Trajectories of Social Role Occupancy and Health: An Intra-Individual Analysis of Role Enhancement, Strain, and Context

by

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Dissertation submitted in partial fulfillment of
the requirements for the degree of Doctor of Philosophy in the Department of Sociology in the Graduate School
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ABSTRACT

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Abstract

This study examines whether trajectories of multiple social role occupancy, measured by level and dynamics of spouse, parent, and worker roles, are associated with mortality and concurrent trajectories of depressive symptoms and self-rated health. I frame hypotheses with role strain, role enhancement, role context, stress process, and life course theories to examine both within-person changes over age and between-person predictors of health status.

I use data from the Americans' Changing Lives Study, a nationally representative accelerated cohort panel study of U.S. adults interviewed in 1986, 1989, 1994, and 2001/2 with mortality tracking through 2006. I use latent class analysis to estimate disaggregated trajectories of role occupancy, role strain, role satisfaction, depressive symptoms, and self-rated health across the adult life course. I then use multinomial and logistic regression analyses to examine associations between role trajectories and health outcomes.

I find that (1) there is significant heterogeneity in trajectories of role occupancy and characteristics across the adult life course; (2) higher levels of social role occupancy are associated with better depressive symptom and mortality outcomes; (3) lower levels of role strain and higher levels of role satisfaction are associated with better depressive symptom outcomes, and (4); the association between role occupancy and health is robust

to the inclusion of role characteristics. Thus, I find support for the role enhancement hypothesis in that higher levels of role occupancy are associated with better health outcomes irrespective of reward and strain associated with those roles.

Dedication

In memory of my grandparents: Ann & Emidio Angelini and Doris & Christian Sautter.

I miss you every day.

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1. Introduction

A long-standing literature in sociology dating back to Parsons, Merton, and Durkheim has examined how social structure impacts individuals. Social status (position in the social structure) and social role (behaviors and expectations connected to status) are concepts that link social structure and the individual, connecting macro and micro levels of society. Social roles provide integration, status in society, resources, and social support. Thus, many believe that the more roles one occupies, the better. But roles also come with duties, obligations, and time pressures, leading others to believe that there are limits to the benefits of multiple role occupancy, especially when considering the outcome of mental health status. In this dissertation, I examine the associations between multiple role occupancy and health, contributing to the literature by incorporating characteristics and dynamics of roles within individuals.

This dissertation provides a more nuanced test of theories about multiple role occupancy and health in three ways. First, I utilize within-person trajectories to identify both level and dynamics of independent and dependent variables across age, capturing the processual nature of individual experience across the life course and drawing attention to non-linear change as well as stability. Second, I utilize disaggregated trajectories to highlight significant heterogeneity in individual experience across age. I use these trajectories as predictor and outcome variables in traditional regression models

to examine between-person predictors of level and change/stability in within-person processes. Third, I introduce explicit measures of role strain and satisfaction, which may explain the association between role occupancy and health.

At the same time, I provide a more general test of role occupancy theories in three ways. First, I utilize a sample that covers a broad range of the adult life course, not just later life. I seek to discover if multiple role occupancy is protective across the life course, not just in later life when both role loss and health deterioration are most common. Second, I focus on three core work and family roles—spouse, parent, and worker. This approach allows me to examine structurally important roles that are not easy to gain or lose (e.g., friend, volunteer) and are not exceedingly stressful (e.g., caregiver). Third, I examine a variety of health outcomes, including depressive symptoms (mental health), self-rated health (subjective assessment of overall health), and mortality. This allows me to examine the utility of multiple role theories for different dimensions of health.

Chapter 2 introduces the theoretical background for this study, including role strain (Goode 1960), role enhancement (Sieber 1974), and role context (Moen, Dempster-McClain, and Williams 1989) theories. Role strain theory predicts that occupying a greater number of social roles is detrimental for health due to excessive strain and demand, while role enhancement theory argues that occupying a greater number of

social roles is beneficial for health because the rewards of social integration and role relationships outweigh the demands. The role context theory adds to these theories by arguing that one must consider the nature and circumstances of role occupancy. I also introduce stress process theory (Pearlin, Menaghan, Lieberman, and Mullan 1981), which guides hypotheses on how to appropriately conceptualize demands and rewards associated with role occupancy, and the life course perspective (Elder 1974), which provides a framework for studying change over age within individuals.

Chapter 3 reviews prior literature on multiple social role occupancy and health. Most prior literature has supported the role enhancement hypothesis, that occupying a greater number of social roles and experiencing role gains are associated with better health (Hong and Seltzer 1995; Moen, Dempster-McClain, and Robin M. Williams 1992; Pavalko and Woodbury 2000; Thoits 1986). However, these studies were limited by a focus on older adults and caregiving and the inclusion of several periphery roles (e.g., friend, volunteer) that can easily be dropped as a result of poor health. Additionally, most prior research did not incorporate measures of role demands and rewards, key components in the hypothesized relationship between multiple role occupancy and health. Most importantly, these studies utilized a between-person approach, focusing on relationships between variables instead of within persons.

Chapter 4 introduces the data and methods I use to examine multiple role occupancy and health in this study. I use data from the Americans' Changing Lives Study, an accelerated cohort panel study of 3,617 U.S. adults. I utilize data from 2,146 respondents who completed the first three waves of the study in 1986, 1989, and 1994. Strengths of this dataset include a nationally representative sample, a wide age range that represents several birth cohorts, repeated measures for individuals over nine years, and measures of role strain and satisfaction. I introduce latent class analysis as an appropriate method to identify disaggregated trajectories of both level and change or stability in focal variables within individuals across the adult life course (age 25-85). This method identifies typically unobserved heterogeneity by assigning individuals to groups based on both level and change over age. I then introduce multinomial and logistic regression analyses that allow me to identify between-person associations among intra-individual role occupancy, role characteristic, and health trajectories.

Chapter 5 employs latent class analysis to identify disaggregated intra-individual trajectories of multiple role occupancy, role strain, role satisfaction, depressive symptoms, and self-rated health. I identify several trajectories characterized by either quadratic role loss or stability at varying levels across age, indicating that static measures and change scores cannot accurately capture the complexity of intra-individual trajectories of focal variables that U.S. adults tend to experience. I compare

these trajectories to aggregate trends across age and find that aggregate trends do not accurately characterize a large proportion of respondents.

Chapter 6 utilizes regression methods to examine the association between role occupancy trajectories and health outcomes, including mortality and trajectories of depressive symptoms and self-rated health. I find support for role enhancement theory in that higher levels of social role occupancy are associated with a more favorable depressive symptom trajectory and lower odds of dying when compared to lower levels of role occupancy.

Chapter 7 again utilizes regression methods to examine the association between role strain and role satisfaction trajectories and health outcomes. I find that lower levels of role strain and higher levels of role satisfaction are associated with lower depressive symptom trajectories. However, these trajectories do not reduce the impact of role occupancy trajectories on depressive symptom trajectories, leading me to conclude that higher levels of role occupancy confer a distinct benefit for depressive symptoms regardless of how demanding or rewarding the roles may be.

Chapter 8 concludes with a review of relevant findings, limitations of the study, and directions for future research. I conclude that the benefits of multiple role occupancy stand up to the more stringent tests presented in this dissertation. This conclusion is strongest when examining mental health, i.e., depressive symptoms.

Although I cannot explicitly test causation versus selection, I present convincing evidence that role occupancy trajectories lead to mental health patterns, while physical health trajectories likely influence role occupancy trajectories. I also show that, in most cases, role dynamics are less important for health than level of role occupancy. Thus, although strain, satisfaction, and change over age all exert important influences on health, they do not diminish the impact of structural role occupancy on health.

2. Theoretical Background

Research examining how social structure affects individuals and their health dates back to Durkheim's seminal study of suicide ([1897] 1951). Durkheim discovered that social factors, including social role occupancy, were correlated with suicide rates. Thus, the seemingly individualized outcome of suicide could be predicated from basic social characteristics. In this chapter, I introduce three subsequent theoretical perspectives that guide my investigation of social role occupancy and health: role theories, stress process theory, and the life course perspective. First, I introduce the concepts of social status and social role and review theories that specifically address multiple role occupancy. Second, I review a role perspective that moves away from functional, organizational, and abstract role theories and argues for contextualization and a focus on individual outcomes. Third, I review stress process theory, which provides the tools to explicitly measure role rewards and demands that are implicit in role theories. Fourth, I review the life course perspective, which integrates the strengths of each perspective and provides theoretical links among role and stress theory (George 1993). Finally, I discuss the within-person perspective that guides the conceptualization of this study.

2.1 Role Theories

The original anthropological formulation of role theory defines a social role as expected and/or exhibited behaviors, rights, and responsibilities connected to a status, which is a position in the social structure (Linton 1936). Linton emphasized that both status and role can refer to a single status/role or to the total collective of statuses/roles that an individual occupies. Robert Merton further explicated theory that connected individuals to social structure through statuses and roles (1957). Like Linton, Merton emphasized that individuals occupy many statuses, and that each status is associated with a set of relationships, duties, and obligations.

Early role theories were structural and organizational, focusing on how social statuses, relationships, and norms contribute to or compromise social order. Social norms about expected role behavior guide processes of role allocation, socialization for expected role behavior, timing of role entry and exit, and sanctions for improper role performance (George 1993). Social statuses benefit individuals by anchoring them to social structure and providing social integration, defined duties, and behavioral constraints (George 1980). However, there is potential for conflict between the duties and obligations of multiple roles (Merton 1957). Thus, role theory in general argues that role occupancies are not typically stressful due to socialization and the inherently beneficial nature of social statuses, although there is potential for conflict. Next, I review

two role theories that take strong positions on whether multiple role occupancy is good or bad for individuals and society.

2.1.1 Role Strain

Later role theory followed Merton's notion of role conflict and addressed potential difficulties in managing multiple roles that are necessary to maintain social structure. The classic statement of role strain theory argues that multiple social roles are problematic because of conflicting and/or overwhelming duties and obligations (Goode 1960). Goode argues that role strain, defined as difficulty in fulfilling role demands, is not only normal but inevitable. Social roles result in strain because of high levels of conflict and demands both within and between roles. According to Goode, one cannot fully conform to all role obligations without other roles suffering. To reduce role strain, individuals can make "role bargains" or transition into or out of roles to reduce demands on individuals. Role strain increases rapidly with increasing number of social roles because the demands typically outweigh the benefits.

Goode's role strain theory is organizational and functional, with an emphasis on how social roles and associated behaviors and strain hold social structure in place. However, role strain theory does inform hypotheses about the individual-level effects of multiple role occupancy. First, higher levels of multiple role occupancy, compared to lower levels, may be associated with poor health outcomes due to excessive demands

and resulting role strain. Second, loss, compared to stable role occupancy, may be associated with better health outcomes due to decreased demands.

2.1.2 Role Enhancement

Role accumulation theory (also referred to as role enhancement theory) responds directly to role strain theory, arguing that Goode and other role theorists placed inappropriate emphasis on role strain and ignored potential benefits of role accumulation (Sieber 1974). Sieber argues that the benefits of social roles outweigh the negative effects of role strain and overload, so that multiple social roles provide a net positive impact on well-being. The main benefits of role accumulation include privileges, status security, resources, and personal enrichment. These benefits provide direct rewards based on role occupancy, but also enable individuals to more effectively manage multiple role occupancy and time constraints, implying that role accumulation provides mechanisms to reduce role strain. Role accumulation may also buffer role strain by offering a wider range of role sets to compensate for problems in any one role.

Like role strain theory, role accumulation theory is organizational and functional, focusing on abstract social roles and their function in maintaining social structure. Role accumulation counters role strain theory by focusing more on the positive aspects of role occupancy. Thus, it informs different hypotheses about the individual-level effects of multiple role occupancy. First, higher levels of role occupancy, compared to lower levels, may be associated with positive health outcomes due to the direct benefits and

management skills associated with multiple role occupancy. Although role accumulation theory does not directly address change versus stability, it does imply that a gain in social roles may be associated with better health outcomes compared to a decrease in role occupancy.

2.1.3 Role Context

The next installment of multiple role theory called for a general theory that would incorporate both role strain and role accumulation/enhancement perspectives and provide a less deterministic framework of role occupancy and strain (Marks 1977). After reviewing research showing that individuals with multiple social roles do not always experience distress, Marks argued that theories should focus more on the conditions under which multiple role occupancy results in strain or enhancement.

Phyllis Moen and her colleagues also criticized the deterministic framework of prior role theories and advanced the role context hypothesis as a contrast to role strain and role accumulation theories (Moen, Dempster-McClain, and Williams 1989). The role context hypothesis asserts that the nature or circumstances of role occupancy may be just as important, or even more important, than the structural number of roles occupied. For example, the number of roles that provide social support may be more important for health than the total number of roles occupied. The hypothesis asserts that the types of roles, the levels of support received from the role relationships, and the level of involvement in certain roles all affect how stressful or beneficial the role may be for

health and longevity. Importantly, this hypothesis explicitly considers health (in their study, mortality) as a product of multiple role occupancy.

The above examples demonstrate important additions that move role strain and enhancement hypotheses beyond structural and deterministic predictions. The number of social roles that an individual occupies is important, but one cannot evaluate hypotheses based on number alone. The lived experience of social role occupancy varies by context and nature of the role, issues that should be empirically measured and tested in studies of multiple role occupancy.

2.1.4 Role Theory and the Life Course

Although role theory pays little or no attention to heterogeneity in roles, early studies based on structural/functional theory suggested possible variation in the relationship between social role occupancy and health across the life course. Aging scholars theorized that the number and nature of social roles change across the life course in response to societal needs and opportunities. Disengagement theory hypothesizes that at older ages, individuals and society mutually disengage, producing the functional outcome of elders relinquishing social roles while more competent younger adults fill those roles (Cumming and Henry 1961). Role loss therefore fosters health and life satisfaction in later life. Although this theory fell out of favor, largely due to its structural/functional orientation, newer developmental theories took its place to explain age-related change in roles. Selective optimization with compensation theory

similarly predicts that as people age, they withdraw from periphery roles, focusing their limited time and energy on core roles and relationships (Baltes and Baltes 1990). Selective optimization with compensation theory predicts the same outcome as disengagement theory—withdrawal from social roles with increasing age—but is more agentic in that individuals, not society, decide when to reduce their role set. Finally, Rosow theorized that as individuals age, their roles shift from institutional (status plus role) to tenuous (status but no role) or informal roles (role behaviors but no status) (Rosow 1985). Thus, individuals may lose important roles and take up less important and less beneficial roles in later life.

Unlike disengagement theory and selective optimization with compensation, Rosow predicted that the loss of roles in later life has a negative impact on well-being. But all three theories assert that both the number and importance of social roles declines in later life. Additionally, social roles have less connection to demands and rewards in later life. Role loss is fairly normative in old age, implying that the relationship between social roles and health may be distinctly different in old age and thus vary across the life course.

2.2 Stress Process Theory

As noted above, the role context hypothesis advocates a more nuanced approach to studying multiple role occupancy through the nature of social roles. Stress process

theory is important to this study because it informs an explicit examination of demands and rewards associated with social role occupancy, issues that were often assumed and untested in role theories. Stress process theory states that social location, including social status and related roles, affects health through differential exposure to stress, personal resources, coping skills, and social support (Pearlin, Menaghan, Lieberman, and Mullan 1981). Pearlin and colleagues proposed stress theory as a process: life events and stressors produce strain, which can result in diminished self-concept; over time, low self-esteem and mastery may leave individuals vulnerable to distress outcomes, most notably depression. Thus, the main conceptual proposition in stress process theory connects stress with distress. Further propositions introduce mediating factors of social support, coping, and social psychological resources such as self-esteem, self-efficacy, and mastery, which can reduce the impact of stress on distress.

Most stressors in stress process theory are life events, which are identifiable and discrete changes in life patterns; thus, stress process theory is directly linked to role theory because many life events are actually role transitions (George 1980). In fact, the sources of stress that Pearlin and colleagues initially studied were role strains in work and family roles, roles that I examine in this dissertation. Additionally, multiple role occupancy provides sources of social support that may buffer the negative effects of social stress (Dean and Lin 1977). Although the role strain and role enhancement theories were developed before stress process theory, they conceptualize ways that

social networks produce stress and support. Goode's role strain theory states that demands related to multiple roles (conflict and overload, which can be conceptualized as stressors) harm health. Sieber's role accumulation theory states that rewards (integration, support, and self-esteem, which can be conceptualized as social support and coping resources) improve health.

Stress process theory is valuable to this study for several reasons. First, it provides a theoretical link between status, related social roles, and health. Second, it emphasizes process and change over time. Third, stress process theory provides the conceptual tools to measure whether roles are stressful or beneficial for individuals. Instead of assuming that roles are stressful or supportive and measuring only the structural aspect of role occupancy, stress process theory allows one to examine variation in levels of stress and reward, important mechanisms linking social role occupancy to health outcomes. Finally, this theory moves hypotheses from an abstract, organizational level to the individual level. Instead of focusing on how role occupancy and transitions relate to social stability, stress process theory focuses on how stress, support, and distress vary within society and how stress leads to distress at the individual level.

2.3 The Life Course Perspective

The life course perspective emphasizes the importance of timing, context, cohort, and heterogeneity when analyzing the effects of social structure on individuals (Elder 1974; Elder, Johnson, and Crosnoe 2003). Individual outcomes are conceptualized as life-long processes that develop across the life course, so that prior history is important to understanding current status. Age and cohort, along with other sources of heterogeneity, strongly condition how life events will affect individuals. Thus, the life course perspective enhances the study of multiple role occupancy and health by further emphasizing heterogeneity in roles and experiences and explicitly considering age, cohort, and change over time.

A major feature of the life course perspective is the concept of trajectories, which are "long-term patterns of stability and change, often including multiple transitions, that can be reliably differentiated from alternate patterns" (George 1993). In essence, the life course is comprised of a set of trajectories mapping change and stability in social statuses and experiences over time. Because the focus is on change over time, trajectories require longitudinal data. The advantage of trajectories is that they provide information on both level and change/stability, allowing one to interpret any point on the trajectories in relation to prior history.

