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Midlife as a Pivotal Period in the Life Course: Balancing Growth and Decline at the Crossroads of Youth and Old Age

Margie E. Lachman, **Salom Teshale**, and **Stefan Agrigoroaei**
Brandeis University, Waltham, MA

Abstract

We provide evidence for multidirectionality, variability, and plasticity in the nature and direction of change in physical health, cognitive functioning, and well-being during the middle years of the life course. The picture of well-being in midlife based on longitudinal data from the Midlife in the United States (MIDUS) study is a more positive one than portrayed in previous cross-sectional studies. We present middle age as a pivotal period in the life course in terms of balancing growth and decline, linking earlier and later periods of life, and bridging younger and older generations. We highlight the role of protective factors and multisystem resilience in mitigating declines. Those in middle age play a central role in the lives of those who are younger and older at home, in the workplace, and in society at large. Thus, a focus on promoting health and well-being in middle age can have a far-reaching impact.

Keywords

midlife; lifespan development; well-being; life satisfaction; health; cognitive functioning; intergenerational relations; caregiving; resilience; early life influences

Scholars of the life course have devoted more attention to the earlier and later periods of life than to the middle years (Lachman, 2004). With over 85 million people [more than a quarter of the United States (U.S.) population, ages 40 to 59, as reported by the 2010 U.S. census] in the middle decades holding key roles in the family, the workplace and the community, there is widespread interest in learning more about this period in the life course. The goal of this paper is to elucidate the middle years within the context of the life course from a developmental perspective. Trajectories of change during adulthood are considered with an eye towards characterizing midlife relative to other age periods. With research examples from the Midlife in the United States (MIDUS) national longitudinal study (Brim, Ryff, & Kessler, 2004), we provide evidence for multidirectionality, variability, and plasticity in the nature and direction of change in physical health, cognitive functioning, and well-being. We highlight the role of protective factors and multisystem resilience in the middle years. We present middle age as a pivotal period in the life course in terms of (a) balancing growth and

Corresponding Author: Margie E. Lachman, Ph.D., Minnie and Harold Fierman Professor of Psychology, Department of Psychology, MS062, Brandeis University, Waltham, MA 02454, 781-736-3255, 781-736-3291 (Fax), Lachman@brandeis.edu.

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decline, (b) linking earlier and later periods of life, and (c) bridging younger and older generations.

Midlife in Historical Perspective

Middle age is neither clearly defined nor well understood. The dictionary describes it as the period between youth and old age, a vague, undifferentiated status. According to Patricia Cohen (2012) midlife is a relatively new construction, invented about 150 years ago. Yet, images of middle age can be found as early as the 16th century in artistic representations of the life cycle. Artistic conceptions of the life course from the 13th, 14th, and 15th centuries do not give special status to the middle years, as they typically portray a circular representation of the cycle of life, or in some cases a linear, or even seemingly haphazard placement of individuals representing different ages. However, in the 16th century, artists regularly depicted the life course as a series of steps ascending and then descending, with an apex in the middle (Cole, 1992). The exalted placement of the middle of life (with the peak typically labeled as age 50), first seen in the late 16th century European paintings, continued through the 17th and 18th centuries (Cole, 1992). These art works illustrated the life course from birth to death or cradle to grave, with each decade from 10 through 100 represented. The midlife peak seems especially remarkable given that the average life span during those periods was less than 50. Perhaps this 100 year depiction of the life course, with age 50 at the peak and images of decline and frailty beyond then, was tied to the fact that those who lived through childhood and childbirth were hearty and some of them did live to 60 or 70. Those select few who did make it to the 80's and beyond were likely quite frail given the lack of treatments for chronic illness or disability.

The salience of decades as a marker of the life course in European art is likely culturally based (Shweder, 1998). The representation of the life course in terms of decades, with age 100 at the final stage, may be tied to the 10-digit Arabic numeral system, which was widely adopted by Europeans beginning in the fourteenth century (Glick, Livesey, & Wallis, 2005). During the 16th and 17th centuries, life course paintings often used animal imagery to characterize the different age periods: the bull at 30 to represent strength, the lion at 40 to depict courage, and the fox at 50 to manifest wit, noted as a means to compensate for losses in strength. Thus even in the Renaissance times with the steps of life genre of paintings, midlife was portrayed as the peak of the life course. There was also a recognition of the tradeoffs between diminishing physical recognition of gains and losses, and the benefits of balancing strengths and weaknesses, was embedded in these early images.

Even into the early 20th century, midlife was considered the prime of life as exemplified by the writings of G. Stanley Hall, who at age 78 wrote his final book, *Senescence, The Last Half of Life* (1922). He stated: "Our life, bounded by birth and death, has five chief stages: (1) childhood, (2) adolescence from puberty to full nubility, (3) middle life or the prime, when we are at the apex of our aggregate of powers, ranging from twenty-five or thirty to forty or forty–five and comprising thus the fifteen or twenty years now commonly called our best, (4) senescence, which begins in the early forties, or before in woman, and (5) senectitude, the post–climacteric or old age proper." (p. vii). Thus, historically, middle age was considered to occur earlier in the life course, likely due to the shorter average lifespan.

This raises a number of questions including how to define midlife. Today on average, midlife is most commonly considered to be 40 to 60, which notably is the age period that Hall referred to as senescence. In the MIDUS national longitudinal study (Brim et al., 2004), participants were asked at what age midlife starts and ends. On average, adults between 24 and 75 estimated that midlife begins at the age of 44 (*SD* = 6.15) and ends at 59 years of age (*SD* = 7.46). Given the high degree of variability within age periods, in terms of health, well-being, and functioning across multiple domains, chronological age may not be the best anchor for identifying what is midlife. Midlife may be better considered in terms of roles (e.g., mentor, parent), timing of life events, and life experience (Lachman, 2004).

Two other early conceptions of midlife foreshadow the themes we wish to highlight (Lachman & James, 1997). Jung described the importance of balance and integration of different aspects (strengths and weaknesses) of the self, a process he called individuation. He saw midlife as a critical period (the afternoon of life) for linking earlier (the morning) and later (the evening) periods (Jung, 1933). Erikson (1963) identified the main challenge for midlife as generativity, highlighting the importance of a linkage between those younger and older in the life course. These themes capture what we call the pivotal nature of midlife in terms of negotiating and regulating growth and decline and integrating youth and old age, within individuals and across generations.

The National Survey of Midlife in the United States

The Midlife in the United States Study (MIDUS) was the first national study focused on middle-aged adults, and it emphasizes biopsychosocial pathways to health and illness (Brim et al., 2004). The first wave of this longitudinal study was conducted in 1994–96 with a sample of 7100 adults, ages 25 to 75, selected by random digit dialing in the 48 contiguous states of the United States. The second wave of the study was conducted in 2004–2006, and the longitudinal retention rate adjusted for mortality was 75% (*N* = 4955). Currently, a third wave of data is being collected (for more information about the study see http://midus.wisc.edu/). We refer to a selection of the MIDUS findings on psychological well-being, cognition, and physical health in discussing the pivotal role of midlife in the life course.

