cohorts and consistent across the other nations, individuals with fewer years of education benefitted the least from historical improvements. This descriptive research lends itself to future endeavors for uncovering why cross-national differences exist, which could be attributable to variations in policy programs between nations, as well as individual- and community-level factors (Gerstorf et al., 2020; Infurna et al., *In press*).

Conclusion

The goal of this paper was to detail how various principles of life-span developmental psychology have guided my past, current, and future research. The principles of life-span development, multiple processes influencing development, and multidirectionality and multidimensionality

have guided my research on resilience to adversity and current and future research on resilience in midlife. Resilience is a complex process that contains many elements (see Table 1). Studying resilience in midlife is a burgeoning/promising area of research because the defining features of midlife lend themselves to examining resilience, midlife continues to not be well understood, midlife health foreshadows health in old age, and the experience of midlife will evolve in the context of an increasingly more diverse society. Future research directions include examining the diverse types of adversities that impact middle-aged adults, exploring historical trends in middle-aged adults mental and physical health across nations, and using both intensive longitudinal designs and qualitative approaches to shed light on midlife development. By elucidating the key features of midlife and the mechanisms and ways middle-aged adults can overcome diverse types of adversities, this can provide meaningful insights for interventions and benefit the greater good of society due to middle-aged adult's involvement in numerous roles, tasks, and responsibilities across work and family.

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Conflict of Interest

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