The life course perspective also emphasizes age, period, and cohort effects. A life event or transition may have different effects on individuals of different ages or

members of different cohorts (Elder 1974). For example, retirement or widowhood may be less deleterious for individuals in later life, when these transitions are more normative, compared to individuals in early adulthood. Timing is important to the life course because the consequences of age-related transitions and trajectories vary throughout the life course (Bengtson, Burgess, and Parrott 1997).

Finally, the within-person perspective supplements the life course perspective's emphasis on trajectories and individual processes. It is important to note that trajectories can be either interindividual (between-person) or intraindividual (within-person) (George 2009). Interindividual trajectories focus on aggregate time or age trends, whereas intraindividual trajectories focus on individual change and stability over time or age. Although the developmental psychology literature has long examined individual change over time, traditional research designs in sociology have typically followed a between-person perspective in that they examine general patterns of association between variables within an aggregated sample. A within-person perspective instead examines associations between variables over time within individuals. Thus, the major difference between the within-person perspective and the between-person perspective is that they ask different questions (George 2009). For this study, a between-person perspective asks whether people who hold a greater number of social roles experience better health outcomes. A within-person perspective reframes

the question to ask whether levels and dynamics of role occupancy are associated with concurrent levels and dynamics of individual health.

Although the within-person perspective presents an innovative way to conceptualize life course processes, it is best used in conjunction with between-person designs. According to the life course perspective, intraindividual processes are affected by between-person factors (e.g., factors that are fixed and do not vary over time within individuals) and can only be meaningfully understood in social and historical context (George 2009). Fixed characteristics such as cohort, gender, and race are likely to predict within-person trajectories of change and stability. Accordingly, analyses should examine both within-person trajectories and between-person predictors of trajectory membership (George 2009; Nagin and Land 1993; Raudenbush 2001; Singer and Willett 2003).

2.4 Conclusion

The theoretical perspectives presented in this chapter provide a solid foundation to conceptualize an investigation of multiple role occupancy and health across the life course. First, role theories connect social statuses to individual role behaviors. Competing theories argue that multiple role occupancy harm (Goode 1960) or enhance (Sieber 1974) individual health. However, these theories are structural and functional, ignoring the fact that social role occupancy can provide both benefits and strains and

that roles may vary in their level of benefit and strain. The role context perspective (Moen, Dempster-McClain, and Williams 1989) acknowledges these limitations and argues that researchers must consider variability in role-health relationships due to the nature of roles and the circumstances contextualizing role occupancy.

Stress process theory (Pearlin, Menaghan, Lieberman, and Mullan 1981) provides additional tools to explicitly consider role strains and rewards. Thus, this perspective allows research to move beyond the assumption that social role occupancy universally provides strain or support. Instead of testing whether role strain or role enhancement theories are true, one can also test whether patterns of role strains and rewards affect health and whether they mediate the effect of structural role occupancy.

The life course perspective (Elder 1974) emphasizes the importance of age, cohort, and change over time. This perspective further enhances the study of social role occupancy and health by moving beyond static analyses abstracted from the individual life course. Instead, the focus turns to trajectories of social role occupancy across age, providing a more dynamic and contextualized examination of social role occupancy and health. The within-person perspective further solidifies the individual, processual, and contextual nature of the life course perspective by focusing on patterns of change and stability within individuals, interpreted in the context of social factors.

2.5 Conceptual Model

Figure 2.1 presents the conceptual model that guides my exploration of the association between multiple role occupancy and health. The most important component of the conceptual model is that I am examining age-based processes of change and stability. Because I am interested in intra-individual patterns of level, stability, and change across age, and because there is likely significant heterogeneity in these life course patterns, I conceptualize focal variables as group-based trajectories.

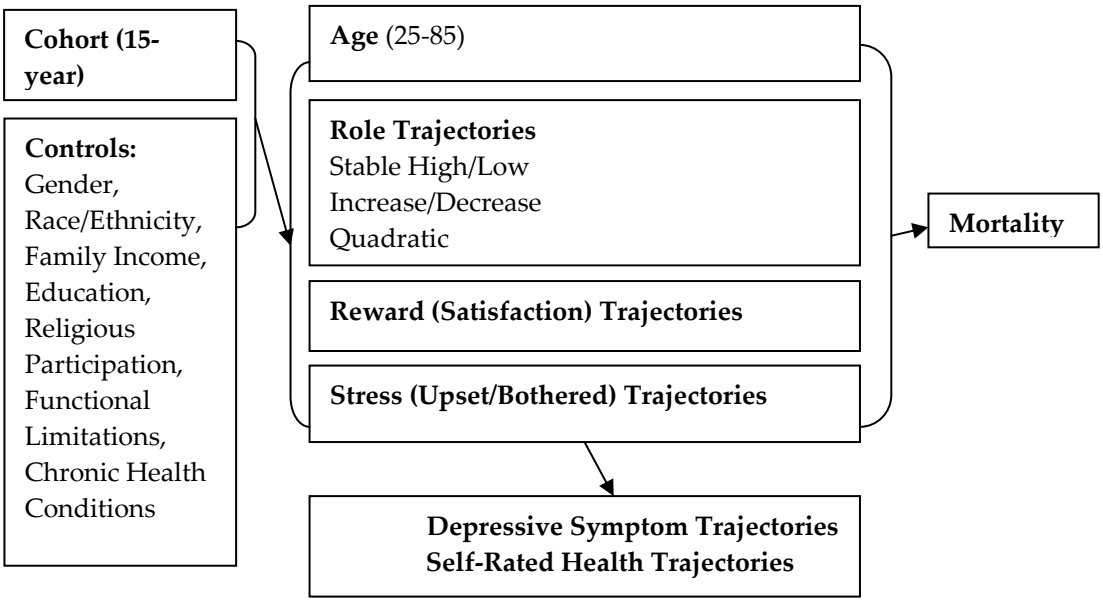

Figure 2.1 Conceptual Model

Social roles include spouse, parent, and worker. These represent core family and work roles that are viewed as normative and prevalent in the adult population, with patterns of variation based on age and gender. They are generally viewed as positive roles with relatively equal importance. My point of departure from previous research is that I conceptualize role occupancy as a process that unfolds over the life course.

Because role occupancy is highly age-dependent it is best understood as a function of age, not time.

I conceptualize role reward as satisfaction with the role. This measure captures individuals' global assessments of the positive aspects of the role, which presumably include factors such as benefits, self-esteem, personality enrichment, resources, support, and security. I conceptualize role strain as being bothered or upset by the role. This measure captures respondents' global assessments of the negative aspects of the role, presumably including time pressure, conflicting demands, role overload, and interpersonal problems. These conceptualizations of role characteristics reflect the themes of role theories as they are internalized and interpreted by the individual.

Finally, I conceptualize health as multidimensional, representing psychological, physical, and survival aspects. Depressive symptom trajectories capture the effects of distress and strain, as predicted by stress process theory. Self-rated health trajectories capture individuals' overall assessment of their physical health status. Mortality captures the ultimate, concrete health outcome.

Note that the layout of Figure 2.1 indicates contemporaneous processes. Because role and health trajectories cover the same age period, one cannot make causal statements about the effect of one trajectory on another. Hypotheses and results related to depressive symptom and self-rated health trajectories must be phrased in terms of associations, not effects. Mortality is an important health outcome because it is

measured after the trajectories and there is no chance of reverse causation. Role trajectories may influence timing of death, but death cannot influence role trajectories.

3. Literature Review

In this chapter, I review prior literature that informs my study of social role occupancy and health. First, I review research on multiple role occupancy and health. Second, I review the literature on role characteristics, including important insights from the stress literature. Third, I discuss issues of causation and selection that are inherent in studies of role occupancy and health. I end with a review of the limitations of prior research and then present the research questions and hypotheses that guide the analyses in later empirical chapters.

3.1 Multiple Role Occupancy and Health

Social role occupancy embeds individuals within social networks. A spouse is connected to a partner, a parent is connected to a child or children, and a worker is connected to co-workers. First, I briefly review major conclusions from a long-standing literature on social networks and health. I then review literature that more explicitly examines theories of role strain and role enhancement. I end this section with a review of literature on changes in social networks and role occupancy and their effects on health.

3.1.1 Social Networks and Health

Social networks have been shown to positively affect health in that larger networks are associated with better health (House, Landis, and Umberson 1988). This positive impact of social network size on individual health is hypothesized to function

through social integration or engagement, social support, social influence, and access to resources provided by contacts within social networks (Berkman, Glass, Brissette, and Seeman 2000). Empirically, social network size has been shown to be negatively associated with risk of ADL disability in older adults (Mendes de Leon, Gold, Glass, Kaplan, and George 2001) and mortality risk among elderly women, even when controlling for health status and health behaviors (Rutledge, Matthews, Lui, Stone, and Cauley 2003). When mental health, such as psychological distress or depressive symptoms, is the outcome, social network ties may directly impact mental health or may have indirect effects by buffering the impact of negative life events on individuals (Kawachi and Berkman 2001).

3.1.2 Multiple Role Occupancy and Health

Cross-sectional analyses of multiple role occupancy and health have generally supported role enhancement theory. Two cross-sectional studies of adults age 60 and older in the Americans' Changing Lives Study found that number of social roles occupied (ranging from zero to eight) was positively associated with well-being, including higher life satisfaction and self-efficacy and lower levels of depressive symptoms (Adelmann 1994; Kikuzawa 2006). A longitudinal study of older caregivers using ACL data found that occupying multiple social roles in addition to caregiving was associated with better self-rated health at a later time, but was not significantly associated with functional impairment or depressive symptoms (Rozario, Morrow-

Howell, and Hinterlong 2004). The additional social roles that Rozario and colleagues studied were work and volunteering, roles they considered to be productive.

Phyllis Moen and colleagues published several papers on multiple roles and health among mid-life women who were wives and mothers when initially interviewed in 1956 and then re-interviewed in 1986. The first study, which generated the role context hypothesis, found that women who were socially integrated (i.e., occupied several social roles in 1956) were likely to live longer than women who occupied fewer roles (Moen, Dempster-McClain, and Williams 1989). A second study found that occupying multiple roles in 1956 was positively associated with both continued multiple role occupancy and favorable health outcomes in terms of functional ability and self-rated health 30 years later, in 1986 (Moen, Dempster-McClain, and Robin M. Williams 1992). A third study that focused on caregiving found that women who occupied multiple social roles in addition to caregiving had higher levels of depressive symptoms compared to caregivers who occupied fewer roles, providing support for the role strain hypothesis (Moen, Robison, and Dempster-McClain 1995).

In conclusion, the majority of studies examining both social network size and multiple role occupancy have generally supported the role enhancement hypothesis, that a greater number of social roles is associated with better health. This support applies to a variety of health outcomes, including both mental and physical health and mortality.

3.1.3 Change in Multiple Role Occupancy and Health

The increasing availability of longitudinal data and the increasing influence of the life course perspective have led researchers to believe that role growth and loss may be more important to the analysis of multiple roles and well-being than static measures of number of roles. Several longitudinal studies of role occupancy and health have supported the role enhancement/accumulation hypothesis.

As with traditional studies of role occupancy, many studies of change in multiple role occupancy focused on older adults and caregivers. Pavalko and Woodbury (2000) found that the addition of the caregiver role was associated with increased psychological distress, and to a lesser extent decreased physical health, two years later. Hong and Seltzer (1995) found that loss of social roles among caregivers was associated with increased depressive symptoms, while role gain was associated with decreased depressive symptoms.

Other studies examined the effect of change in social ties on health outcomes for samples that did not focus on caregivers. Cerhan and Wallace (1997) found that both stably low and decreasing levels of social ties increased mortality risk for elderly men and women, but an increase in level of social ties was not significantly associated with mortality risk. Controlling for demographic and health variables eliminated the link between decreasing level of social ties and mortality. However, a study of Swedish men and women did find that both higher level of social roles and an increase in number of

social roles over eight years were associated with lower risk of insomnia, lingering illness, and medication use (Nordenmark 2004).

When studying change in social roles, the level of role occupancy is also important. Thoits tested two contrasting hypotheses about whether role gain and loss affected isolated or integrated individuals more (1983). The time and energy hypothesis posits that, when individuals occupy several social roles, they are less committed to any one role and therefore are less affected by gain or loss in roles. Similarly, the stress buffering hypothesis argues that individuals who are more socially integrated are less affected by role loss or gain because they have greater resources to adapt to strains and losses. The network-embeddedness hypothesis posits the opposite, that individuals who occupy several social roles will be more affected by role loss or gain because multiple roles tend to overlap so that a loss or gain of one role is likely to affect other roles. Thoits found that role loss and gain had larger impacts on more socially integrated individuals than more socially isolated individuals (1983). However, she attributed at least some of this effect to the fact that individuals are more likely to gain roles in early life and lose roles in later life.

As noted in the theory chapter, the life course perspective advocates the use of trajectories that capture multiple transitions (e.g., gain and loss in roles). Therefore, it is likely that individuals experience several transitions in role occupancy across the life course, and that the use of trajectories would more appropriately capture the great

degree of variability in individuals' role experiences compared to the use of change scores. Additionally, previous research has shown that there is a great degree of heterogeneity in the timing and sequencing of individual life course trajectories (Jackson 2004; Rindfuss, Swicegood, and Rosenfeld 1987). Thus, disaggregated trajectories that allow for several types of role trajectories across age would be even more appropriate.

3.2 Role-related Rewards and Demands

Stress exposure, social support, and coping resources, core components of stress process theory, are socially distributed and are hypothesized to mediate the effects of demographic factors (e.g., age, sex, race, ethnicity), socioeconomic status (e.g., education, income, occupation), and social integration (e.g., network size, voluntary associations) on health outcomes (Aneshensel 1992; George 1996). Most stressors originate in social roles (Holmes and Rahe 1967). Additionally, most social support comes from social role alters (spouse, parent, co-workers). Thus, social roles are important sources of both stress and support. Although the existing literature commonly assumes that social integration confers support, this is not necessarily true. Similarly, not all role loss is stressful. For example, the negative impact of role loss is reduced when the prior role context was stressful (Wheaton 1990). These and other findings demonstrate that social roles are not uniformly stressful or supportive.

Therefore, it is important to measure these aspects of social roles and analyze how role demands and rewards, not just role occupancy, are associated with health.

A study of French employees aged 35-50 found that poor social support and dissatisfaction with social relations, but not small social networks, predicted poor self-rated health (Melchior, Berkman, Niedhammer, Chea, and Goldberg 2003). Another study of married U.S. adults found that marital and job satisfaction were strongly associated with mental health and well-being (Coverman 1989). Role-related rewards and demands can also mediate structural effects of role occupancy. Another study found that positive support and perceived quality of relationship mediated the effects of type of social network on depressive symptoms in older adults (Fiori, Antonucci, and Cortina 2006). Thus, although social networks and social integration have significant effects on health outcomes, support and satisfaction are important components of those relationships. Positive and negative aspects of social roles may have direct or indirect effects on health outcomes. Finally, there may be gender differences in that marital satisfaction is more important for women's self-rated health and job satisfaction is more important for men's self-rated health (Wickrama, Conger, Lorenz, and Matthews 1995).

Levels of stress and rewards associated with social role occupancy are likely to change over time. In a study of midlife women who were caregivers, workers, mothers, and wives, at least 50% of respondents reported a change in the level of stress associated with each role over a one-year period; a similar proportion of respondents experienced a

change in rewards associated with each role, with the smallest amount of change reported for the parent role (Norton, Stephens, Martire, Townsend, and Gupta 2002). Thus, as with role occupancy, it is important to investigate changes in role rewards and demands over time. Declining role quality has been found to be positively associated with psychological distress; however, there is evidence of a stress buffering effect in that declining role quality does not affect distress when individuals occupy other social roles (Barnett, Marshall, and Singer 1992).

3.3 Causation vs. Selection

Another debate within the social role and health literature is whether role occupancy causes differential health outcomes or whether health status affects role occupancy and role transitions. Although early social network research and stress process research theorized that causation is the dominant model, later research has questioned this. For example, stress process theory posited that role strains led to distress (Pearlin, Menaghan, Lieberman, and Mullan 1981), but another perspective posited that distress led to poor role functioning, similar to role strain theory (Dohrenwend, Cook, and Dohrenwend 1981). Thus, role strain may be a cause or consequence of mental health.

Additionally, both causation and selection must be considered when examining role transitions. For example, it may be the case that individuals with better mental

health have higher levels of agency and choose to gain roles, maintain roles, or drop stressful roles (Thoits 2006). The same argument has been made regarding physical health and role occupancy (Verbrugge and Madans 1985). For the case of divorce, research has found more evidence for causation, but some evidence for selection in that individuals with higher levels of distress were more likely to become divorced at a later time (Johnson and Wu 2002).

The research reviewed in this section draws attention to the need to consider both causation and selection in this study of social role occupancy and health. I use these perspectives to consider alternate interpretations of findings in Chapter 6 and 7. I was not able to test causation versus selection with dual trajectory analysis. However, by examining mortality as one health outcome, I am able to make clear causal arguments about role occupancy and characteristics affecting likelihood of death.

3.4 Limitations of Prior Research

Four issues in prior multiple role occupancy and health research have limited the contributions that multiple role and health literature could make to the broader sociological literature.

First, most studies that explicitly tested the role strain and role enhancement debate have examined the health effects of occupying multiple roles in addition to caregiving. Thus, these studies tested hypotheses among select samples of caregivers,

who are most often middle-aged or elderly women. Not only is the caregiving role relatively rare, but it is an inherently stressful role. To address this limitation, I exclude the caregiver role and focused on spouse, parent, and worker roles that occur more regularly in the general population and are not typically viewed as overly stressful.

Second, most prior research has focused exclusively on older adults. This approach is strategic in that it maximizes the likelihood of capturing role loss and poor health outcomes. Later life is also a stage of the life course in which multiple role occupancy will be especially important as the likelihood of role loss increases due to retirement and the death of loved ones. However, the generalizability of conclusions from these studies is limited to a select stage of the life course. By examining multiple role occupancy across a wide range of the adult life course (age 25 to age 85), I am able to reach conclusions about multiple role occupancy and health that are applicable to all adults, not just older adults.

Third, many studies included a wide variety of social roles, including not only parent, spouse, worker, and caregiver, but also friend, grandparent, student, volunteer, church member, etc. These roles vary greatly in terms of importance, amount of time spent in the role, demands, and rewards. Prior research has simply summed the occupied roles out of a potential set of roles without considering the relative importance, or weight, of each role. By studying only spouse, parent, and work roles, core work and

family roles that are relatively equal in importance, my analyses provide a more focused and balanced test of role strain and enhancement theories.