Current (Mis)Conceptions of Midlife

Despite the exalted view of midlife from earlier times, today midlife is widely associated with stress and considered a period marked by crisis (Lachman, 2004). This may have derived from the popular writings about midlife in the 1960's and 1970's (Jacques, 1965; Levinson, Darrow, Klein, Levinson, & McKee, 1978; Sheehy, 1976), which were based largely on clinical samples and therefore focused on the problems rather than the triumphs of those in middle age. This body of work led to negatively biased information about midlife that has not been substantiated in research with more representative populations (Brim et al., 2004; Lachman, 2001; Wethington, 2000). Many of the views of distress typically associated with midlife experiences such as the empty nest syndrome and the menopausal transition have been shown through research to be misrepresentations (Freund & Ritter, 2009; Lachman, 2004). Nevertheless, there is some evidence that stresses involving multiple role demands, or financial pressures may cluster in midlife or take a greater toll in middle

age (Aldwin & Levenson, 2001; Almeida & Horn, 2004). Although job loss or divorce, for example, can occur during other age periods, those in midlife may experience greater stress due to age discrimination by employers or more limited opportunities for remarriage. Yet still today, there are many misconceptions about midlife, with the most common myth centered on the midlife crisis.

The MIDUS survey shows that a crisis is not a typical midlife phenomenon. Certainly, some do have a crisis in midlife, with between 10 and 20% in the U.S. reporting one (Wethington, 2000). In a recent study in the United Kingdom, the reports of crises were higher, in the 40 to 60% range, although the incidence was comparable across adulthood (Robinson & Wright, 2013). Thus, about the same number say they experience crises at other points in life, so midlife is hardly special in that regard. Of those who say they have had a midlife crisis, about half say it involves inner turmoil or angst associated with getting older. For the rest, it is tied to events such as divorce, job loss, or health problems, which can occur at any age period (Wethington, 2000). Those who do experience a crisis in midlife are usually those who have upheavals at other times in their lives, and these individuals seem to be driven more by a neurotic personality than advancing age (Freund & Ritter, 2009; Lachman, 2004; Lachman, Lewkowicz, Marcus, & Peng, 1994).

Perhaps the misconceptions about midlife as a period of crisis help to explain why most adults would rather not be middle-aged. In MIDUS we asked those 40 to 60 years old (N = 3,021) what age they would most like to be (Brim et al., 2004; Lachman, 2004) and on average they wished to be younger than their age (M = 33 years of age, SD = 10.13). This youthful yearning could be tied to stereotypes and biases about those over 40 and images often depicted in the media. Also there is the stark reality for those in the middle of life, who are often faced with juggling multiple responsibilities and dealing with emerging physical and cognitive signs of aging, and they may experience a good deal of stress trying to handle it all. Yet, midlife can also be a peak time in many areas, including earnings, position at work, leadership in the family, decision-making abilities, self-confidence, and contributions to the community (Finke, Huston, & Sharpe, 2005).

Much of the work on well-being has emphasized that old age is a more positive period than many expect it to be. Midlife, in contrast, is portrayed as a quite negative and undesirable period. Moreover, little attention has been paid to the enormous consequences of poor functioning in midlife in terms of the toll it can take on others who interact with or depend on those in midlife. Depression and stress are at their height in the middle years, and this is particularly so for those with financial strain (Lang, Llewellyn, Hubbard, Langa, & Melzer, 2010). The suicide rate is also high in the middle years relative to other age periods (U.S. Department of Health and Human Services, 2013). There is also evidence that suicide rates are increasing over time among those in midlife, although it is not clear if this represents a cohort effect tied to the babyboomers or is a trend that will continue across generations in midlife (Phillips, Robin, Nugent, & Idler, 2010). It is important to address the well-being and mental health needs of those in midlife and to consider whether the patterns are universal or vary by socioeconomic status (SES), cohort, race, or gender.

Much of the empirical work on adulthood has focused on comparing age groups at the two extremes, young and old. Yet, over the past 20 years the middle ages have become the subject of intense study by developmental researchers studying broader and more representative samples (such as MIDUS) and examining midlife in the context of other periods in the life course (Brim et al., 2004). Thus, a clearer picture of the nature of this period is emerging.

A lifespan developmental perspective (Baltes, Lindenberger, & Staudinger, 2006) provides a fruitful framework for studying midlife as a period that is situated at the crossroads of growth and decline. In midlife, the variations in experiences and influences are extensive and depend in large part on the context. It is useful to consider the person in multiple contexts, in relation to the self at other points in time earlier and later, both proximal and distal, and in relation to others in the work place and within the family generations. A holistic, contextual, lifespan approach with a focus on culture, historical period, biology, social factors, environments, genetics, and psychological factors can enrich the theoretical and empirical work on the middle years. Three major tenets of a lifespan developmental perspective are highlighted as particularly relevant to midlife as a pivotal period in the life course: multidirectionality, variability/plasticity, and protection/resilience.

Multidirectionality in Life Course Trajectories

Where does midlife stand relative to earlier and later periods of life? There are numerous possible trajectories of stability and change across adulthood (Lachman et al., 1994; Staudinger & Bluck, 2001) and where midlife stands depends on the dimension that is being considered. Some processes are on a downward trajectory and others are on an upward course. With regard to emotional development, there is a consistent picture of more positive emotions in later life, known as the positivity effect, and often tied to adaptive emotion regulation (Carstensen & Mikels, 2005; Stone, Schwartz, Broderick, & Deaton, 2010). Yet, much of this work on positivity leaves out the middle age range; thus the complete age trajectory is unknown, and it is not clear if there is a linear or non- linear pattern across adulthood.

Perhaps, the most well-known finding about midlife well-being is that life satisfaction is at a low point in midlife, often referred to as the U-bend (Blanchflower & Oswald, 2008). Results from a number of large surveys that include young, middle, and older age adults have revealed that the lowest points of life satisfaction in the life cycle were among those aged 30 to 60 (Blanchflower & Oswald, 2008; Clark & Oswald, 2006; Stone et al., 2010; Ulloa, Møller, & Sousa-Poza, 2013). This pattern with midlife at the bottom of the happiness or life satisfaction curve is often interpreted as evidence for the midlife crisis (Economist, 2010). Recent studies have suggested that the U-bend may reflect cohort differences, indicating that individuals who were born at a particular time (e.g., the babyboomer cohort) may have experienced certain life events that affect their well-being (Sutin et al., 2013; Yang, 2008). There is some evidence that it is only the evaluative dimension of well-being, life satisfaction, that reaches a low point in midlife (Stone et al., 2010). In contrast, the hedonic aspects, including happiness and positive affect are on an upward trajectory from youth to old age, as portrayed by the positivity effect. And in the

domain of eudemonic well-being, purpose in life and personal growth are on the decline while autonomy and positive relations are on the rise during adulthood (Ryff, 1995).