Fourth, most previous studies ignored characteristics of social roles and focused solely on structural role occupancy. In addition to structural role occupancy, I examine stressful role and satisfying role occupancy, testing their direct association with health outcomes and also their potential to mediate effects of structural role occupancy.

Finally, the bulk of the literature followed between-person designs, focusing on the effect of role variables on health outcomes across persons instead of analyzing the effects of change or stability in multiple role occupancy within individuals. As will be discussed in more detail in Chapters 4 and 5, I adopt a within-person perspective to analyze trajectories of social role occupancy, role characteristics, and health as processes that may change over time within individuals. I then utilize these trajectories as between-person predictors of health outcomes in Chapters 6 and 7. Thus, I combine both within-person and between-person methods to examine how change or stability in multiple role occupancy at various levels is associated with concurrent change or stability in health outcomes.

3.5 Research Questions and Hypotheses

To address the limitations of prior research on multiple role occupancy and health listed above, I conduct analyses of social role occupancy and health across the life

course that address the following research questions:

RQ1: What trajectories of level, change, and stability in multiple role occupancy, role characteristics, and health status do individuals typically experience across the life course? I address this research question in Chapter 5 by examining descriptive and empirically estimated trajectories of change across age. These analyses reveal unobserved heterogeneity in two ways. First, I examine quadratic trajectories of change across age, providing more detailed information about life course processes than static cross-sectional or two-wave linear trends can provide. Second, I use latent class trajectory analyses to identify multiple distinct trajectories that vary in level and shape and fit homogeneous sub-groups within the sample. Potential trajectories include stable, increasing, decreasing, or quadratic trajectories at levels from low to high.

H1: Age-based individual trajectories include change as well as stability.

H2: There is significant heterogeneity in intra-individual trajectories.

RQ2: Are trajectories of role occupancy associated with trajectories of mental and physical health and mortality? I address this research question in Chapter 6 by evaluating role strain and role enhancement hypotheses about the associations between multiple role occupancy and health. I use role and health trajectories estimated in Chapter 5 as predictor and outcome variables in appropriate regression models.

H3: Role Strain Hypothesis

H3a: Higher levels of role occupancy are associated with less favorable health

trajectories compared to lower levels of role occupancy.

H3b: Trajectories that are primarily characterized by role loss are associated with more favorable health trajectories compared to stable role occupancy.

H4: Role Enhancement Hypothesis

H4a: Higher levels of role occupancy are associated with more favorable health trajectories compared to lower levels of role occupancy.

H4b: Trajectories that are primarily characterized by role gain are associated with more favorable health trajectories compared to stable role occupancy.

H4c: Trajectories that are primarily characterized by role loss are associated with less favorable health trajectories compared to stable role occupancy.

RQ3: Are trajectories of role strain and role satisfaction associated with trajectories of mental and physical health and mortality? I address this research question in Chapter 7 by examining trajectories of stressful role count and trajectories of satisfying role count. Because measures of role strain (being bothered/upset by a role) and role reward (satisfaction with a role) are measured directly instead of remaining implicit, I move away from role enhancement and role strain hypotheses and instead use stress process theory to guide my hypotheses. I use role stress, role satisfaction, and health trajectories identified in Chapter 5 to test the following hypotheses:

H5: Role Stress Hypotheses

H5a: Higher levels of role stress are associated with less favorable health

trajectories compared to lower levels of role stress.

H5b: Trajectories primarily characterized by decreasing role stress are associated with more favorable health trajectories compared to trajectories of stable or increasing role stress. Similarly, trajectories characterized by increasing role stress are associated with less favorable health trajectories compared to trajectories of stable or decreasing role stress.

H6: Role Satisfaction Hypotheses

H6a: Higher levels of role satisfaction are associated with more favorable health trajectories compared to lower levels of role satisfaction.

H6b: Trajectories primarily characterized by increasing role satisfaction are associated with more favorable health trajectories compared to trajectories of stable or decreasing role satisfaction. Similarly, trajectories characterized by decreasing role satisfaction are associated with less favorable health trajectories compared to trajectories of stable or increasing role satisfaction.

RQ4: Do trajectories of role strain and role satisfaction mediate the relationship between role occupancy trajectories and health?

I address this research question in Chapter 7 by including role occupancy, role strain, and role satisfaction trajectories together in a single model predicting health outcomes. I examine whether stressful role count and satisfying role count trajectories mediate the impact of total role count trajectories on health trajectories.

H7: Trajectories of role strain and role satisfaction mediate the relationship between role occupancy trajectories and health.

4. Study Design

As evidenced by the previous chapters, this study requires data that are longitudinal and survey a broad age range of individuals. The Americans' Changing Lives (ACL) Study (House 2008) meets these requirements, and thus is an appropriate dataset for this project.[1] The ACL data are ideal for the proposed analyses for four reasons: 1) they contain longitudinal panel data, permitting trajectory analyses; 2) they follow an accelerated cohort/panel design, permitting disaggregation by age and cohort; 3) they cover a broad range of the adult life course, not just older adults; and 4) they contain measures of role strain and satisfaction that are important additions to the role enhancement/strain literature. This study also requires analytical methods that estimate within-person and between-person change across age. As will be discussed below, I utilize several analytic methods that are designed to capture change over time and model unobserved heterogeneity.

In this chapter I describe the ACL Study, its design, structure, and attrition patterns. I introduce the measures that capture important concepts in this study: role occupancy, role characteristics, age, cohort, health outcomes, and socio-demographic covariates. I then introduce latent class analysis, dual trajectory analysis, and survival analysis--analytic methods that I use to evaluate hypotheses about stability and change

[1] These data are publically available through the Inter-University Consortium for Political and Social Research (ICPSR) at http://dx.doi.org/10.3886/ICPSR04690.

in social role occupancy and related characteristics and how they are associated with patterns of health outcomes across the life course.

4.1 Data Source

The ACL is a nationally representative panel study of 3,617 U.S. adults with interviews conducted in 1986, 1989, 1994, and 2001/2. James House and colleagues initiated the ACL to examine theories about health and well-being in later life, such as the compression of morbidity hypothesis. Informed by the stress and coping literature, the ACL included several psychosocial and behavioral factors, including stress, social support, social activity, and health behaviors (House, Lantz, and Herd 2005).

The ACL is a popular source of data for existing studies of social role occupancy and health (Adelmann 1994; Kikuzawa 2006; Li and Ferraro 2005; Rozario, Morrow-Howell, and Hinterlong 2004). However, all of these studies restrict analyses to older adults, all use between-person analyses, and two are cross-sectional. I take full advantage of these excellent longitudinal data and build upon existing research by using the entire age range and three waves of data to elucidate both between-person and within-person associations between social role occupancy and health.

Although four waves of the ACL are available, I analyzed only the first three waves of data for four reasons. First, the time elapsed between Wave III and Wave IV is much longer than the time elapsed between any of the earlier waves. It is likely that this eight-year follow-up period obscures transitions that occur between Wave III and Wave

IV. Second, sample size drops dramatically between Wave III (n=2,512) and Wave IV (n=1,759). An analytic sample based on four-wave survivors would not only be small, but would be highly selected by differential mortality and non-response. Third, the data from Wave IV are substantially less reliable, with excessive item-missing data and illogical responses for several variables (e.g., identical age at Wave I and Wave IV). Fourth, as of the latest mortality tracking through 2006, only 259 respondents (17% of those living at Wave IV) had died since the end of Wave IV. Restricting the analytic sample to those who completed the first three waves provides a sufficient number of deaths for mortality analyses (802 deaths, 34% of those living at Wave III).

4.2 Sample

4.2.1 Sample Design

The sampling frame of the ACL consisted of a multi-stage stratified area probability sample of Americans age 25 and older, excluding individuals living in Alaska, Hawaii, group quarters, and institutions (House 2007). The initial sample size was 3,617 respondents. The data spanned an average of 15.5 years, with face-to-face or telephone interviews at four waves: 1986, 1989, 1994, and 2001/2. The first two survey waves were conducted via 90-minute face to face interviews. At Waves III and IV, the interview time was reduced to 45 minutes and some interviews were conducted over the telephone and/or with proxy respondents (House, Lantz, and Herd 2005).

The multi-stage probability sample design for the first wave of the ACL included four selection stages: 1) selection of Standard Metropolitan Statistical Area (SMSA's) and non-SMSA counties; 2) sampling of area segments within primary sampling units; 3) systematic selection of housing units within area segments; and 4) selection of respondents within individual housing units (House 2007). This procedure allowed the ACL team to interview a nationally representative sample of adults in the contiguous United States.

The ACL's sample design also included independent oversamples of Blacks and elders 60 and older because of early project interests in older adults and racial differences (House, Lantz, and Herd 2005). Both sub-populations were oversampled at a ratio of 2:1 to ensure appropriate numbers for analyses focusing on older adults and/or racial differentials. This resulted in elderly Blacks having the highest sample representation relative to population representation, at a ratio of 4:1 (House 2007).

4.2.2 Sample Attrition

Sample attrition over the eight-year survey period used in these analyses was significant. At baseline Wave I (1986) the ACL included 3,617 respondents. At Wave II (1989), 177 respondents had died, 573 did not respond, and 2,867 respondents completed an interview. At Wave III (1994), 544 respondents had died, 511 did not respond, and 2,562 respondents completed an interview (House, Lantz, and Herd 2005). More than

20% of the sample did not respond at one or more waves of the study: 542 respondents were missing for one wave and 271 were missing for two waves.

I analyzed sample attrition during this eight-year period to identify baseline characteristics that significantly predicted attrition. The first column of Table 4.1 presents odds ratios from logistic regression equations predicting likelihood of dying during the first three waves of the study. Respondents who were older (OR=1.07), were functionally impaired (OR=1.80), or had low income (OR=1.65) had increased odds of dying during the eight year study period compared to those who were younger, unimpaired, and had incomes higher than $15,000 per year. Respondents who were women (OR=0.32) and those with more social roles (OR=0.73) and better self-rated health (OR=0.87) had decreased odds of dying during the study period.

The second column of Table 4.1 presents odds ratios estimating the impact of socio-demographic and health factors on the likelihood of not responding to any survey wave conditional on surviving through all three waves. Respondents who were Black (OR=1.33), had less than a high school education (OR=1.41), or who had low income (OR=1.33) had increased odds of not responding to a survey wave compared to those who were White, had higher education, or had higher income. Respondents who were older (OR=0.99), had more chronic health conditions (OR=0.91), had a higher number of social roles (OR=0.85), and had higher self-rated health (OR=0.89) had decreased odds of

not responding to a survey wave compared to those who were younger, had fewer chronic health conditions and social roles, and had higher self-rated health.

Table 4.1 Odds Ratios Predicting Likelihood of Death and Non-Response in the ACL Panel Data, 1986-1994

	Death	*Non-Response*[1]
Socio-demographic Variables[2]		
Age (25-85)	1.07***	0.99**
Female (vs. Male)	0.32***	0.91
Black (vs. White)	1.15	1.33***
<HS Education (vs. HS+)	1.01	1.41**
Low Income (vs. $15k+ per yr)	1.65**	1.33**
High Religious Attendance (vs. < once per week)	0.85	0.83
Functional Impairment (vs. none)	1.80***	1.02
Chronic Conditions (0-11)	1.07	0.91*
Study Variables		
Number of Roles (0-3)	0.73***	0.85**
Depressive Symptoms (0-11)	1.01	1.01
Self-Rated Health (1-4)	0.87*	0.89*
n	3,495	2,989

[1] Likelihood of non-response is conditional on surviving all three waves.
[2]Variables with a range are continuous or ordinal. Variables with a reference category are categorical. *** p<.001, **p<.01, *p<.05. Unweighted data.

Because I only analyzed respondents who survived and responded to the first three waves of the ACL, my analytic sample is biased toward respondents who are younger, more socioeconomically advantaged, healthier, more socially engaged, and disproportionately White and female compared to the full baseline sample. Clearly, the

analytic sample differs from the population from which the sample is drawn. Next, I discuss potential implications of this bias.

4.2.3 Correction for Sample Design and Attrition

Most statistical techniques assume a simple random sample, meaning that every individual in the population has an equal chance of being represented in the sample. The complex structure of the ACL study design—a multistage probability sample that oversamples Blacks and the elderly and follows surviving individuals longitudinally—is not a simple random sample. Oversampling and random chance increase sample variance and create sample distributions that differ from the population they are drawn from (Winship and Radbill 1994), while cluster sampling draws individuals from homogeneous groups, decreasing sample variance.

Researchers often correct distortion due to sampling by incorporating sampling weights, which are the inverse of the probability of selection based on the sampling design, into descriptive analyses. The sample weight also accounts for probability of attrition (non-response and death). The composite sampling weight variable recommended for descriptive analyses in the ACL codebook combines housing unit selection weight, household screening factor, respondent selection factors (age and race), nonresponse adjustment weight, and post-stratification weight to make the weighted sample match Census population estimates (House 2007). In follow-up waves, the composite sampling weight for wave *n* is the composite sampling weight for wave *n-1*,

adjusted for nonresponse and death and post-stratified based on wave *n* data. Both statistical programs that I used, Stata and Latent GOLD, are able to incorporate sample weights into descriptive and multivariate analyses.

Although descriptive analyses often employ sampling weights, there is some debate over the use of sampling weights in multivariate analyses. Some researchers argue that sampling weights must always be included in some form when analyzing complex data (Pfeffermann 1996), while others argue that sampling weights are not always necessary to produce unbiased parameter estimates (Winship and Radbill 1994). If unweighted and weighted results are similar, unweighted estimates are preferable because they are efficient and have correct standard errors. If unweighted and weighted results differ significantly, then weighted estimates are preferable, provided that efforts are made to report correct standard errors (Winship and Radbill 1994). Similar arguments have been made concerning the use of sampling weights in latent class analysis; some argue that lack of weighting introduces serious bias (Kaplan and Ferguson 1999), while others argue that unweighted latent class models are acceptable and even preferable when unweighted and weighted results do not differ significantly (Vermunt and Magidson 2007). Following the latter advice, I estimated both weighted and unweighted models for all of my regression and latent class analyses and found that results using both weighted and unweighted data were similar. Some coefficients were

slightly altered with weighted data, but general patterns and conclusions remained the same. Therefore, I present results estimated without sampling weights in the main text.

4.2.4. Analytic Sample

For reasons discussed in section 4.1, my analytic sample includes respondents who participated in the first three waves of the study. Among the original 3,617 respondents, 1,269 died or did not respond during the first three years of the ACL study. Of the remaining 2,348 respondents, I deleted 125 respondents who were interviewed by proxy in Wave III. Reasons for proxy interview include respondent having a hearing impairment, other physical/health disability, mental/cognitive disability, respondent is too busy or not home much, and respondent will not cooperate with the interview. Because data on depressive symptoms, self-rated health, and role rewards and demands are highly subjective, proxy data are not valid for these analyses. I deleted an additional 77 cases due to item-missing data (discussed further in section 4.3 below), which produced a final analytic sample size of 2,146 respondents.

4.3 Measures

4.3.1 Social Role Occupancy

Social role occupancy is a dichotomous indicator of whether or not the respondent currently holds a social role at each of three waves. A *spouse* is currently married. I created a dichotomous variable that indicated spouse versus non-spouse;

non-spouses include those who are separated, divorced/annulled, widowed, and never married. A *parent* has one or more children of any age living in the household or living elsewhere. A *worker* is currently working for pay, including those who are temporarily laid off, those on sick or maternity leave, and those who do unpaid family work. Non-workers include those who are unemployed, looking for work, retired, permanently disabled, keeping house, and students. One respondent was missing data on marital status at Wave III and one respondent was missing data on work status at Wave I; I dropped these respondents from the analytic sample.

Role count indicates the number of roles that an individual occupies at each wave. I created this variable by summing the dichotomous indicators of spouse, parent, and worker at each wave. Number of roles ranges from zero to three at each wave.

4.3.2 Role Characteristics

In separate questions related to each of the three focal social roles, r*ole strain* assesses how often the respondent was bothered or upset by his or her role as a parent, spouse, and/or worker at each wave. Role strain questions were worded similarly: "How often do you feel bothered or upset in your marriage/work/as a parent?" Response categories included (1) Almost Always, (2) Often, (3) Sometimes, (4) Rarely,

and (5) Never. I reverse coded so that higher values indicated greater strain.[2] Respondents who did not occupy the focal role at a particular wave were coded as zero in that wave. I then dichotomized role strain into *high strain* (sometimes, often, or almost always bothered/upset) versus low strain (never or rarely bothered/upset) for individuals who hold the role at each wave. Turning to multiple role analyses, I created a measure of *stressful role count*, which is the summed number of roles classified as high strain at each wave (range 0-3).

Role Reward measures how satisfied the respondent was with his or her role as a parent, spouse, and/or worker. Parental, spousal, and work satisfaction questions were worded similarly: "How satisfied are you with parenthood/marriage/job?" Response categories included (1) Completely Satisfied, (2) Very Satisfied, (3) Somewhat Satisfied, (4) Not Very Satisfied, (5) Not at All Satisfied. I reverse coded so that higher values indicated greater satisfaction. As with role strain, I dichotomized role satisfaction into *high satisfaction* (very or completely satisfied with the role) versus low satisfaction (somewhat, not very, or not at all satisfied with the role) for individuals who hold the role at each wave. For multiple role analyses, I created a measure of *satisfying role count*, which is the summed number of roles classified as high satisfaction at each wave (range 0-3).

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[2] For most role strain and satisfaction measures, between one and eight respondents were missing data for any measure at any wave. One exception is work satisfaction at Wave II—188 respondents were missing on this item. I retained all of these respondents with missing data in the analytic sample because role characteristics were only included in the analyses in Chapter 7.

4.3.3 Life Course Variables

Age is a continuous measure of self-reported age of the respondent at each wave. I dropped three respondents whose age data were too unreliable to impute.[3] To produce sufficient sample sizes at very old ages, I truncated the age distribution at 85 years, combining respondents age 86 and older into a final open-ended age category of 85 and older.[4] For latent trajectory analyses, I centered age at 25, the youngest age of entry into the analyses. I included age up to the second power, the highest polynomial that can be can be used to estimate age-based trajectories with three waves of data (Andruff, Carraro, Thompson, Gaudreau, and Louvet 2009; Nagin 1999).

Cohort indicates the time periods in which respondents were born. I followed the longitudinal cohort design of the ACL and assigned respondents to four 15-year age cohorts: (1) Baby Boomers (born 1947-1961); (2) WWII (born 1932-1946); (3) Depression/pre-War (born 1917-1931); and (4) Young Progressives/WWI (born 1891-1916).[5] These 15-year cohorts represent time periods with distinct social and historical

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[3] For 58 respondents, age at Wave II or Wave III was impossible given baseline age (e.g., age at a later wave was younger than age at baseline or age at a later wave was 5-15 years older than expected given years elapsed between waves. To correct age inconsistencies, I replaced respondents' age at Wave *t* with age at baseline plus the average number of years between baseline and Wave *t* if age at Wave *t* was impossible, except for three cases with very unreliable age data (e.g., age 35 Wave I, age 50 Wave II, age 65 Wave III).

[4] This truncation affected two respondents at Wave I, 12 respondents at Wave II, and 52 respondents at Wave III.

[5] To test the sensitivity of cohort cut points, I also tested all analyses with seven 10-year age cohorts: (1) Age 25-34 at Wave I (born 1952-1961); (2) Age 35-44 at Wave I (born 1942-1951); (3) Age 45-54 at Wave I (born 1932-1941); (4) Age 55-64 at Wave I (born 1922-1931); (5) Age 65-74 at Wave I (born 1912-1921); (6) Age 75-84 at Wave I (born 1902-1911); Age 85+ at Wave I (born 1892-1901). These sensitivity analyses with 10-year cohorts produced results very similar to those with 15-year cohorts.

contexts that affect norms about role occupancy and sequencing, especially for women, that apply to individuals born during those time periods.

4.3.4 Covariates

Gender is a time-invariant dichotomous measure indicating female or male (reference category). *Race* is a time-invariant categorical measure including Black, White, American Indian, Asian, and Hispanic. The ACL sample was 64.22% White and 32.46% Black at baseline. The remaining 3.32% of the sample was comprised of American Indians (1.3%), Asians (0.83%), and Hispanics (1.19%). Because of the small size of these racial groups, I dropped 62 respondents in the "other" racial/ethnic category from the analytic sample. I then created a dichotomous measure of race indicating Black or White (reference category).

Education is a continuous measure of the highest year of education completed. The ACL Study did not ask respondents to report educational credentials, only years of education. I recoded years of education into a categorical measure with response categories including: (1) Less than a high school education (<12 years), (2) High school graduate (12 years), (3) Some college (13-15 years), and (4) Bachelor's degree or higher (16 or 17 years). I then created a dummy variable indicating *low education* (<12 years vs. other).

Family Income is a time-invariant categorical measure of dollars earned by the respondent and his or her spouse from all income sources,[6] before taxes, in the last 12 months. Response categories included: (1) Less than $5,000, (2) $5k-$9,999, (3) $10k-$14,999, (4) $15k-$19,999, (5) $20k-$24,999, (6) $25k-$29,999, (7) $30k-$39,999, (8) $40k-$59,999, (9) $60k-$79,999, and (10) $80k+ per year. I recoded the 10-category measure into a 3-category measure of family income: (1) Low, $0-15,000 per year; (2) Medium, $15-30,000 per year; and (3) High, more than $30,000 per year. I also created a dummy variable indicating *low family income* ($0-15,000 per year vs. other). I used a baseline measure instead of a time-varying measure because family income values were relatively stable across waves, with correlation coefficients ranging from 0.64 to 0.73 (see Appendix Table A.1). The ACL staff imputed an income value for 148 respondents who were missing income data, based on education and work status.

Religious Participation is a time-invariant ordinal measure of how often the respondent attended religious services, ranging from never to more than once a week. I reverse coded so that a higher value indicated more frequent attendance. Categories included: (1) Never, (2) Less than once a month, (3) About once a month, (4) Two or three times a month, (5) Once a week, and (6) More than once a week. I followed convention in the literature and evidence that the highest levels of religious attendance

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[6] Income from all sources includes job earnings, rent, interest, dividends, money market funds, trust funds, social security, VA benefits, retirement pay, pensions, annuities, unemployment compensation, disability, workers' compensation, alimony, child support, SSI, welfare or public assistance, food stamps, and other income.

are most beneficial for health and created a dummy variable indicating frequent religious attendance, with once a week or more coded as one and less frequent attendance categories coded as zero (Musick, House, and Williams 2004; Strawbridge, Cohen, Shema, and Kaplan 1997). I dropped six respondents who were missing data on religious attendance. I used baseline religious attendance instead of a time-varying measure because high religious attendance was relatively stable across survey waves, with correlation coefficients ranging from 0.57 to 0.71 (see Appendix Table A.2).

Functional Limitation Index is a time-varying measure of how much difficulty the respondent has doing everyday tasks due to physical limitations. The ACL included ordinal measures summarizing the respondent's difficulty and need for help with several tasks that require varying levels of functional ability: bathing, climbing stairs, walking several blocks, and doing heavy work around the house such as shoveling snow or washing walls; another item asked whether the respondent was currently in bed or a chair most of the day.

Most of the items used in the ACL functional limitation index, including doing heavy housework, climbing stairs, and walking several blocks, are items from the Rosow-Breslau scale, which assesses higher-level functioning necessary for independent living (Rosow and Breslau 1966). Bathing is an item from the Activities of Daily Living Scale, which assesses more basic needs and levels of functioning (Katz, Ford, Moskowitz, Jackson, and Jaffe 1963). Because the functional limitation items span two

indices designed to assess limitations with basic and advanced self-care, the coding strategy below can assess several levels of impairment, from no impairment to most severe impairment. The response categories for the ACL-constructed functional limitation index included: (1) No functional impairment, (2) Least severe functional impairment (cannot do or has a lot of difficulty with heavy housework like shoveling show or washing walls), (3) Moderately severe functional impairment (cannot do or has a lot of difficulty climbing a flight of stairs and/or walking a block), and (4) Most severe functional impairment (currently in bed or chair most of the day and/or cannot do or has a lot of difficulty bathing).

I created a dichotomous indicator of whether the respondent was functionally impaired or not at each wave, with any impairment coded as one and no impairment coded as zero. I used a time-varying measure of functional impairment because correlations across waves were relatively low (r=0.44-0.55), implying moderate change over time (see Appendix Table A.3). Additionally, functional ability is important to role occupancy, particularly the work role; thus, it is important to include a time-varying measure of functional impairment.

Chronic Conditions is a continuous variable summing 10 chronic conditions that the respondent may report having in the past 12 months, including arthritis, lung disease, hypertension, heart attack, diabetes, cancer, foot problems, stroke, broken bones, and incontinence. Possible values range from zero to 10. I used a baseline

measure of chronic conditions instead of a time-varying measure because of relatively stable values across waves (r=0.64-0.71, see Appendix Table A.4).

I included three additional covariates in mortality analyses: BMI, smoking status, and alcohol use. *Body mass index (BMI)* is a measure of respondents' weight divided by height squared (Garrow and Webster 1985).[7] The ACL staff imputed missing values with the gender-specific median BMI value for 79 cases in Wave I, 55 cases in Wave II, and 44 cases in Wave III. I used baseline BMI instead of a time-varying measure because BMI values were highly consistent across survey waves (r=0.83-0.91, see Appendix Table A.5). I then created dichotomous BMI measures indicating *underweight* (18.5 kg/m^2 or less), *normal weight* (18.6-24.9 kg/m^2), *overweight* (25.0-29.9 kg/m^2), and *obese* (30 kg/m^2 or greater) at baseline. I chose these cut points based on recent mortality literature using the ACL (Lantz, Golberstein, House, and Morenoff 2010).

Smoking status is another covariate for mortality analyses. I created three mutually exclusive categories to describe respondents' smoking status: *current smoker*, *former smoker*, and *never smoked*. Correlations across waves for current smoking status were fairly high (r=0.68-0.80), so I use a baseline instead of a time-varying measure (see Appendix Table A.6).

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[7] In Wave I, the ACL staff measured weight in pounds and height in inches. In Waves II and III, the ACL measured weight in kilograms and height in meters.

Finally, I included alcohol use in mortality analyses. The ACL staff computed number of drinks per month based on three questions: 1) "Do you ever drink beer, wine, or liquor?" (2) "During the last month, on how many days did you drink beer, wine, or liquor?" and (3) "On days that you drink, how many cans of beer, glasses of wine, or drinks of liquor do you usually have?" Thirty respondents were missing data and were not imputed. I used number of drinks per month to code respondents into three categories: (1) *non-drinkers* (0 drinks per month), (2) *moderate drinkers* (1-79 drinks per month), and (3) *heavy drinkers* (80+ drinks per month). Correlations across waves were moderate (r=0.53-0.56, see Appendix Table A.7), but I used a baseline instead of time-varying measure for the sake of simplicity.

4.3.5 Health Outcomes

Depressive Symptoms are taken from the Center for Epidemiologic Studies Depression Scale (CES-D), a widely-used instrument designed to assess current depressive symptomatology in the general population through in-home survey methods (Radloff 1977). The 20 items in the CES-D measure four factors of depressive symptoms, including depressed affect, positive affect, somatic complaints, and interpersonal problems. The CES-D has been shown to have high validity, internal consistency, and reliability across a wide variety of demographics (Ensel 1986; Radloff 1977).

The ACL included a shorter form of the CES-D, with 11 of the original 20 items and simplified response categories. An analysis of this short-form among elders in the

Iowa EPESE cohort found that this 11-item scale retains acceptable internal consistency and loads on the original four factors (Kohout, Berkman, Evans, and Cornoni-Huntley 1993). The 11 items included: "I felt depressed," "I felt everything I did was an effort," "My sleep was restless," "I was happy" (reverse coded), "I felt lonely," "People were unfriendly," "I enjoyed life" (reverse coded), "I did not feel like eating, my appetite was poor," "I felt sad," "I felt that people disliked me," and "I could not get going." Respondents indicated how often they felt this way in the past week, with responses including (1) "Hardly ever," (2) "Some of the time," and (3) "Most of the time." I created a time-varying symptom count by summing the number of symptoms that occurred "some of the time" or "most of the time" for each respondent at each wave.

I imputed values for missing CESD items using the following decision rules. First, I only imputed values for individuals who provided valid responses for more than two-thirds of the 11 CESD items; I did not impute values for respondents missing four or more items. Second, I imputed "yes" or "no" item responses that were proportional to the individuals' valid responses for other items. If a respondent was missing one item, I imputed a "no" for that item. If a respondent was missing two items and reported having fewer than two of the remaining nine symptoms, I imputed a "no" for each item; if a respondent was missing two items and had two or more symptoms, I imputed a "yes" for one symptom and a "no" for the other. If a respondent was missing three items and reported zero of the remaining eight symptoms I imputed a "no" for the

three missing items; if a respondent with three missing items reported any symptoms, I imputed a "yes" for one missing item and a "no" for the other two. Based on these decision rules, I imputed missing values for 22 participants in Wave I, 16 respondents in Wave II, and seven respondents in Wave III. I dropped four cases that were missing four or more depressive symptom items at any wave.

Self-Rated Health is respondents' self-assessment of the question, "How would you rate your health at the present time?" Response categories included: (1) Excellent, (2) Very Good, (3) Good, (4) Fair, and (5) Poor. I reverse coded so that higher values indicated better self-rated health, and combined the "fair" and "poor" categories due to the small number of responses in these categories. I also created a time-varying dichotomous indicator of poor self-rated health (good, fair, or poor self-rated health) versus other (excellent or very good self-rated health).

Mortality. The ACL Study continuously tracked respondent mortality via the National Death Index, death certificates, and informant reports through 2006. As of 2005, the study reported over 99% mortality ascertainment with over 97% of deaths confirmed with death certificates (House, Lantz, & Herd 2005). I created variables that indicated whether the respondent died after Wave III and year of death (1994-2006).

4.4 Descriptive Statistics

Table 4.2 presents descriptive statistics (means and percentages) for the study variables described above. For social role variables, the table shows that roughly half of

the respondents are married and/or working, the large majority of respondents are parents, and the average respondent holds approximately two of the three social roles. Approximately half of parents and workers report that the role is stressful, while just one-quarter of spouses report that their marriage is stressful; respondents hold an average of one stressful social role. At the same time, most parents and spouses are satisfied with their role (>80%), while approximately 60% of workers are satisfied with the role; respondents hold an average of 1.5 satisfying social roles.

Descriptive analyses of covariates reveal that the average respondent was 50 years old at baseline. More than half of the sample is female and approximately one quarter of the sample is Black. Less than 30% of the sample has less than a high school education and more than one third of the sample has a household income lower than $15,000 per year. Functional impairment and chronic illnesses are not very common in this sample, which is not surprising given the age range. Depressive symptoms are on average moderate (3-4 symptoms out of 11) and self-rated health is typically in the "very good" range (2.5-2.7 out of four).

Table 4.2 Descriptive Statistics

	W1 (1986)	WII (1989)	WIII (1994)
Social Role Variables			
Married (%)	60.5% (0.01)	59.3% (0.01)	56.7% (0.01)
Parent (%)	84.8% (0.01)	85.4% (0.01)	85.1% (0.01)
Worker (%)	60.9% (0.01)	58.5% (0.01)	46.9% (0.01)
# of Roles (0-3)	2.06 (0.02)	2.03 (0.02)	1.89 (0.02)
Role Strain			
Spouse Strain (%)	25.0% (0.01)	25.7% (0.01)	25.2% (0.01)
Parent Strain (%)	55.4% (0.01)	52.3% (0.01)	47.5% (0.01)
Work Strain (%)	53.6% (0.01)	52.9% (0.01)	55.3% (0.02)
# of Stressful Roles (0-3)	0.95 (0.02)	0.91 (0.02)	0.81 (0.02)
Role Satisfaction			
Spouse Satisfaction (%)	84.3% (0.01)	83.1% (0.01)	83.2% (0.01)
Parent Satisfaction (%)	84.1% (0.01)	81.4% (0.01)	84.0% (0.01)
Work Satisfaction (%)	66.3% (0.01)	65.1% (0.01)	63.8% (0.01)
# of Satisfying Roles (0-3)	1.63 (0.02)	1.57 (0.02)	1.49 (0.02)
Life Course Variables			
Age (25-85)	50.4 (0.35)	53.06 (0.35)	58.0 (0.34)
15-year Cohort (%)			
(1947-1961)	33.8% (0.01)		
(1932-1946)	20.7% (0.01)		
(1917-1931)	32.6% (0.01)		
(1891-1916)	12.9% (0.01)		
Covariates			
Female (%, vs. Male)	64.0% (0.01)		
Black (%, vs. White)	28.2% (0.01)		
< HS Education (%, vs. HS+)	28.8% (0.01)		
Low Income (%, vs. >$15k per year)	36.4% (0.01)		
High Religious Att. (%, vs. < 1/wk.)	42.7% (0.01)		
Functionally Impaired (%, vs. no)	16.4% (0.01)	18.2% (0.01)	23.1% (0.01)
# of Chronic Illnesses (0-10)	1.2 (0.03)		
BMI (15-55)	26.3 (0.11)		
Current Smoker (%, vs. non)	27.8% (0.01)		
# of Drinks per month (0-80+)	12.99 (0.65)		
Health Outcomes			
Depressive Symptom Count (0-11)	3.73 (0.07)	3.51 (0.06)	2.73 (0.05)
Self-Rated Health (1-4)	2.70 (0.02)	2.51 (0.02)	2.49 (0.02)

Notes: Numbers in parentheses are standard errors. Role strain and satisfaction estimates are conditional on holding the role. Unweighted estimates. N=2,146

Note that these analyses are unweighted. Weighted descriptive statistics are presented in Appendix A.2. Because the ACL oversampled elderly and Black individuals and my analytic sample contains respondents who survived the first eight years of the study, weighted results differ in several ways, including younger average age (by five years); a higher percentage of married and working respondents; fewer women, Black respondents, and individuals with low education and/or income; and lower average disability.

4.5 Analytic Methods

The major contribution of this study is its use of longitudinal methods that capture both within-person and between-person effects to examine how the process of social role occupancy across the life course relates to concurrent trajectories of health outcomes and likelihood of death. Most previous studies of role occupancy and health followed a between-person approach and examined whether people with more or fewer roles are more or less likely to experience poor health outcomes. An intraindividual approach reframes the question (George 2009) to ask whether individual levels and dynamics of social role occupancy are associated with concurrent patterns of health outcomes.

Intraindividual analyses, also known as within-person or person-centered analyses, focus on the individual (Bergman and Trost 2006) and identify stability and change within individuals over time (George 2009; Laursen and Hoff 2006). One major hallmark of within-person analyses, especially within the developmental psychology literature, is careful attention to unobserved heterogeneity. Some researchers argue that variable-oriented research is appropriate for homogeneous populations, whereas person-oriented research is more appropriate when the sample being analyzed is heterogeneous (von Eye and Bogat 2006). Between-person analyses present effects of variables that may be true for the aggregate population, but may not reflect the reality experienced by individuals or groups of individuals (Bergman and Trost 2006; von Eye and Bogat 2006). According to this perspective, latent growth models are a form of variable-centered analysis because they utilize a single, aggregate trajectory; in contrast, latent class analysis or group-based trajectory models are a form of person-centered analysis because they utilize disaggregated trajectories, (Laursen and Hoff 2006; Liang, Xu, Bennett, Ye, and Quinones 2010), issues that I will discuss in the next section.

Many scholars of change over time advocate the inclusion of both between-person and within-person models (Bergman and Trost 2006; Hofer and Piccinin 2010; Laursen and Hoff 2006; Nagin and Land 1993; Raudenbush 2001). This approach fully utilizes the advantages of the life course perspective by identifying interindividual factors that predict intraindividual patterns of stability and change over time/age

(George 2009). Following the life course perspective, I combined between-person and within-person approaches to examine distinct patterns of change and stability within individuals across age, how these patterns are related, and how between-person social factors are associated with intraindividual patterns (George 2009; Singer and Willett 2003).