The U-shaped pattern has also been shown in the specific domain of marital satisfaction, in which the low point occurs during the child bearing and rearing years (Bradbury, Fincham, & Beach, 2000), with a rebound after the children leave home (VanLaningham, Johnson, & Amato, 2001). Recent findings, however, suggest that it is not having children per se that leads to lower life satisfaction in the middle years (Deaton & Stone, 2014).

The MIDUS study data are consistent with the positivity effect for positive and negative affect (Mroczek & Kolarz, 1998) and with the U-bend trend for life satisfaction (Lachman, Röcke, Rosnick, & Ryff, 2008). The cross-sectional work with the data from the first wave showed that positive affect reached its peak in old age and negative affect was lowest in old age (Mroczek & Kolarz, 1998). We were interested in whether a positivity effect would be present in both affective (i.e., positive and negative affect) and evaluative (i.e., life satisfaction) measures of well-being, and whether changes in life satisfaction would be consistent with cross-sectional findings showing midlife as the lowest point in the U-bend trends.

The picture of midlife in this longitudinal context differs from the cross-sectional results, in that it is the middle years, ages 40 to 60, which fare best when 10-year change is examined (see Figure 1). As shown in the upper panel, individuals in their 50s showed increases in positive affect over a ten-year period. Those over 60 remained stable, but individuals in their 70s showed significant declines in positive affect. Effects in the opposite direction were found for negative affect (not shown). In the lower panel, middle-aged adults show flat levels of life satisfaction from 30s to 40s, and increases in life satisfaction from 40s through 60s.

From this longitudinal perspective, midlife seems to be the best of times when considered in relation to what the future holds. Thus, considering positive and negative affect in terms of intraindividual, within-person change provides evidence for midlife as perhaps a more favorable period for well-being relative to a more static view focused on age differences in mean levels.

For life satisfaction, the emphasis in the aging literature has been on the peak that seems to occur in later life relative to the low point in midlife. The findings from the MIDUS study show that a majority of middle-aged adults are satisfied with their life and stay that way or even improve over a 10-year period. They also expect their future satisfaction to be even higher, and this optimism can motivate them to achieve their goals and strive for growth or improvement (Lachman et al., 2008). When present and future life satisfaction are considered together, midlife is at the intersection of the decline path for future satisfaction and the incremental path for present satisfaction. Whereas present satisfaction is on the rise, and has not yet reached its peak in midlife, projected satisfaction about the future is on its way down, and has not yet reached the nadir which does not occur until old age (Ryff, 1991; Staudinger, Bluck, & Herzberg, 2003). In both early and middle adulthood, the future looks

brighter than the present. In contrast, in old age, although present life satisfaction is at its height, the future is expected to be worse (see Figure 2).

Variability and Plasticity

Much of the work on age differences in well-being has focused on average ratings, which convey relative age trends, but do not reveal the variations within age groups. Differential patterns of performance and functioning within age periods are of interest in understanding the range of different processes and possible pathways to well-being. Regarding the mechanics of cognitive functioning, measured by dimensions such as reasoning, speed of processing and memory (see MIDUS data presented in Figure 3), middle-aged adults fall on average between those younger and older; yet there are wide individual differences within age groups and the age distributions overlap. This suggests there are some in middle age whose cognitive performance is comparable to young adults and others who resemble older adults to a greater extent. Although the data in Figure 3 are based on cross-sectional age differences, the patterns are consistent with longitudinal evidence showing that the mechanics of cognition (a.k.a. fluid intelligence) show declines beginning in midlife, on average (Salthouse, 2009; Singh-Manoux et al., 2012). Nevertheless, this variation around the mean makes it possible to examine to what extent and why some age more rapidly and others age more successfully than others.

Examining variations within age groups can reveal cases of resilience in the face of challenge, or the potential for change and plasticity even when circumstances are difficult or unfavorable. When considering the case of social class differences, as an example, it is possible to learn a great deal from those who are vulnerable and at risk, yet turn out to do well, or better than expected. One such approach is to look at moderating variables that can mitigate the potentially negative effects for those at risk for poor outcomes. For example, those who have low SES levels, in terms of limited educational attainment, show poorer episodic memory, and are less likely to engage in stimulating cognitive activity on a regular basis. In MIDUS, we found that frequent engagement in cognitive activity attenuates the SES differences in memory such that those who have lower education and frequently engage in cognitive activity have memory that is comparable to those with higher levels of education (Lachman, Agrigoroaei, Murphy, & Tun, 2010). This evidence that, despite constraints, there is the opportunity for improvement beyond what may be the typical or average levels for one’s counterparts, demonstrates a form of plasticity. Such plasticity may operate at the neural or behavioral levels, and captures the notion that there is opportunity for change and enhancement beyond existing levels of functioning or performance. The notion that in midlife it may be possible to reverse physical or psychological damage associated with early life adversities is gaining prominence and interest (National Institute on Aging, 2012).

Protection and Resilience: A Multisystem Approach

Although many processes of decline are well underway during midlife, there are possibilities for minimizing or slowing further decrements with protective resources. These can include a combination of adaptive lifestyle factors and modifiable psychosocial and behavioral factors

that may reduce health problems and curtail declines, above and beyond the deleterious effects of traditional physical risk factors. Those at risk for health problems (e.g., from low SES backgrounds) may show resilience by maintenance, recovery, or improvement in health following challenge (Ryff et al., 2012). There is an opportunity for plasticity and control over aging in midlife, a time period at which there is still tremendous potential to modify brain function and physical abilities. Even those who are most vulnerable to declines may benefit from interventions that can reduce the risks of decline and disease.

There are many potential risk and protective factors for health and well-being in later life. Risk factors include smoking, poor diet, obesity, and loneliness (Kremen, Lachman, Pruessner, Sliwinski, & Wilson, 2012). Protective factors include an engaged lifestyle, physical exercise, social support, and positive beliefs such as a sense of control (Kremen et al., 2012). Many studies focus on one specific risk or protective factor. When they do consider multiple factors, they are typically all included in a model simultaneously to examine their unique contributions. Yet, these factors co-occur and considering their net effects may not reflect their full, additive contribution. An approach we have adopted is to control for risk factors and to consider multiple protective factors as a composite,that is to examine their contribution in a cumulative manner. This composite approach indicates to what extent one or more factors makes a difference, and whether any particular combination of factors is most adaptive (Lachman & Agrigoroaei, 2010). It is also possible to examine the moderating effects of the protective composite. Although a protective factor may be helpful in general, it is possible that the effects are differential, benefiting some more than others. Adaptive behaviors and psychosocial resources have been shown to make a difference for health and well-being. Yet, the biggest advantages have been found for those at greatest risk, for example, those with early childhood adversity or with low educational attainment in adulthood (Ryff et al., 2012).