4.5.1 Latent Trajectory Analysis

To test life course models effectively, one needs statistical techniques that can: a) model change over time, b) discriminate among distinctive trajectories, c) identify heterogeneity over time and within samples, and d) identify factors related to stability and change over time (George 1999). To this end, I use latent class growth analyses in Chapter 5 to produce age-based trajectories of multiple social role occupancy, role stress and satisfaction, depressive symptomatology, and self-rated health. The major goal of these analyses is to identify distinct trajectories of change and stability in predictor and outcome variables that will be used in later chapters on the association of roles and characteristics with health outcomes.

This is an appropriate analytical approach to the study of social roles and health for several reasons. First, health outcomes are a product of both proximate and distal social factors that unfold over the life course. Latent trajectory analyses incorporate information about stability and change of social roles, which may have important effects on health outcomes. A focus on stability and change draws attention to the dynamic

nature of the relationship between social roles and health across the life course. Second, latent class analyses model sample heterogeneity by identifying distinct trajectories within the sample that can vary in both intercept and the magnitude and direction of slope. It is possible that role growth (increase in number of roles one occupies) or role decline (decrease in number of roles one occupies) may have a greater effect on health than static role occupancy; the use of latent class analysis will expand the social role and health literature to focus explicitly on the effects of both baseline level (i.e., intercept) and growth (i.e., slope) of social roles.

Latent class growth models, also called group-based trajectory models, are a special case of finite mixture models that identify multiple distinct trajectories within the population (Nagin and Tremblay 2005). Latent class growth models improve upon standard change score methods because they can model non-linear change over multiple observation points instead of just linear change between two discrete time points (Andruff et al. 2009; Curran and Muthen 1999). They improve upon standard aggregated growth models because they allow for distinct individual trajectories that are lost when modeling average trajectories (Andruff et al. 2009). Whereas latent growth curve models assume a homogeneous population, an assumption that is often violated, latent class growth models do not have this assumption and are designed to identify patterns in heterogeneous samples (Bollen and Curran 2006). Latent class growth models capture what psychologists call multinomial heterogeneity in change (Nagin

1999)—by estimating separate intercepts and slopes that are fixed for each distinct subgroup, researchers can pick up on several different and sometimes contrasting longitudinal trends that would otherwise be obscured by the average trend of the sample (Andruff et al. 2009). Thus, instead of predicting individual variation around a mean trajectory, group-based methods allow researchers to predict membership in one of several distinct trajectories (Nagin and Tremblay 2005).

In criminology, the use of models that allow distinct trajectories by subgroup were developed to test whether the well-known quadratic age-crime curve applied at the individual level or was a product of distinct trajectories averaged together (Nagin and Land 1993). In psychology, these models were applied to examine age trends in phenomena such as depression, where there is likely no common age trend in levels of depression but rather distinct trajectories that characterize qualitatively different subgroups, such as those who are never depressed, consistently depressed, or cycle between periods of higher and lower depression (Raudenbush 2001).

In general, latent class growth models are preferable to standard growth models when the researcher expects that all population members may not follow the same trajectory and when the motivation for the analysis is to uncover heterogeneity hidden by aggregate trends (Nagin and Tremblay 2005). The slopes and intercepts for individuals within each subgroup are set to equality. These fixed parameters leave one

extra degree of freedom, allowing one to estimate quadratic trajectories with three waves of data, cubic trajectories with four waves of data, and so on (Andruff et al. 2009).

4.5.2 Dual Trajectory Analysis

Dual trajectory (George and Lynch 2003; Lynch and George 2002; Silverstein and Long 1998) and triple trajectory (Taylor and Lynch 2004) analyses are distinctive in that both the predictor and outcome variables are operationalized as trajectories. In Chapter 6, I use dual trajectory analysis to examine the association between role occupancy trajectories and trajectories of depressive symptoms and self-rated health. In Chapter 7, I examine the association between role characteristic trajectories and health outcome trajectories.

Dual trajectory analyses offer important methodological and substantive advantages over traditional methods; both predictor and outcome variables are measured as processes, or patterns, which are central to a life course understanding of social phenomena (Taylor and Lynch 2004). Dual trajectory analyses also represent an efficient use of rich time-varying longitudinal data (George 2009). We know that the number of social roles one occupies is associated with differences in health outcomes; dual trajectory methods allow one to examine how patterns of social role occupancy (e.g., growth, loss, stability) are related to patterns of well-being

One important limitation of dual trajectory analyses is that they cannot address causality. The "predictor" trajectory and "outcome" trajectory cover the same time

points, so there is no way to establish which trajectory is affecting the other (George 2009; Raudenbush 2001; Silverstein and Long 1998; Taylor and Lynch 2004). As a consequence, one must interpret results as associations or relationships, not causal effects.

4.5.3 Cohort Representation and Effects

Age and cohort effects are central to all analyses. An accelerated longitudinal design follows several adjacent cohorts of individuals over a relatively short period of time (Tonry, Ohlin, and Farrington 1991). This data structure allows one to examine the effects of age and cohort and their interactions. Accelerated longitudinal designs also allow investigators to pool data from multiple cohorts; however, estimates may be biased if different cohorts experience different patterns of change with age (Miyazaki and Raudenbush 2000). Accelerated longitudinal designs are also essential for disentangling the effects of age (developmental) and cohort (effect of being a certain age during a certain historical period) (House, Lantz, and Herd 2005; Miyazaki and Raudenbush 2000). The ACL was designed as a "long-term cohort longitudinal study" to include multiple observations for respondents from multiple birth cohorts, allowing investigators to pool 15 years of observation for four 15-year age cohorts, producing a synthetic cohort that represents individual experiences from age 25 to 99 (House, Lantz, and Herd 2005). One important implication of this data structure is that the sample represents a wide variety of ages; therefore, age-based analyses are preferable over time-

based analyses because time-based analyses would assume that patterns over time are similar for all ages. This assumption is not tenable in a life course framework.

Figure 4.3 shows the unweighted age range and number of observations per wave for each of the 15-year cohorts. Observations used in this dissertation (the first three waves) are indicated in bold font. The "Total" row at the bottom of the table shows that the accelerated longitudinal design provides observations for a wide age range at each wave. More importantly, the body of the table demonstrates the strength of the accelerated longitudinal design—each age between 40 and 78 is represented by adjacent cohorts, permitting one to disentangle age and cohort effects. For example, in my analytic sample age 50 is represented by Cohort 1 and 2 at Waves I, II and III. Similar results using 10-year cohorts are presented in Appendix Table A.9.

Table 4.3 Age Representation by 15-Year Cohort

	W1 (1986)	W2 (1989)	W3 (1994)	W4 (2001/2)
Cohort 1 (1947-1961)	**Age 25-39 n=1,082**	**Age 27-43 n=865**	**Age 31-48 n=843**	Age 39-55 n=715
Cohort 2 (1932-1946)	**Age 40-54 n=638**	**Age 42-59 n=529**	**Age 47-64 n=511**	Age 55-70 n=421
Cohort 3 (1917-1931)	**Age 55-69 n=1,118**	**Age 57-74 n=923**	**Age 62-78 n=794**	Age 69-85 n=509
Cohort 4 (1891-1916)	**Age 70-95 n=776**	**Age 72-97 n=543**	**Age 77-102 n=366**	Age 85-99 n=114
Total	**Age 25-95 n=3,614**	**Age 27-97 n=2,860**	**Age 31-102 n=2,512**	Age 39-99 n=1,759

Note: Unweighted data.

Some researchers have called attention to the need to study both within-person and between-person effects of age, that is, not only the effect of increasing age but also

the effect of age at baseline (Mendes de Leon 2007). The inclusion of cohort indicators based on age at baseline address this concern.

5. Trajectories of Change across Age

In this chapter, I examine age-based intra-individual trajectories of social role occupancy, role reward and demand, and health across the adult life course. These trajectory analyses preface dual trajectory and mortality analyses in later chapters, allowing me to ask how change or stability in role occupancy and characteristics are associated with change or stability in health outcomes. As noted in the theory and literature review chapters, trajectories are important theoretical and methodological tools that assess level, change, and stability over time. Trajectories appropriately capture the processual nature of individual-level social phenomena, including role occupancy, role characteristics, and health. I argue that the use of trajectories offers a more dynamic and nuanced view of how these social phenomena are patterned across the adult life course.

This chapter examines research question #1: *What trajectories of level, change, and stability in multiple role occupancy, role characteristics, and health status do individuals typically experience across the life course?* I use latent class analysis to identify distinct, disaggregated trajectories of change over age. My first hypothesis is that these trajectories will capture change across the life course in addition to stability. Results showing that a substantial proportion of individuals experience significant change in focal variables across age would support the conclusion that longitudinal data and measures are needed to accurately capture the complexity of social processes across the

life course. My second hypothesis is that there is significant heterogeneity in within-person trajectories across age. Results demonstrating more than one latent trajectory across age for the sample would support the conclusion that one aggregate trajectory cannot accurately capture heterogeneity in life course patterns of focal variables across age and that an aggregate trajectory presents an average that obscures distinct sub-group patterns.

I do not examine hypotheses about the exact nature of expected trajectories because there is little empirical guidance on intra-individual age-based trajectories of role occupancy, role characteristics, and health across the adult life course. Instead, I use latent class analysis to empirically identify trajectories from a set of theoretically possible trajectories: stable, increasing, decreasing, or quadratic trajectories at various levels.

Two methodological issues deserve mention before I present analytic methods and results. First, I created a longitudinal data set by converting the data into "person-period" form, so that each respondent had one record for each wave of measurement (Singer and Willett 2003). Thus, in the converted data set, each respondent has three entries, one for each wave of data. Person-period datasets are essential to longitudinal analyses because they highlight individual change over time. This conversion produced a total of 6,438 observations from 2,146 respondents observed at three waves.

Second, the accelerated cohort design of the ACL Study creates a synthetic cohort that spans the age range of the entire sample. Although each respondent is only

interviewed over a nine-year period within a specific age range (e.g., age 30-39, age 42-51), this study design allows one to pool the data together, combining information from segments of the life course experienced by individual respondents into one synthetic cohort's life course from age 25 to age 85.

Section 5.1 presents the statistical methods and analytical strategies used in this chapter. The remainder of the chapter presents aggregate trends and latent trajectories for five variables: multiple role occupancy (supported by descriptive analyses of spouse, parent, and work roles), multiple role strain (supported by descriptive analyses of spouse, parent, and work strain), multiple role satisfaction (supported by descriptive analyses of spouse, parent, and work satisfaction), depressive symptoms, and self-rated health. For each focal trajectory, I estimated three sets of analyses. First, I plotted mean values across age to estimate the between-person pattern of change across age. These analyses provided information about the aggregate pattern of change across age. Second, I estimated empirically-derived trajectories across age with latent class analyses. These results provided dummy variables for trajectory membership that function as major independent and dependent variables in Chapter 6 and Chapter 7 analyses. Third, I estimated how study covariates affected the odds of belonging in each trajectory.

5.1 Methods

5.1.1 Latent Class Analyses

I used Latent GOLD 4.0 (Vermunt and Magidson 2005) to conduct latent class analyses. Latent GOLD uses a finite mixture model approach to disaggregate data that represent a mixture of distinct sub-groups within a sample (Vermunt and Magidson 2005). The goal of latent class analysis is to identify hidden heterogeneity within samples, elucidating distinct patterns between sub-groups that are masked by aggregated data analysis. I used latent class regression analyses to simultaneously estimate a separate regression equation for each class. Each class has distinct intercept and slope parameters, identifying trajectories across age for homogeneous sub-groups.

I used several goodness of fit statistics to assess model fit for a set of models that varied in terms of number of classes and polynomial age function. Two goodness of fit statistics, the Bayesian Information Criterion (BIC) (Schwarz 1978) and the Akaike Information Criterion (AIC) (Akaike 1973), are popular because they are flexible (models do not have to be nested within each other) and they take sample size and number of parameters into account (Singer and Willett 2003). The BIC statistic is most commonly used (Nagin 1999), but several researchers advocate the use of both the BIC and the AIC (Kuha 2004; Singer and Willett 2003). I also used the approximate weight of evidence (AWE) indicator available in Latent GOLD. The AWE is like the BIC statistic, but takes classification performance into account (Vermunt and Magidson 2005).

For each trajectory that I analyzed, I tested model fit in the following manner. First, I compared model fit for a quadratic model versus a linear model for each of 1-10 class solutions (Andruff et al. 2009). I then chose the best specification (quadratic vs. linear) and compared model fit statistics to determine the optimal number of classes.

It is important to note that all trajectories are age-based, not time-based. I conducted all analyses with age centered at 25, the youngest age in the sample (i.e., I subtracted 25 from each sample member's age at each wave). This allowed me to interpret intercepts as starting points at age 25, not age zero (Singer and Willett 2003).

5.1.2 Multinomial Logistic Regression

I used multinomial logistic regression to analyze covariates associated with odds of trajectory membership with Stata 10 (StataCorp 2007). Multinomial logistic regression is the preferred analytic method when the outcome variable consists of unordered categories (Borooah 2002). Because latent class analysis produces a variable with several levels corresponding to trajectories with no inherent order, I used this method to estimate odds of membership in latent class trajectories. This method simultaneously estimates *k-1* models where *k* is the number of levels of the outcome variable (i.e., number of latent trajectories) (UCLA: Academic Technology Services). One level is omitted as a reference category. Thus, this method allowed me to examine correlates of trajectory membership, which are important in their own right and provide

contextualizing information for later chapters. For variables with only two latent trajectories, I used logistic regression.

5.2 Aggregate Trends for Individual Role Occupancy

5.2.1 Spouse Role

Figure 5.1 presents the average between-person trend in marital status across the adult life course. Slightly fewer than 60% of respondents are married at age 25. This percentage increases to a high of 66% at ages 55-59. After this age interval, the percentage of married respondents declines at an increasing rate through age 85. This pattern reflects a balance of divorces, new marriages, and stable marriages through early and mid-adulthood, with decreasing prevalence of marriage in late life due to the death of spouses and a lower tendency to remarry.

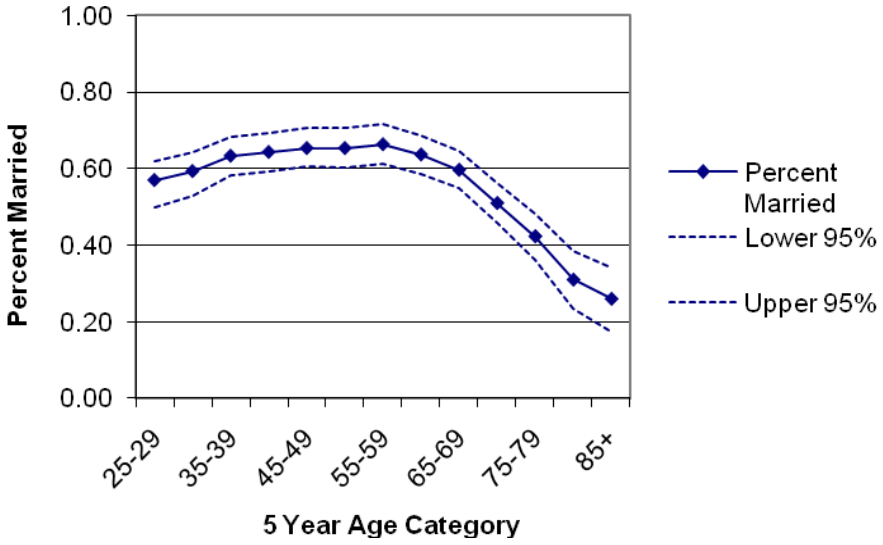

Figure 5.1 Aggregate Marital Trend by Age

5.2.2 Parent Role

Figure 5.2 shows that the aggregate trend for parental status is markedly more stable than the marital trend, although it does exhibit a quadratic trend across age. Approximately 70% of respondents are parents at age 25. This percentage increases as respondents become parents for the first time to a high of 92% between ages 55 and 60, then decreases to 76% by age 85 as respondents lose children due to death. Taken together with the marital trend, this indicates that the age interval 55-59 is a turning point when respondents are likely to lose social roles, most likely due to the death of significant others (spouses and children).

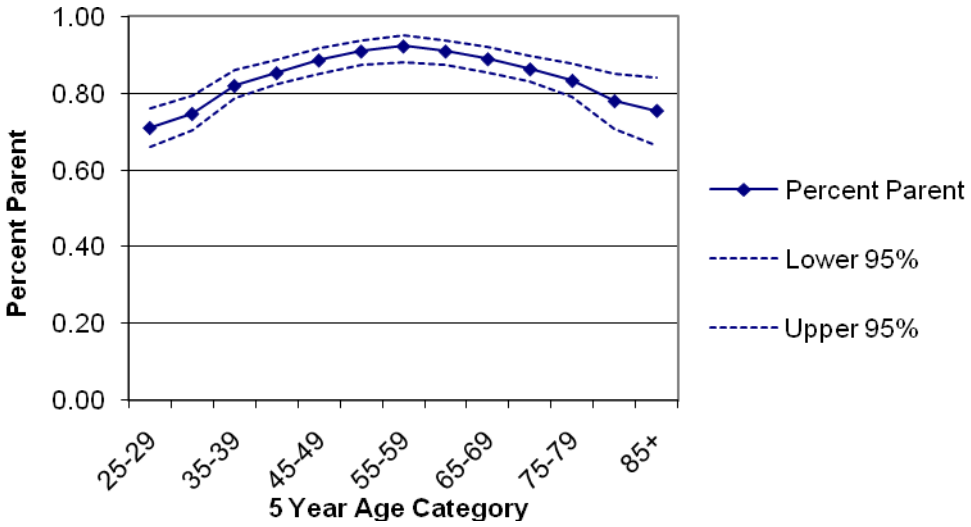

Figure 5.2 Aggregate Parental Trend by Age

5.2.3 Work Role

The aggregate trend for work status exhibits the greatest variation across age. Figure 5.3 presents the percentage of respondents who are working by 5-year age interval. The trend approximates a logistic curve in shape although the upper bound is approximately 80%, not 100%. Percentage working holds steady at just above 80% through approximately age 50. After age 50, the percentage working declines steadily to 0% at age 85+. Again, this trend indicates that, at the aggregate level, it is common for individuals to lose social roles after mid-life.

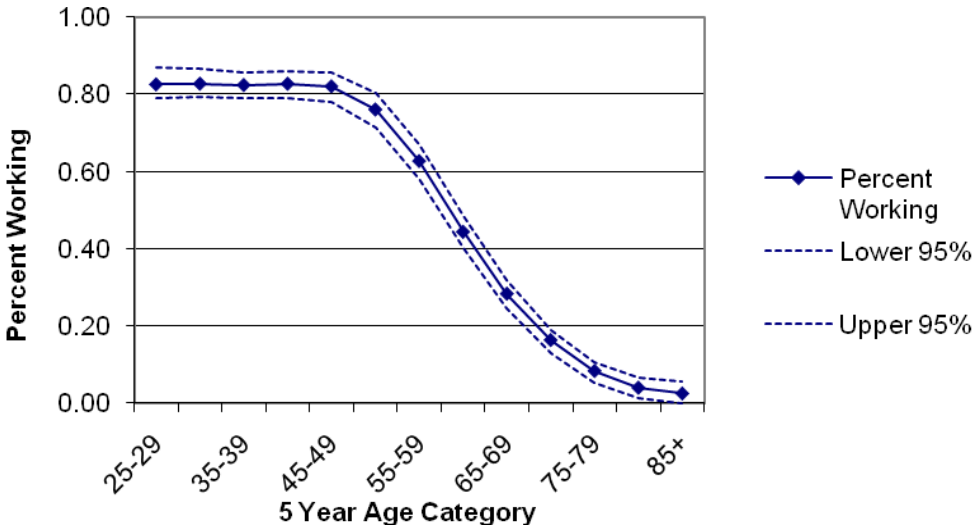

Figure 5.3 Aggregate Work Trend by Age

5.3 Multiple Role Occupancy

5.3.1 Aggregate Role Occupancy Trend across Age

At the aggregate, between-person level, Figure 5.4 shows that the average number of social roles (range 0-3) at age 25 is two. This increases to an average of almost 2.5 roles by age 50, then declines to an average of one role by age 85. This pattern is consistent with those for individual social roles: the average trend is that people work in early adulthood and add parental and marital roles, reaching a peak around age 50 after which there is a steady decline in number of social roles as people stop working and lose the spouse role through divorce or widowhood. Parenthood appears to be relatively stable and likely contributes little to the decline in social roles in later life.

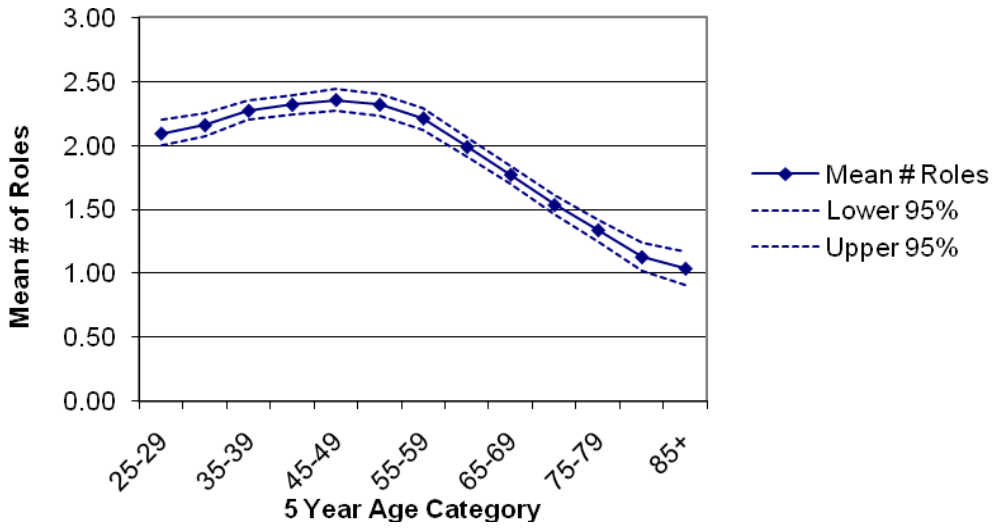

Figure 5.4 Aggregate Role Count Trend by Age

5.3.2 Latent Class Trajectories

First, I estimated basic linear and quadratic age-based trajectories of multiple role count. For all but the two-class solution, the quadratic model had a better fit than the linear model. Several model fit statistics, including the BIC, AIC, log-likelihood (LL), and AWE, indicated that the quadratic five-class solution fit the data best. Note in Figure 5.5 that model fit improved with each additional class, but the rate of improvement diminished sharply after five classes.

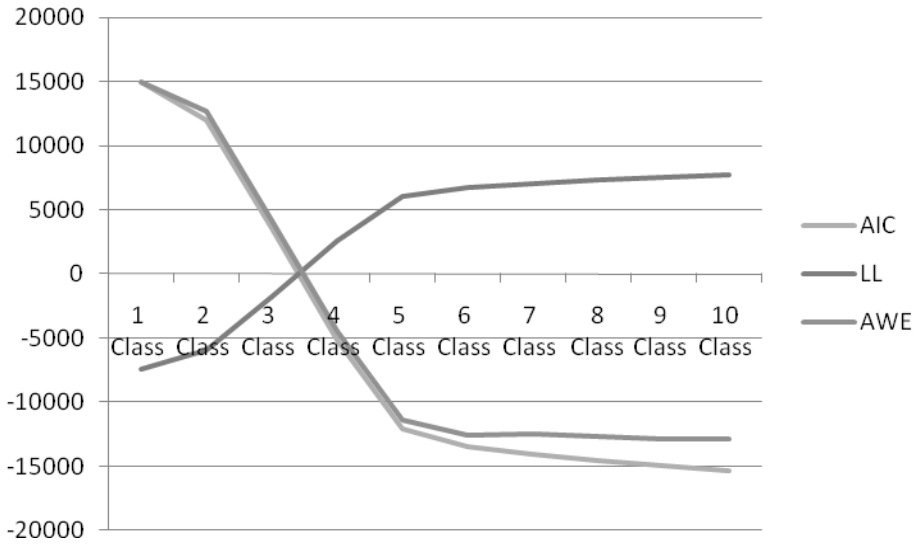

Figure 5.5 Latent Class Fit Statistics, Role Count

The preferred model produced five distinct latent age-based trajectories of multiple role count across the life course, each with significant intercepts and parameter estimates for age and age squared. As depicted in Figure 5.6, these trajectories include stable high (19.3%), stable medium (19.1%), stable low (14.4%), medium quadratic (30.6%), and low quadratic (16.6%). These trajectories show that just over half of the

sample is expected to experience stable multiple role occupancy throughout the adult life course (52.8%). Slightly fewer than half of the sample is expected to experience role gain and loss, represented by the medium and low quadratic curves (47.2%). Note that both of the quadratic role trajectories are primarily characterized by role loss. Stable and quadratic trajectories are further disaggregated by level of social role occupancy: high (three roles), medium (two roles), and low (one role). The medium and low quadratic curves provide an interesting contrast in that they have similar intercepts as the medium and low stable trajectories, respectively, but then gain roles through mid-life and begin to lose roles in later life at a rate that results in distinctly fewer roles in late life than the respective stable medium and low trajectories. Importantly, the age range for each separate trajectory was 25-85, indicating that these trajectories do incorporate information from the full synthetic cohort and not just segments of the life course.

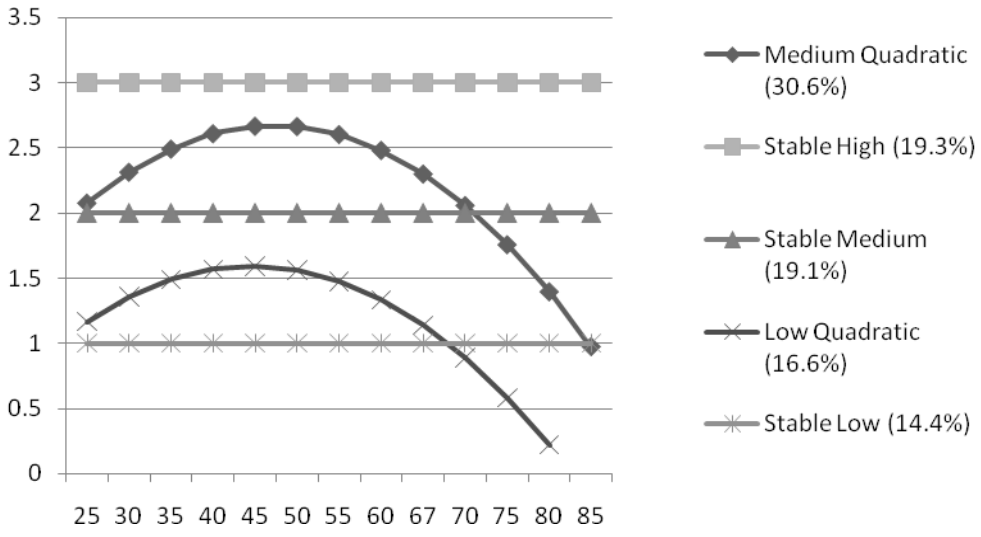

Figure 5.6 Role Count Latent Class Trajectories

In comparison to the aggregate trend presented in Figure 5.4, latent class results show that the most common role count trajectory, medium quadratic, closely follows the aggregate trend. However, the aggregate trend only fits for 30% of the sample. The other 60% of the sample experiences significantly different trajectories, including both change and stability across age. Substantively, these results show that it is not appropriate to measure role count as a static variable or a change score, as previous analyses have done, because of the significant proportion of respondents who experience a quadratic trajectory of role occupancy across the adult life course.

5.3.3 Predictors of Role Occupancy Trajectory Membership

Next, I used multinomial logistic regression to identify factors that influence the odds of belonging to a certain role count trajectory. Table 5.1 presents relative risk ratios identifying odds of belonging in each trajectory compared to the reference trajectory, medium quadratic (the most common trajectory and the one that reflects the aggregate between-person trend). The most notable finding is that gender and race are consistently associated with role count trajectory membership. Women and Black respondents are more likely to belong to stable high, low quadratic, and stable low trajectories compared to the reference trajectory of medium quadratic. Thus, they are less likely to follow the normative aggregate life course pattern of accumulating social roles in early adulthood and relinquishing some roles, most likely the work role, in later life.

Table 5.1 Relative Risk Ratios Predicting Role Count Trajectory Membership

	Stable High	Stable Medium	Low Quadratic	Stable Low
Role Strain				
Spouse Strain	1.18	1.11	0.92	1.01
Parent Strain	0.97	0.92	0.93	1.01
Work Strain	0.92	0.90	0.81*	0.97
Role Satisfaction				
Spouse Satisfaction	0.89	0.76**	0.79**	0.91
Parent Satisfaction	0.95	0.87	1.02	1.08
Work Satisfaction	0.92	0.92	0.99	0.92
15-year Cohort (ref (1947-1961)				
(1932-1946)	1.04	0.98	0.94	1.17
(1917-1931)	0.85	1.01	0.89	1.11
(1891-1916)	1.05	1.06	0.66**	1.29
Covariates				
Female	1.28**	1.05	1.28**	1.23*
Black	1.49***	1.09	1.37***	1.59***
Less than HS Education	0.92	0.97	0.80*	0.76**
Low Income (<$15k per year)	1.07	1.05	0.97	0.99
Frequent Religious Attendance	0.91	1.16	1.04	0.93
Functionally Impaired	0.88	1.01	0.94	0.81
# of Chronic Illnesses (0-10)	1.02	0.96	1.04	1.03
Health Outcomes				
Depressive Symptoms (0-11)	0.96*	0.99	1.01	1.01
Poor Self-Rated Health	1.02	0.94	1.04	0.97

Notes: Quadratic Medium (30.6%) is the reference category. Results are reported as relative risk ratios. Unweighted estimates. N=6,358. *p<.05, **p<.01, ***p<.001. All variables are time-varying except for cohort, female, black, education, income, and religious attendance.

Interestingly, the stable medium and quadratic medium trajectories are indistinguishable in terms of predictors, except for high spouse satisfaction, which decreases the odds of belonging to the stable medium trajectory by 24%. Finally,

members of the Young Progressives cohort have lower odds of belonging to the low quadratic trajectory compared to the medium quadratic trajectory.

5.4 Aggregate Trends for Individual Role Strain

5.4.1 Spouse Strain

At the aggregate level, spousal strain exhibits a quadratic trend over the adult life course. Figure 5.7 presents the proportion of spouses who report that the spouse role is stressful (sometimes, often, or almost always bothered or upset by the spouse role) for ages 25-85. At age 25, approximately one-quarter of spouses report that the role is stressful. This proportion increases to a peak of 30% by age 50 and then steadily decreases with increasing age. Note that the confidence intervals start to widen around age 70, when fewer than 40% of respondents are married (see Figure 5.1). The aggregate trend for spouse strain is more dynamic than the trend for holding the spouse role. Although Figure 5.1 does show a slight quadratic curve, Figure 5.7 shows a much more distinct pattern across the life course. There is likely a selection process involved in that respondents who remain married at later ages are in relatively happy marriages with little strain. Another interpretation is that marital strain may decrease at post-retirement ages when work no longer competes with marriage.

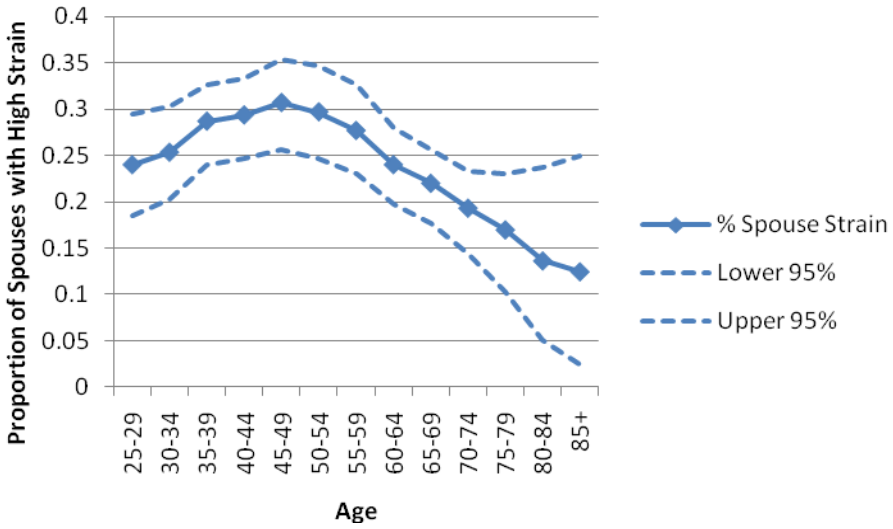

Figure 5.7 Aggregate Spouse Strain Trend by Age

5.4.2 Parent Strain

In contrast to the fairly stable aggregate trend for holding the parent role across the life course, the aggregate trend for parent strain is much more variable. Figure 5.8 shows that almost 70% of parents experience high strain at age 25, but then strain declines slowly through age 45 and then declines more rapidly through late life. This trend presumably corresponds with adult children leaving the home and requiring less of parents. Parents do not lose the parent role when children grow up, but they do lose many of the demands and strains associated with parenting a young child or adolescent.

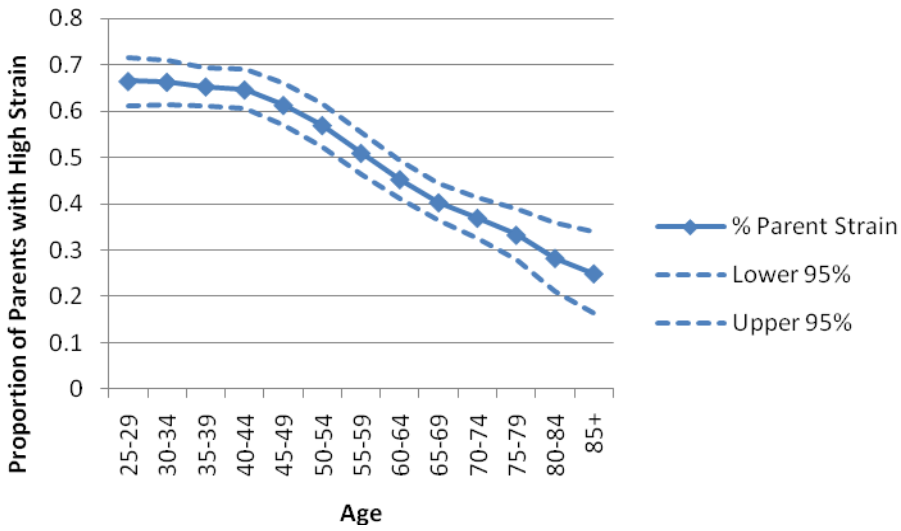

Figure 5.8 Aggregate Parent Strain Trend by Age

5.4.3 Work Strain

The aggregate trend for work strain over age follows the structural role occupancy trend more closely than marital and parental strain follow role occupancy trends. Figure 5.9 shows that almost 60% of working adults report high work strain at age 25. This trend decreases to approximately 50% by age 60 and then decreases more rapidly but with large confidence intervals as the percentage of respondents who work decreases to zero. Thus, at the aggregate level, work strain is fairly stable with 50-60% of workers reporting high strain.