Although those from low SES backgrounds are at risk and vulnerable for accelerated aging, they also are likely to be responsive to psychosocial and behavioral changes. “Differential susceptibility” refers to individual differences in the response to adversity (National Institute on Aging, 2012). It suggests that the same attributes that make an individual particularly sensitive to adversity may also make him or her more responsive to supportive interventions designed to offset the effects of adversity. There is evidence across multiple domains that those who are at risk for poor aging outcomes are the ones who benefit most from psychosocial moderators (Lachman & Weaver, 1998; Miller, Lachman, et al., 2011; Ryff et al., 2012; Turiano, Chapman, Agrigoroaei, Infurna, & Lachman, in press). This may be in part because these individuals have more room to show improvement, and also because they may be more motivated to change.

In MIDUS, we found that a combination of multiple adaptive factors (e.g. sense of control, physical exercise, social support) are protective in reducing 10-year declines in cognitive and functional health (Agrigoroaei & Lachman, 2011; Lachman & Agrigoroaei, 2010). Similarly Puterman et al. (2013) found the combined effects of multiple factors had a buffering role for health. They found that healthy emotion regulation, strong social connections, and positive health behaviors (sleep and exercise) predicted leukocyte telomere length (LTL) and mitigated previously demonstrated associations between depression

diagnosis and LTL. Telomeres are biological markers of cellular aging that shorten as an individual ages (Epel et al., 2004). Thus, there is evidence that a combination of adaptive behavioral factors can influence the biological course of aging. The multidirectionality and variability of change and the potential for plasticity and resilience in midlife are important features that contribute to the pivotal nature of this period in the life course. Next we consider three manifestations of this pivotal position: (a) balancing growth and decline, (b) linking earlier and later periods of life, and (c) bridging younger and older generations.

Midlife at the Intersection of Growth and Decline

A life-span perspective considers change as dynamic, and at any age period both gains and losses are experienced. With aging, there is a shift in the balance of gains and losses, so that gains typically are expected to be higher in proportion to losses in childhood and early adulthood (Heckhausen, Dixon, & Baltes, 1989). In old age the ratio is expected to reverse with losses higher relative to gains. Midlife from this multidirectional perspective can be seen as a pivotal period in the life course in terms of a shift to a focus on maintenance and stability of functioning (Baltes et al., 2006; Mustafic & Freund, 2013).

A multidimensional, multisystem view considers trajectories across domains. This view highlights the placement of midlife at the intersection of growth and decline pathways, as illustrated in Figure 4.

Midlife holds a unique place in that it is neither at the low point or the high point on these trajectories. On the one hand, for example, happiness is on an upward course. In contrast, many cognitive and physical functions, including speed of processing, memory, lung function, and muscle mass, are on a downward path. Midlife has a somewhat unique advantage in the life course with the juxtaposition of gains and losses.

The intersection of growth and decline has been studied extensively in the intelligence domain (Baltes et al., 2006). The classic depictions of fluid and crystallized intelligence (Salthouse, 2010) or the mechanics and pragmatics of intelligence (Baltes et al., 2006) show one dimension of intelligence increasing and the other decreasing throughout adulthood. A plot of the experience and knowledge-related abilities on the way up, along with the acquisition of new knowledge especially under speeded conditions, on the way down, shows the upward and downward trajectories intersect in midlife (Salthouse, 2010). Financial decision making abilities peak in midlife, as these skills benefit from the domain-relevant experience and knowledge accumulated by midlife even if more general cognitive processes are on the decline. Although those who are younger have faster cognitive processing, they lack the relevant experiences with financial choices. And those in later life, despite added years of experience, fall victim to the declines in executive functioning and working memory (Agarwal, Driscoll, Gabaix, & Laibson, 2009). Thus midlife, at the intersection of upward and downward cognitive trajectories, is at a particularly beneficial position in terms of a balance of strengths and limitations.

To date, little attention has been paid to integrating trajectories across domains for a more holistic portrayal of middle and later adulthood. There is both cross sectional and longitudinal evidence that cognitive functioning (Salthouse, 2010) and functional health

(Freedman, Martin, & Schoeni, 2002; Seeman, Merkin, Crimmin, & Karlamangla, 2010) show decrements with age. In contrast, happiness and life satisfaction show an upward trend from middle age to old age. Based on data from the MIDUS, we see evidence of what has been called a *paradox of aging* (see Figure 5). The emphasis in the literature has been on the later years rather than midlife, in that well-being and happiness unexpectedly reach a peak in old age despite the accompanying declines in cognitive and physical functioning. In midlife, while happiness is on the way up and not yet at the peak, the biologically-based processes are still in the moderate range, and on their way down. With this multidimensional view, midlife emerges as a favorable period in terms of changing trajectories, with some domains on the upswing and others on the downswing, suggesting a favorable balance across domains. There is the opportunity to compensate for declines in one area with assets from other areas of strength (Baltes et al., 2006).

Controllability in Midlife

One example of the tradeoffs involved in growth and decline comes from the work on control beliefs. Life in the middle is often challenging, but it can also be extremely rewarding. Adults in the middle typically feel overwhelmed, with too much to do and not enough time. It is naturally a time of questioning choices made and pathways taken. On top of that, physical changes and memory lapses begin to set in and the realities of the aging body and mind come to the forefront. These experiences all have one common denominator; they challenge the basic human need for control. Research shows that feeling in control is one of the key ingredients for health and happiness (Lachman, Neupert, & Agrigoroaei, 2011; Lachman, Röcke, & Rosnick, 2009; Infurna, Gerstorf, & Zarit, 2011). Yet the middle years are a time when many feel out of control, and helpless, and low controllability can be a major source of stress (Dickerson & Kemeny, 2004).

The middle years are a time when the sense of control is continually tested by the multitude of demands and responsibilities and the accumulating signs of physical and cognitive aging. In contrast, young adults are more likely to feel invulnerable, at the center of the universe, undaunted by the obstacles, perhaps unrealistic in their perceived control, and unaware of aging processes. A central focus for youth is to figure out what they want to do in life, and it is adaptive to ignore the setbacks and to take risks. They typically do not have to worry about anyone but themselves, and there is usually someone else (parents, teachers, friends) to step in to help if needed. In the middle years things change in a big way. With self-pursuits no longer the sole focus of attention, those in the middle have others to think about, and their time is heavily divided and spread thin. Although control seems to dwindle, how the middle years play out is largely in one’s own hands. This realization can be both frightening and liberating, as those in the middle are faced with taking on and juggling responsibilities in multiple arenas (Lachman, 2004).

There are two major sources of control throughout the adult years, one showing gains and the other losses, and midlife is at the crossroads of these trajectories (Lachman et al., 2009). Gains in control come from acquiring experience, developing mastery, reaching a peak of knowledge, competence and expertise. At the same time there are declines in functioning, performance and productivity, with increasing constraints tied to aging. Control declines are

tied to obstacles and limitations, including the unexpected events such as health events and loss of loved ones that increase with age. It is important to recognize and integrate both aspects of control to stay on course and balanced. The key is to find ways to compensate for or counteract the losses and declines by using assets, strengths and skills. Recent findings suggest that beliefs about control in midlife can have long-term consequences for health (Gerstorf, Röcke, & Lachman, 2011; Infurna, Gerstorf, & Zarit, 2011) and even mortality risk (Turiano et al., in press). Further research is needed to examine whether a there is an adaptive combination of personal mastery and perceived constraints, that is acknowledging ones strengths and limitations in terms of control.

Linkages From Earlier To Later Life

Consideration of both the distal and proximal influences on development can help to illuminate the nature of midlife. There is evidence that experiences in childhood can affect health and well-being even many years later in the middle years. At the same time there is some discontinuity and therefore opportunity for change and resilience (Fox, Zeanah, & Nelson, 2012). Moreover, in keeping with a pivotal period, experiences in midlife can also have long-term consequences for later life.

Early Life Influences on Midlife

Although much developmental work has focused on childhood and adolescence, a lifespan approach includes the adult years in its focus. One approach to integration across the lifespan is to investigate the connections across earlier, middle, and later periods of life. Childhood characteristics, behaviors, and experiences have long-term consequences for health in midlife. This evidence has come from longitudinal studies as well as cross-sectional analyses of retrospective reports. Much of the work has looked at childhood adversity and the sequelae for well-being in adulthood as well as the protective effects of personality (e.g., Hampson, Edmonds, Goldberg, Dubanoski, & Hillier, 2013). A study using the MIDUS sample found that experiencing parental divorce and death in childhood before the age of 17 was related to health and well-being in midlife (Maier & Lachman, 2000). Parental divorce predicted poorer health for both men and women in midlife compared to those from intact households. For women, parental death in childhood or adolescence was related to a higher likelihood of depression. Knowing there are long term effects of early adversity can lead to different courses of action. One option is to consider whether the effects are reversible through interventions in midlife. Another approach is to implement preventive efforts as early as possible to minimize the long-term effects.

Miller, Chen, and Parker (2011) propose a “biological embedding of childhood adversity” model, which postulates that stress occurring at sensitive periods of development has an impact on body systems over time through inflammatory responses and poor self-regulation. They examined stress in childhood due to poor parental treatment and low SES as influences on later risk for various diseases, including stroke, arthritis, and cardiovascular disease. Shonkoff’s “toxic stress” model also proposes that negative stress in early childhood can build up over time and affect health status in adulthood (Shonkoff, Boyce, & McEwen, 2009). These models propose that childhood represents a vulnerable stage in which stressors such as maltreatment or low SES can affect the developing immune system and can lead to

increased inflammation. Thus, elevated stress in childhood can put individuals at a higher risk for chronic diseases and cognitive deficits in adulthood (Shonkoff & Garner, 2012).

Low SES in childhood is associated with a higher risk for metabolic syndrome in middle age than those with high SES in childhood (Miller, Lachman, et al., 2011). Low SES in childhood is also related to higher Allostatic Load, that is greater dysregulation in multiple biological systems tied to chronic stress, in adulthood, compared to those from high SES backgrounds (Chen, Miller, Lachman, Gruenewald, and Seeman, 2012). Nevertheless, these studies provide some evidence that the effects of childhood adversity on health can be reversed through factors such as supportive relationships or adaptive attitudes.

Although negative childhood experiences can have damaging consequences throughout life, this is not predetermined. Despite the long-term influences, there is the potential for reversibility and recovery in midlife even if hardships have taken a far reaching toll. Some who have had adversity in early life are resilient and are able to adjust well. The pathways from early life to adulthood are varied so that it is not always possible to predict who will fare well in midlife based on earlier life.

Although problems in childhood can potentially leave middle aged adults at a higher risk for negative long-term health outcomes, specific coping strategies can help to minimize the long-term damage of these stressors, leading to reversibility of the effects of early adversity. Chen, Miller, Lachman, Gruenewald, and Seeman (2012) found that adults who had low SES in childhood had lower Allostatic Load when using shift-and-persist strategies compared to low SES adults who did not. This involves shifting (adjusting oneself to stressors through cognitive reappraisals and emotion regulation) and persisting (enduring life with strength by holding onto hopes for the future). This combination of shift and persist approaches to dealing with life stressors is hypothesized to reduce physiological responses to acute stress and, by doing so, mitigates the long-term progression of pathogenic processes that can lead to chronic disease in midlife (Chen et al., 2012). Other evidence suggests that positive experiences in childhood, such as having a nurturant and supportive mother can mitigate the negative effects of low social class on metabolic syndrome in midlife (Miller et al., 2011). Similar evidence comes from a longitudinal study in Finland, in which the ability for self control in childhood was related to well-being in midlife, and this relationship was mediated by positive social networks (Pulkkinen, Lyyra, & Kokko, 2011).

Midlife Predictors of Later Life

We have noted examples of the long term influences from early life experiences to functioning in midlife. There is also evidence that what happens in midlife can have a long term impact on the nature of aging. Those who engage in healthy behaviors throughout adulthood are likely to reap the benefits in later life. In contrast, those who engage in risky or health damaging behaviors in adulthood are destined to have more difficulty in old age. For example, those who exercise and are fit in midlife have better cognitive functioning in later life (Chang et al., 2010) and a lower risk of dementia (DeFina et al., 2013). On the other hand, experiencing extensive stress in midlife was found to predict disability in old age (Kulmala et al., 2013). In the MIDUS study, we found that those who had supportive social relationships, exercised regularly, and had positive attitudes about control in midlife were

better able to maintain their functional health and cognitive skills over a 10 year period, and the more of these positive factors, the better (Lachman & Agrigoroaei, 2010). Similar findings of a long-term, additive effect were reported in the Whitehall longitudinal study of British civil servants. They showed that the more healthy behaviors engaged in during midlife, the better the health and cognitive functioning in later life (Sabia et al., 2012).