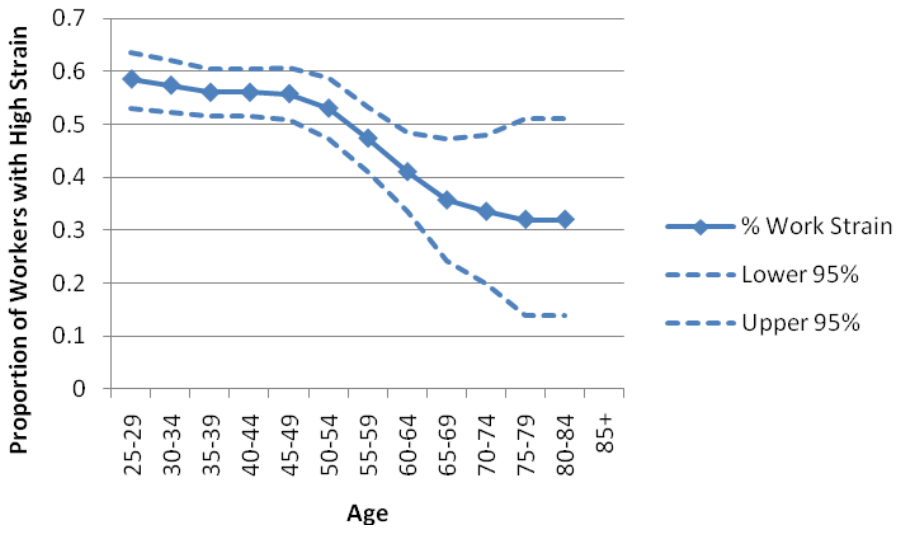

Figure 5.9 Aggregate Work Strain Trend by Age

5.5 Stressful Role Occupancy

5.5.1 Aggregate Role Strain Trend across Age

As one would expect after examining aggregate trends in structural role occupancy and individual role strain that are quadratic and decline in later life, the aggregate trend in stressful role count increases slightly through early adulthood and then decreases sharply with increasing age. Figure 5.10 shows the aggregate trend in number of stressful roles occupied over age. Although the quadratic shape is expected, there is a noticeable difference in level between aggregate stressful role count patterns and aggregate structural role count patterns. At age 25, the average respondent holds two social roles (see Figure 5.4); however, only one of those roles is likely to be stressful. At the other end of the life course, respondents at age 85+ are likely to hold one role, and

that role is not likely to be stressful. Thus, at the aggregate level, respondents typically experience a balance of stressful and non-stressful roles. The sharp decline in stressful role count in later life is likely due to a mixture of three factors: loss of roles, adaptation to roles, and decrease in role demands.

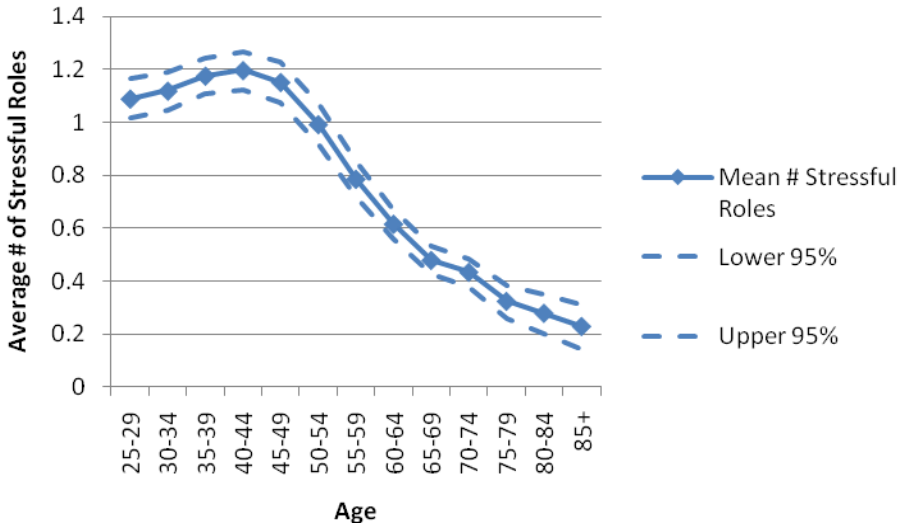

Figure 5.10 Aggregate Trend in Stressful Roles by Age

5.5.2 Latent Class Trajectories

Following the approach described in the beginning of this chapter, I estimated both linear and quadratic age-based trajectories for one through ten class solutions. For all class solutions, the quadratic trajectory fit better than the linear trajectory. Model fit statistics presented in Figure 5.11 show that the six class quadratic solution provides the best fit. However, this solution produced trajectories that were barely distinguishable from one another and trajectories that described less than one percent of the sample. I

chose the three class solution as the optimal solution because fit statistics for the four and five class solutions were not substantially better than the three class solution.

Figure 5.11 Model Fit Statistics, Stressful Role Count

The three trajectories identified in Figure 5.12 include slow decline (51.4%), quadratic decline (30.8%), and no stress (17.8%). For role strain, the latent class analysis shows that the aggregate trend does not match the most common trajectory, but rather represents an average of the three latent trajectories. The aggregate trajectory has the same general shape as the quadratic decline trajectory, but is shifted down in level due to the influence of the slow decline and no stress trajectories.

The vast majority of the sample is expected to experience decreasing role strain with increasing age, but can be divided into two distinct trajectories based on level and shape. The slow decline trajectory holds approximately one stressful role in early adult life and steadily declines to almost zero stressful roles by late life. The quadratic decline

trajectory is also expected to experience a decline in stressful roles with age, but begins at a higher level and experiences an increase before the decline. Thus, the quadratic decline trajectory peaks at almost two stressful roles but then declines to the same level as the slow decline trajectory by age 85. The third trajectory holds no stressful roles across the life course. However, as shown in the descriptive statistics, this does not mean that members of this trajectory do not hold any roles; only 16% of the respondents who belong to the no stress trajectory occupy zero roles at all three waves.

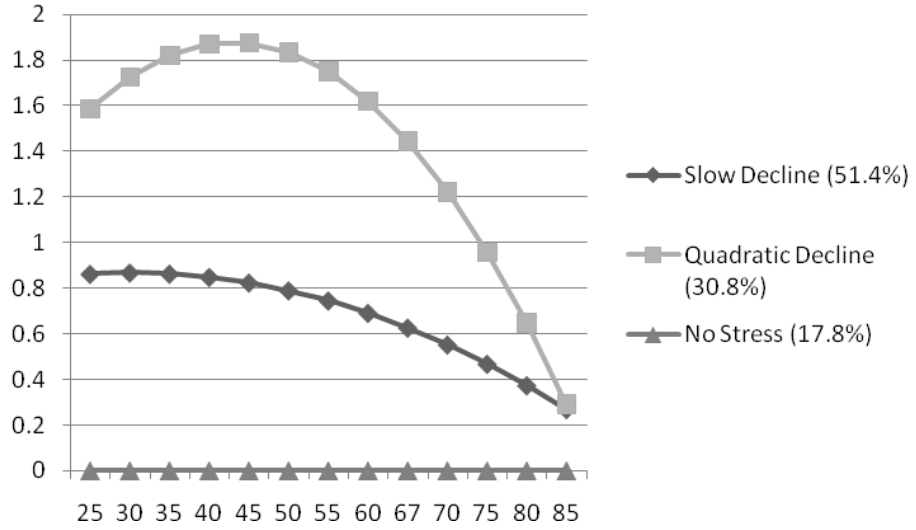

Figure 5.12 Stressful Role Count Latent Class Trajectories

5.5.3 Predictors of Role Strain Trajectory Membership

Results in Table 5.2 show that social role, socio-demographic, and health variables are more strongly associated with stressful role trajectory membership than with total role trajectory membership (see Table 5.1). The reference trajectory in this analysis is the most common trajectory, slow decline in number of stressful roles.

Column 2 shows that respondents who are married, parents, or working have much higher odds of belonging in the quadratic decline trajectory (higher number of stressful roles) than the slow decline trajectory compared to those who do not hold those roles. Intuitively, individuals with more social roles are more likely to hold a greater number of stressful roles. Respondents who report high satisfaction in each of the three focal roles have lower odds of belonging to the quadratic decline trajectory than the slow decline trajectory compared to those who occupy each role with low satisfaction. This implies that strain and satisfaction are negatively related, so that high satisfaction is associated with fewer stressful roles. Although gender and race were important predictors of total role trajectories, they exert no significant effects on stressful role trajectory membership. The opposite is true for health covariates—they exerted no significant influence on multiple role occupancy, but respondents who are functionally impaired have lower odds of belonging to the quadratic decline (higher stress level) trajectory than the slow decline trajectory. Finally, higher levels of depressive symptoms are associated with increased odds of being in the quadratic decline trajectory compared to the slow decline trajectory.

Column 3 presents relative risk ratios for the odds of belonging to the no stress trajectory compared to the slow decline trajectory. Again, several covariates are significantly associated with stress trajectory membership. Intuitively, spouses, parents,

and workers have lower odds of belonging in the no stress trajectory than in the slow decline trajectory; respondents with high role satisfaction have higher odds of belonging

Table 5.2 Relative Risk Ratios Predicting Stressful Role Count Trajectory Membership

	Quadratic Decline	No Stress
Social Role Variables		
Married	8.51***	0.28***
Parent	9.63***	0.09***
Worker	4.70**	0.31***
Role Satisfaction		
Spouse Satisfaction	0.31***	3.53***
Parent Satisfaction	0.59***	3.01***
Work Satisfaction	0.51***	1.93***
15-year Cohort (ref 1947-1961)		
(1932-1946)	1.27*	1.46*
(1917-1931)	1.15	4.73***
(1891-1916)	1.29	9.77***
Covariates		
Female	1.09	0.80**
Black	1.09	0.69***
Less than HS Education	1.01	1.38*
Low Income (<$15k per year)	1.26***	0.91
Frequent Religious Attendance	1.18*	1.16
Functionally Impaired	0.66**	1.23*
# of Chronic Illnesses (0-10)	1.08*	0.93*
Health Outcomes		
Depressive Symptoms (0-11)	1.20***	0.84***
Poor Self-Rated Health	0.90	0.88

Notes: Slow Decline (51.4%) is the reference category. Results are reported as relative risk ratios. Unweighted estimates. N=6,358. *p<.05, **p<.01, ***p<.001. All variables are time-varying except for cohort, female, black, education, income, and religious attendance.

in the no stress trajectory. Members of older cohorts have higher odds of belonging in the no stress trajectory compared to the Baby Boomers. Although women and Black respondents typically hold fewer social roles than the full sample, Black respondents and women have lower odds of belonging in the no stress trajectory compared to the slow decline trajectory. Functional impairment increases the risk of being in the no stress trajectory, likely due to lower role occupancy, while higher depressive symptoms and chronic illnesses are associated with a decreased risk of belonging in the no stress trajectory compared to the slow decline trajectory.

5.6 Aggregate Trends for Individual Role Satisfaction

5.6.1 Marital Satisfaction

Marital satisfaction follows an inverse and much more stable aggregate pattern than spousal role occupancy and marital strain. Although marital role occupancy and strain peak in early adulthood and steadily decline after, marital satisfaction dips slightly in mid-life and then increases through late life (see Figure 5.13). This aggregate trend of increasing satisfaction in later life is likely because individuals who remain married are likely in satisfying marriages.

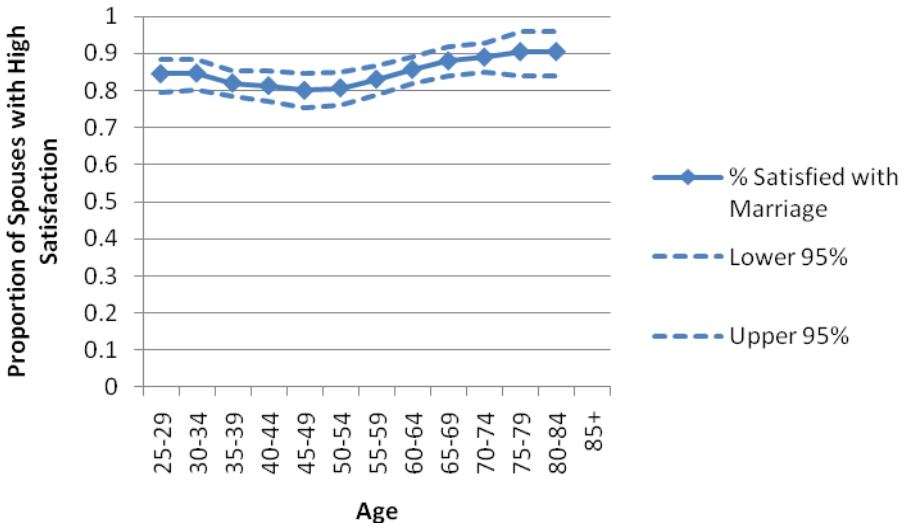

Figure 5.13 Aggregate Marital Satisfaction Trend by Age

5.6.2 Parental Satisfaction

As with the spouse role, parental satisfaction exhibits relative stability at the aggregate level. Also like the spouse role, satisfaction increases with age as strain decreases, with the exception of a small dip in mid-life (see Figure 5.14). More than 80% of parents are satisfied with their role in early adulthood, increasing to over 90% in later life. In the same way that parental strain decreases as children grow up and leave the home, parental satisfaction likely increases in later life as parents see their children become adults and lead productive lives of their own.

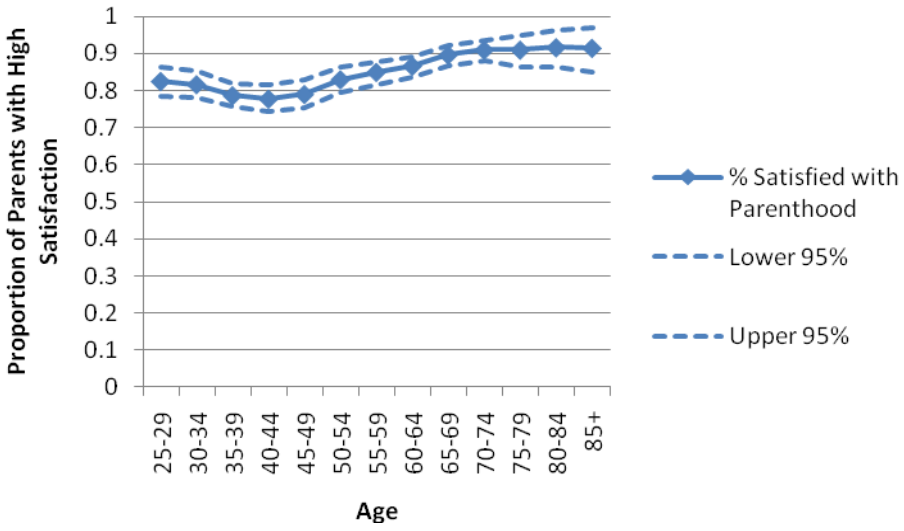

Figure 5.14 Aggregate Parental Satisfaction Trend by Age

5.6.3 Work Satisfaction

Work satisfaction is not as stable as marital and parental satisfaction, but shares the common characteristic of increasing with age at the aggregate level (see Figure 5.15). At age 25, approximately 60% of workers are highly satisfied with their jobs. By age 75, almost 90% of those who still work are highly satisfied with their jobs.[1] Because loss of the work role is nearly universal, there is likely a selection process occurring in that those who continue to work in later life do so because they are highly satisfied with what they do.

[1] There are not enough respondents who work past age 75 to provide reliable estimates.

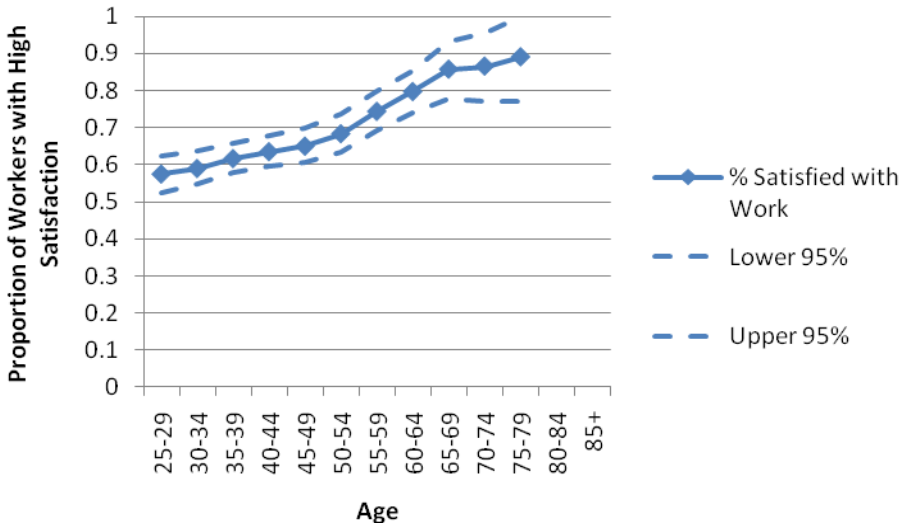

Figure 5.15 Aggregate Work Satisfaction Trend by Age

5.7 Satisfying Role Occupancy

5.7.1 Aggregate Role Satisfaction Trend across Age

Given that most individual roles provide a high level of satisfaction, it is not surprising that the aggregate satisfying role count pattern mirrors the total role count pattern more closely than the stressful role count pattern. At each point in the life course, the average number of satisfying roles is just slightly lower than the average number of total roles occupied (see Figure 5.4 and Figure 5.16). This contrasts with the fact that the average number of stressful roles is often one full role lower than the average number of total roles. Although individual aggregate patterns exhibited a steady increase in role satisfaction with age for those who hold the role, the aggregate trend for total number of satisfying roles decreases with increasing age. This is because

the total number of roles tends to decrease with age, providing fewer roles that can be classified as satisfying.

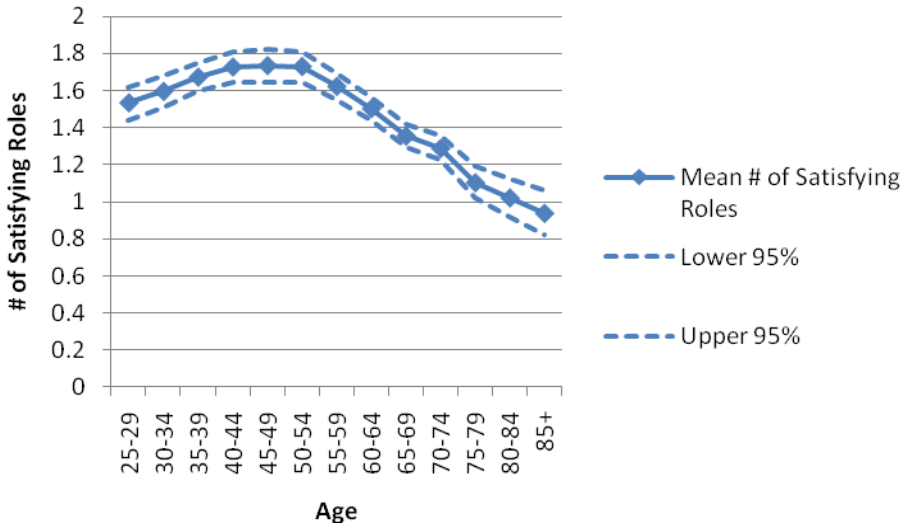

Figure 5.16 Aggregate Trend in Number of Satisfying Roles by Age

5.7.2 Latent Class Trajectories

Next I conducted a latent class analysis of satisfying role count, similar to those performed for total role count and stressful role count. Several model fit statistics indicated that a six-class quadratic age-based solution fit the data best (see Figure 5.17).