Roles of Midlife- Between the Younger and Older Generations

The well-being of those both younger and older at home, in the workplace, and society at large depends heavily on the stability of those in the middle years. It is well documented that those in midlife are often involved in caregiving and support for their children as well as for their parents (Pinquart & Sörensen, 2007). These multiple roles can be stressful and take a toll on the mental and physical health of those in midlife (Pinquart & Sörensen, 2003, 2005). Nevertheless, family happiness and well-being depends in large part on the ability of those in midlife to take on these multiple roles and be generative (An & Cooney, 2006).

Parents of children with disabilities experience more stressors and more instances of negative affect on a daily basis, and their cortisol levels over the day decline more slowly (suggesting chronic stress) than parents of children who do not have disabilities (Seltzer et al., 2009). The stress of caregiving can also lead to accelerated aging in caregivers of chronically ill children, as indexed by the length of telomeres (Epel et al., 2004). Length of time spent as a caregiver (i.e., duration of chronic stress) was directly related to telomere length. More time spent as a caregiver was associated with shorter telomeres, even after controlling for age. Baseline activity level in telomerase, an enzyme related to telomere length, for caregivers was lower than that of non-caregivers, although caregiver and control groups' telomerase activity increased similarly in response to stress (Epel et al., 2010). A pilot study by Lavretsky et al. (2013) found that caregivers of people with dementia who engaged in meditation showed both an increase in telomerase activity and improvements in mental health compared to a control group practicing relaxation.

Stress experienced by a parent can also affect the child at a young age. For example, maternal symptoms of depression in infancy can affect children's display of depressive symptoms in childhood and adolescence (Bureau, Easterbrooks, & Lyons-Ruth, 1999; Goodman & Gotlib, 1999). This work shows the importance of addressing the mental health of caregivers, who are most often those in the middle years of life. If a caregiver is not receiving adequate health care or other support, then the well-being of both the caregiver and those they are responsible for can be negatively affected.

It is noteworthy that caregiving stressors do not always lead to negative outcomes. For example, there is some evidence that the well-being for parents of children with disabilities may be comparable to parents of healthy children, indicating possibilities for resilience and adaptive responses to the stress of child-rearing (Seltzer, Krauss, Choi, & Hong, 1996; Van Riper, Ryff, & Pridham, 1992). The potential for resilience under stressful circumstances such as caregiving is of great interest for understanding midlife (Fox et al., 2012; Ryff et al., 2012).

Those in midlife are often called the sandwich generation (Miller, 1981). This phrase refers to the middle aged parents who provide some form of care, financial support, or emotional investment for both younger adult children and elderly parents (Pierret, 2006; Spillman & Pezzin, 2000). The Pew Group reports that in 2012, 47%+ of adults between 40 and 59, who are raising or supporting a child, also have a parent over age 65 (Taylor, Parker, Patten, & Motel, 2013). This percentage suggests that a large number of middle aged parents today are currently exposed to potential stressors from multiple demanding roles. Those in the middle may be responsible for two generations of individuals (their children and parents), along with work roles outside the home (Marks, 1998). In fact, the Pew report (Taylor et al., 2013) found that 38% report that both their grown children and their parents rely on them for emotional support. These "high exchanger" families, in which parents are committed to taking care of their children and also helping older parents, are likely to show high levels of family solidarity (Grundy & Henretta, 2006). Thus, middle aged adults, serving as a bridge between younger children and elderly parents, may potentially benefit from mutual exchanges of help and support across generations in their family network.

Not only do the middle aged have an impact on the well-being of those they care for, their own well-being is also affected by their family members' circumstances. Middle aged adults' own sense of well-being is often linked to their assessments of their children's social and personal adjustment after having left the house. Parents who feel their children have successfully adjusted have a higher sense of well-being, as they feel they have successfully accomplished their parenting goals (Ryff, Lee, Essex, & Schmutte, 1994). This suggests that there are multiple domains in which a middle-aged adult may feel stressed, but there are also opportunities to feel accomplished with a sense of mastery and satisfaction in their roles. Indeed, there is evidence that middle-aged adults are able to learn from stressful experiences and can find meaning or experience growth in the face of adversity (Aldwin, Sutton, & Lachman, 1996).

Summary and Future Directions

We have portrayed midlife as a central, pivotal period in the life course. It falls at a critical juncture of growth and decline pathways, enabling a convergence and integration of gains and losses. The placement of midlife at the intersection of upward and downward trajectories in many domains can lead to an optimal balance of strengths and weaknesses. Midlife also is a prime period for connections across earlier and later periods of the life course. This operates at the individual level, in linking childhood experiences with midlife health and lifestyle in midlife with health in old age. It also plays out at the interpersonal, intergenerational levels through roles such as parenting, caregiving, and mentoring.

Functioning at any age is variable and flexible, and there is tremendous opportunity for modifiability. This can take place through preventative or remedial interventions. There is much evidence for plasticity at the behavioral and neural levels into midlife and beyond. The evidence for resilience in the context of challenge, and the opportunity to modify circumstances and the way they are appraised at the individual or group level is encouraging as it suggests new directions and possibilities at any age. An investment in understanding

ways to optimize the middle years can also have far reaching value for those younger and older.

Over the past twenty years with representative longitudinal studies such as the MIDUS, we have begun to understand more about midlife in the context of the life course. Yet, there is much more to be learned. We know little about whether the current findings are specific to the particular cohorts or cultures that have been studied. More international, cross-cultural, and multigenerational perspectives are needed to shed light on the universals and the extent to which our current knowledge base can be generalized across time and place.

A promising direction for future research on midlife is to consider how daily experiences are embedded in the context of long-term changes (Charles, Piazza, Mogle, Sliwinski, & Almeida, 2013; Hahn & Lachman, in press). This approach provides an opportunity to examine change processes at multiple levels and different time scales (Sliwinski, Almeida, Smyth, & Stawski, 2009) to examine the ups and downs of everyday life in the context of multiple roles and responsibilities, and how the burdens and assets accumulate over time to create differential trajectories over the long run.

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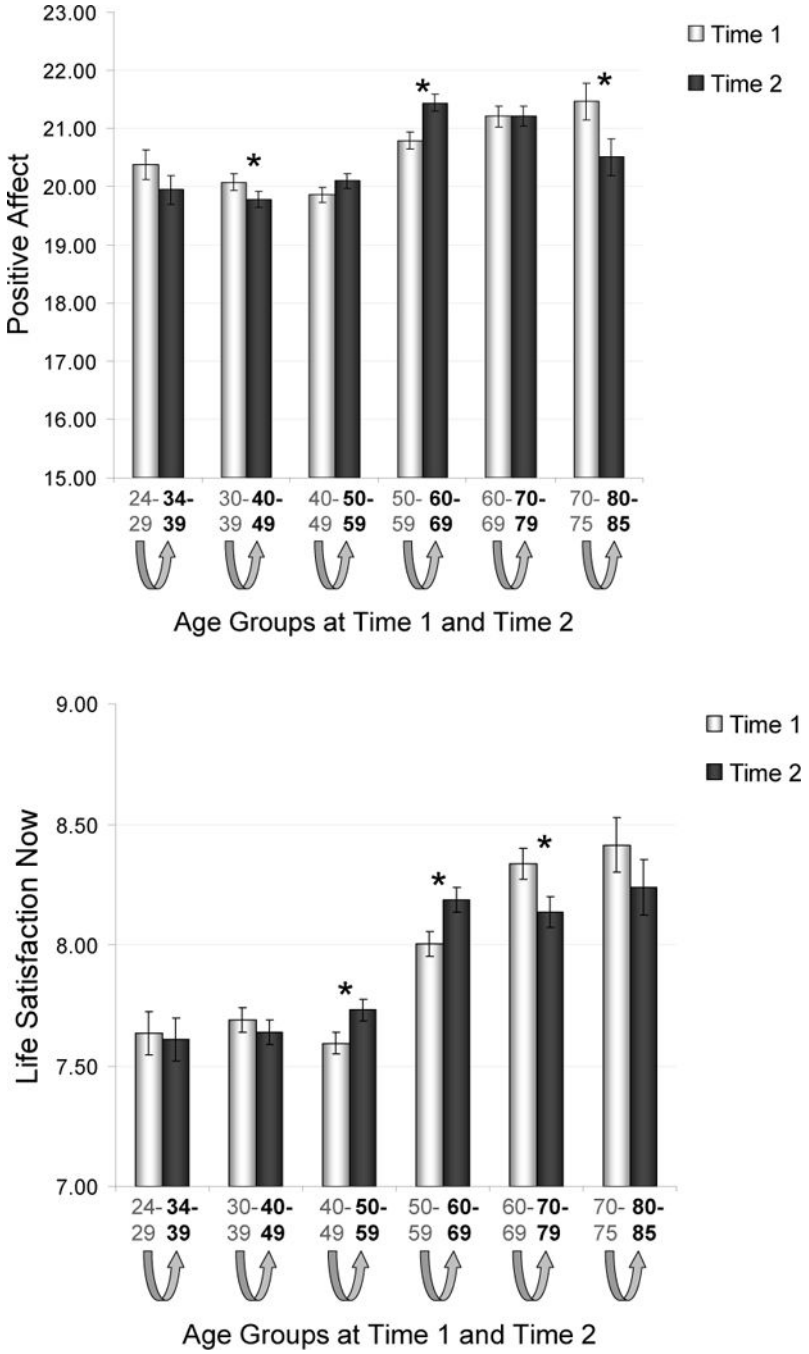

Figure 1.

Means for Positive Affect (upper panel) and Life Satisfaction (lower panel) over 10-Years by Age Group Note: Asterisks indicate significant ten-year changes.

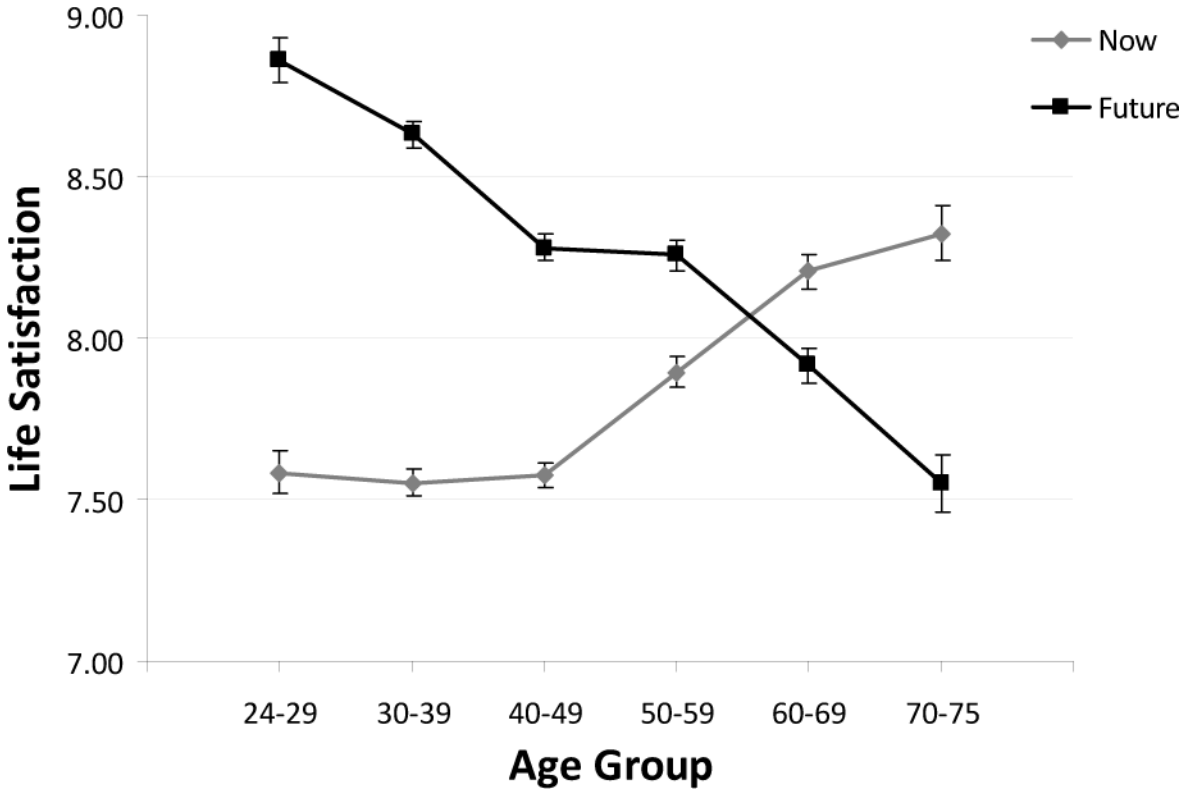

Figure 2.
Means for Present and Future Life Satisfaction by Age Group at Time 1

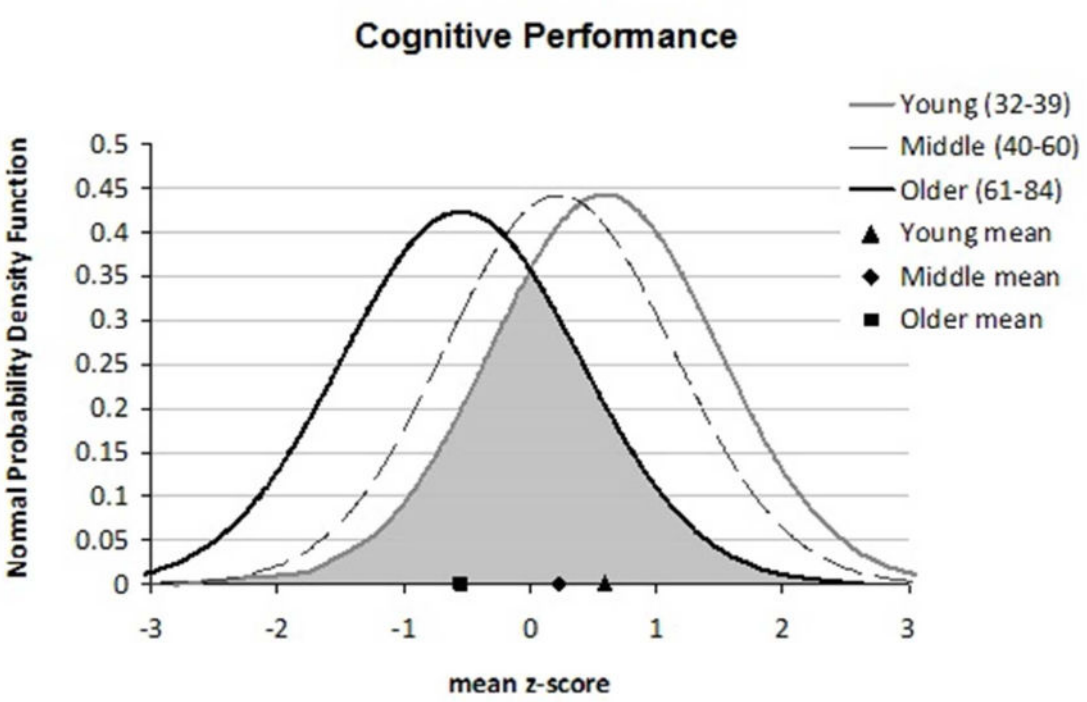

Figure 3.
Normal Probability Density Function of Cognitive Scores for Younger, Middle-aged, and Older Adults

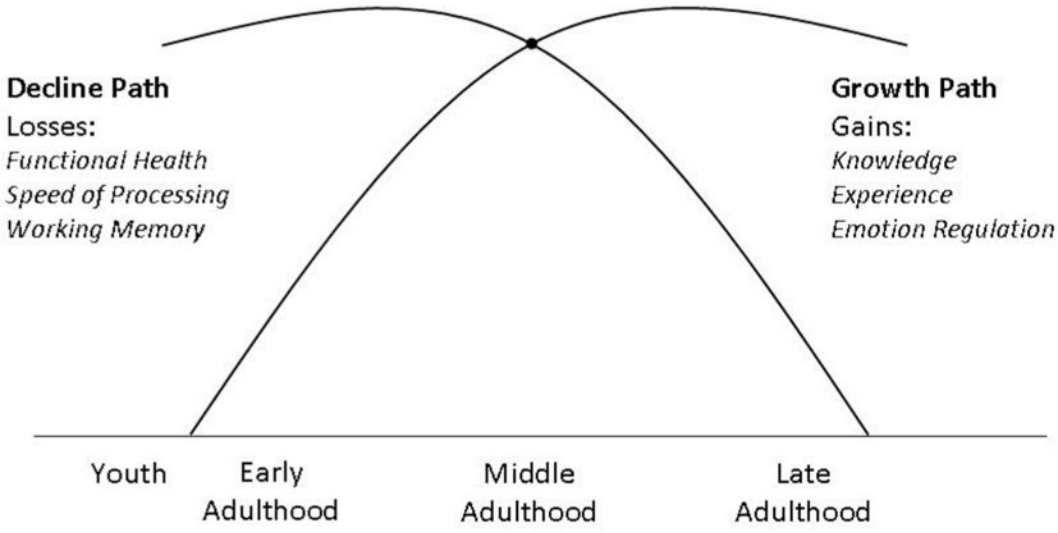

Figure 4.
Intersection of Growth and Decline in Midlife

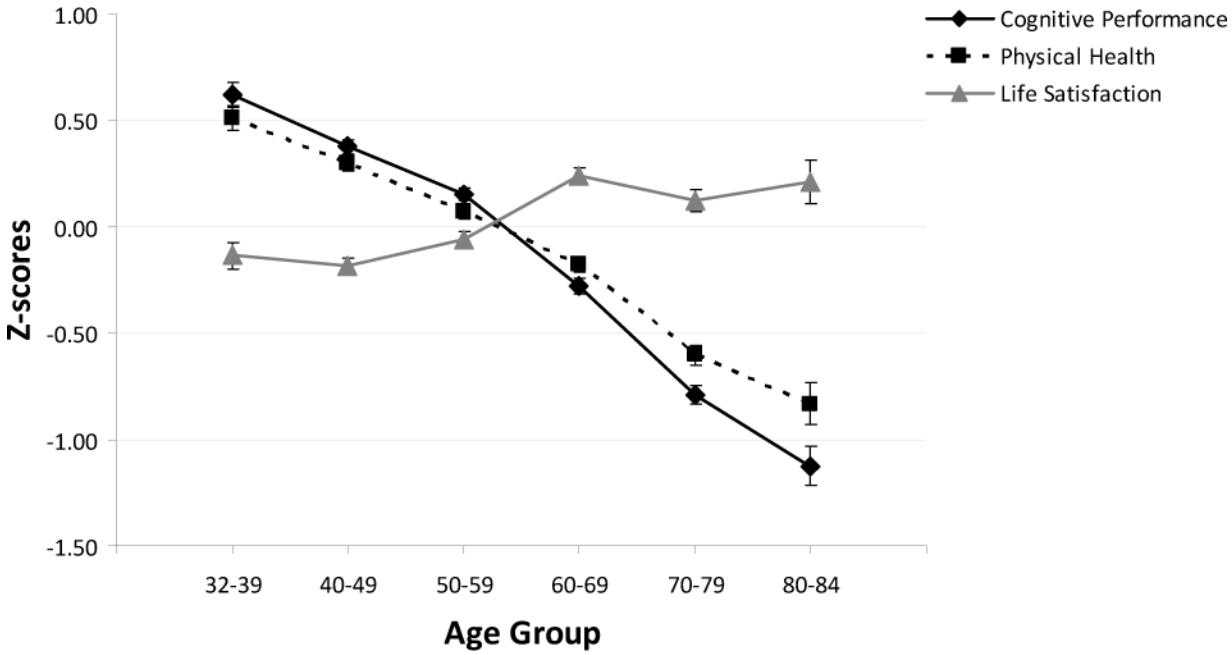

Figure 5.

The Paradox of Aging:Z-Score Means for Cognitive Performance, Physical Health, and Life Satisfaction by Age Group at Time 2