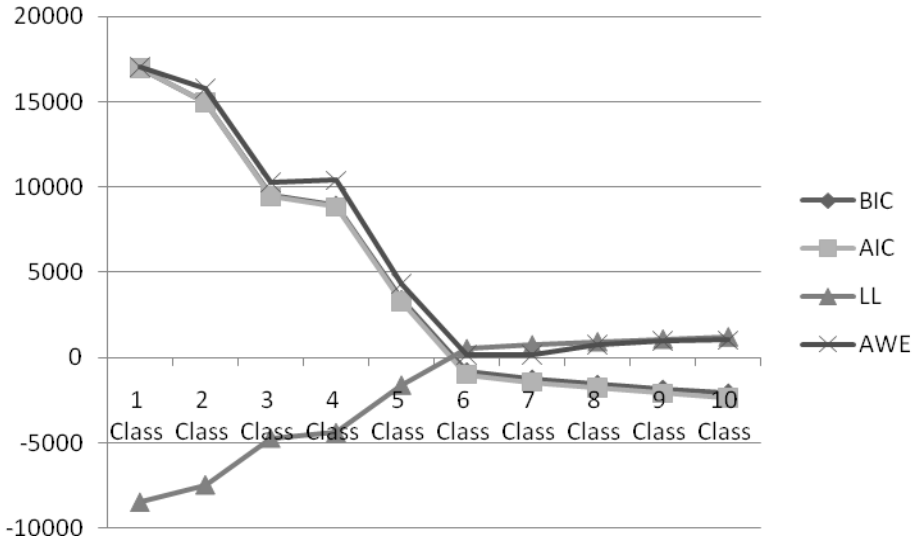

Figure 5.17 Model Fit Statistics, Satisfying Role Count

Figure 5.18 shows that latent class analysis produced six distinct trajectories: medium quadratic (31.4%), low quadratic (30.1%), stable medium (14.1%), stable low (12.7%), stable high (6.2%), and stable none (4.8%). As with aggregate trends, satisfying role count trajectories closely mirror total role count trajectories with two important differences—satisfying role trajectories include a stable "no satisfaction" class and the two quadratic trajectories are shifted slightly lower in level than the total role trajectories. Importantly, though, the aggregate satisfying role count pattern does not match any of the latent class trajectories, demonstrating that the aggregate pattern is an average of several latent trajectories and does not accurately describe the experience of sample respondents.

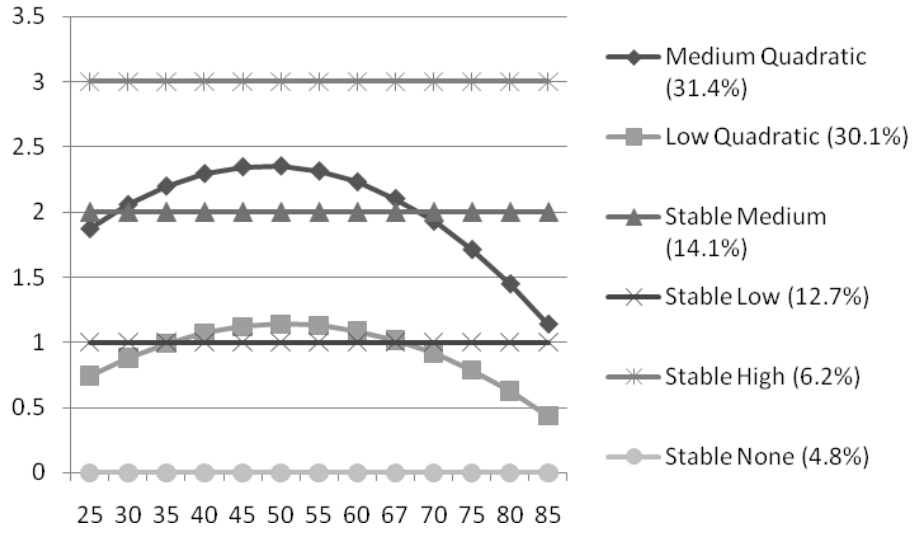

Figure 5.18 Role Satisfaction Latent Class Trajectories

5.7.3 Predictors of Role Satisfaction Trajectory Membership

Next I present results from multinomial logistic regression equations estimating predictors of satisfying role trajectory membership. Each trajectory is compared to the reference trajectory, medium quadratic. Column 1 highlights differences between quadratic trajectories at two levels. Intuitively, respondents who hold each of the three focal social roles have lower odds of being in the low trajectory compared to the medium trajectory, and respondents with high role strain have higher odds of being in the low quadratic satisfaction trajectory. Marital role occupancy and strain have the strongest effects on satisfying role trajectory membership. In terms of cohort, members of the two oldest cohorts have lower odds of belonging to the low quadratic trajectory compared to the medium quadratic trajectory. Women have lower odds of belonging in

Table 5.3 Relative Risk Ratios Predicting Satisfying Role Count Trajectory Membership

	Low Quadratic	Stable Medium	Stable Low	Stable High	Stable None
Social Role Variables					
Married	0.94***	1.52**	0.04***	1.21E+08	0.003***
Parent	0.07***	1.42	0.08***	4.07E+07	0.002***
Worker	0.21***	0.22***	0.10***	1.80E+08	0.04***
Role Strain					
Spouse Strain	3.81***	0.73*	4.48***	0.61**	4.62***
Parent Strain	1.48***	1.08	1.12	0.71**	5.41***
Work Strain	1.80***	1.59***	1.51*	0.90	3.64***
15-year Cohort (ref 1947-1961)					
(1932-1946)	1.91***	1.48**	2.30***	1.90***	3.16***
(1917-1931)	0.78*	0.92	1.07	0.52**	1.85*
(1891-1916)	0.23***	0.59**	0.79	0.35	1.50
Covariates					
Female	0.76**	1.07	1.12	0.66**	0.51***
Black	1.79***	0.89	1.35*	1.08	2.27***
Less than HS Education	0.78*	0.99	0.90	0.95	0.67
Low Income (<$15k per year)	0.81***	0.91	0.64***	1.05	1.03
Frequent Religious Attendance	0.90	1.22*	1.20	2.17***	0.58**
Functionally Impaired	1.09	1.06	1.17	0.75	0.96
# of Chronic Illnesses (0-10)	0.98	1.09*	1.01	0.94	0.90
Health Outcomes					
Depressive Symptoms (0-11)	1.12***	0.97	1.06**	0.87***	1.20***
Poor Self-Rated Health	1.24*	0.87	1.13	0.61**	2.34***

Notes: Medium Quadratic (31.4%) is the reference category. Results are reported as relative risk ratios. Unweighted estimates. N=6,358. *p<.05, **p<.01, ***p<.001. All variables are time-varying except for cohort, female, black, education, income, and religious attendance.

the low trajectory, while Black respondents have higher odds of being in the low quadratic trajectory. Finally, some health status measures also affect odds of belonging

in the low versus medium quadratic trajectory; respondents with poor self-rated health and a higher level of depressive symptoms have higher odds of being in the low trajectory than the medium trajectory. Column 2 highlights differences between the stable medium and quadratic medium satisfying role trajectories. Respondents who are married have higher odds of being in the stable trajectory, but spouses with high marital strain have lower odds of being in the stable trajectory. In the opposite direction, workers have lower odds of being in the stable satisfaction trajectory, but workers with high strain have higher odds of being in the stable trajectory. Respondents in the WWII cohort have higher odds of being in the stable trajectory, while respondents in the Depression and WWI cohorts have lower odds of being in the stable trajectory. Finally, respondents with higher numbers of chronic illnesses have slightly higher odds of belonging in the stable trajectory.

Column 3 compares the odds of belonging in the stable low trajectory compared to the medium quadratic trajectory. Results show similar patterns as those comparing odds of belonging in the low quadratic trajectory compared to the medium quadratic trajectory (column 1).

Column 4 compares the odds of belonging in the stable high trajectory compared to the medium quadratic trajectory. Respondents with high marital and parental strain have lower odds of belonging in the stable high satisfaction trajectory compared to the medium quadratic trajectory. As would be expected, women, respondents with higher

levels of depressive symptoms, and respondents with poor self-rated health have lower odds of belonging in the stable high trajectory compared to the medium quadratic trajectory.

Column 5 compares the odds of belonging in the stable no satisfaction trajectory compared to the quadratic medium trajectory. As expected, high strain in any role is associated with much higher odds of belonging in the no satisfaction trajectory compared to the reference. Women have lower odds than men of belonging in the no satisfaction trajectory; Black respondents have higher odds than Whites of belonging in the no satisfaction trajectory. Poor health is another important predictor, with respondents with higher levels of depressive symptoms and poor self-rated health having higher odds of belonging in the no satisfaction trajectory compared to the medium quadratic trajectory.

5.8 Depressive Symptoms

5.8.1 Aggregate Depressive Symptom Trend across Age

The aggregate, between-person trend across age shows a generally decreasing level of depressive symptoms with increasing age, from an average of four symptoms at age 25 to an average of three symptoms at ages 85 and older (see Figure 5.19). Note that confidence intervals widen substantially at older ages, indicating greater variation in the aggregate trend in later life.

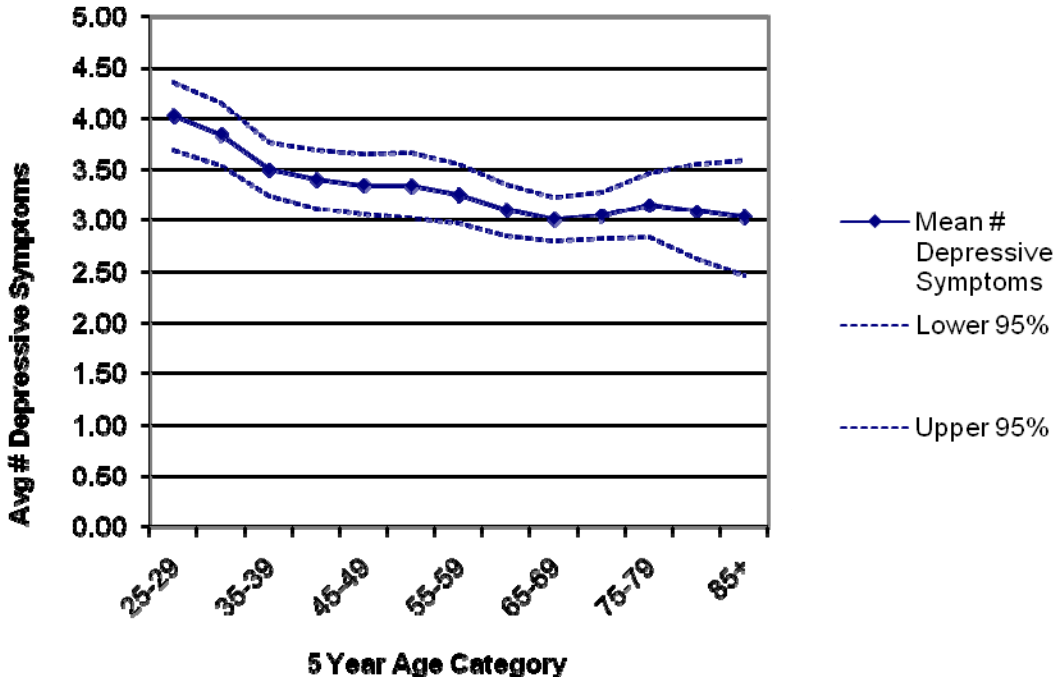

Figure 5.19 Aggregate Trend in Depressive Symptoms by Age

5.8.2 Latent Class Trajectories

Model fit comparisons showed that quadratic functions (age and age squared) fit the data better than linear functions. Figure 5.20 presents fit statistics for several class solutions, showing that the two class quadratic solution provided the best model fit.

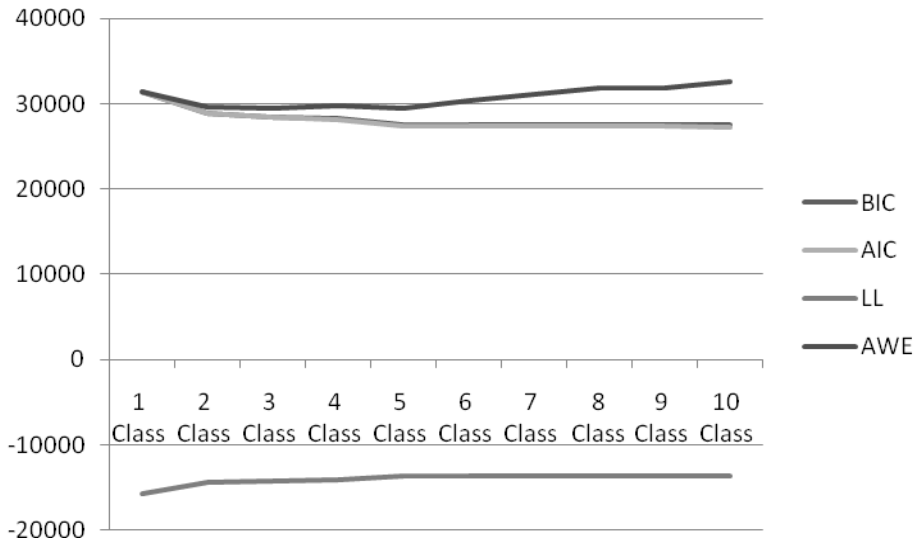

Figure 5.20 Fit Statistics for Depressive Symptom Latent Class Analysis

The preferred two class solution reveals significant sample heterogeneity that is masked in the aggregate descriptive patterns shown above (see Figure 5.21). The sample is split into two roughly even trajectories. The largest class, "high decreasing" (56.6%), has an average of 5.5 depressive symptoms at age 25 and decreases to four symptoms by age 85. The "low quadratic" trajectory (43.4%) experiences substantially lower levels of depressive symptoms, with higher levels of depressive symptoms in early adulthood, decreasing levels through mid-life, then increasing levels in later life. These trajectories reveal two important insights about individual age-based patterns of depressive symptoms. First, the aggregate pattern shown in Figure 5.19 is an average of these two latent trajectories, supporting early justification for latent class analyses based on the notion that different types of people will experience trajectories of depressive symptoms that differ in both intercept and slope (Raudenbush 2001). Second, these two trajectories

provide support for both sides of the debate about the age-dependence of depression. For some individuals, depressive symptoms decrease with increasing age (Blazer, Burchett, Service, and George 1991). For other individuals, depressive symptoms follow a life-cycle pattern, declining through mid-life and then increasing in later life (Mirowsky and Ross 1992).

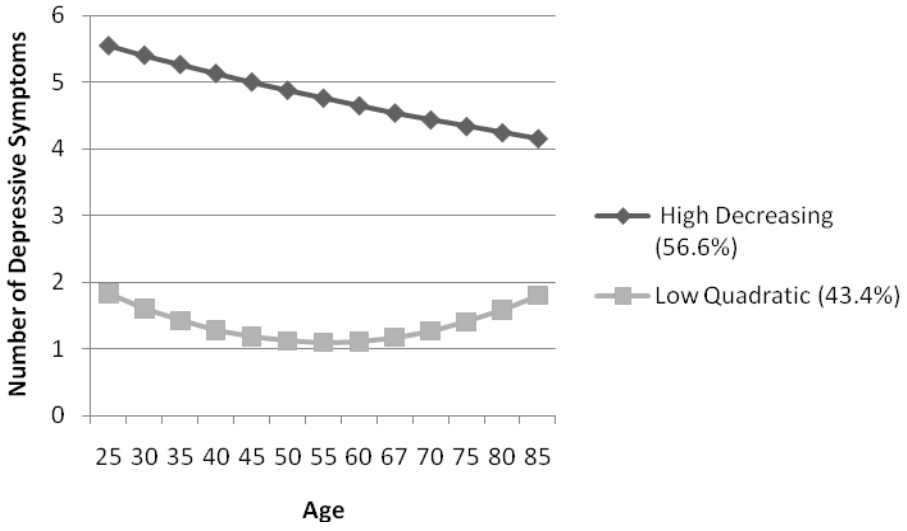

Figure 5.21 Depressive Symptom Latent Class Trajectories

5.4.3 Predictors of Depressive Symptom Trajectory Membership

Table 5.4 presents results from a logistic regression equation predicting odds of belonging to the low quadratic depressive symptom trajectory compared to the high decreasing trajectory (reference trajectory). Parents have lower odds of belonging in the low trajectory than the high trajectory. Role satisfaction is associated with higher odds

Table 5.4 Odds Ratios Predicting Depressive Symptom Trajectory Membership

	Low Quadratic
Social Role Variables	
Married	1.28
Parent	0.77*
Worker	1.02
Role Satisfaction	
Spouse Satisfaction	1.61***
Parent Satisfaction	1.62***
Work Satisfaction	1.77***
Role Strain	
Spouse Strain	0.36***
Parent Strain	0.58***
Work Strain	0.60***
15-year Cohort (ref 1947-1961)	
(1932-1946)	1.52***
(1917-1931)	2.10***
(1891-1916)	2.47***
Covariates	
Female	0.95
Black	0.76***
Less than HS Education	0.80**
Low Income (<$15k per year)	1.39***
Frequent Religious Attendance	1.14*
Functionally Impaired	0.64***
# of Chronic Illnesses (0-10)	0.85***
Health Outcomes	
Poor Self-Rated Health	0.52***

Notes: High Decreasing (56.6%) is the reference category. Results are reported as relative risk ratios. Unweighted estimates. N=6,358. *p<.05, **p<.01, ***p<.001. All variables are time-varying except for cohort, female, black, education, income, and religious attendance.

of belonging in the low trajectory, while role strain is associated with lower odds of belonging in the low symptom trajectory. Earlier cohorts have higher odds of belonging in the low symptom trajectory. Surprisingly, gender is not associated with depressive symptom trajectory membership. Black respondents have lower odds of belonging in the low symptom trajectory compared to White respondents. Finally, poor health indicators (functional impairment, higher number of chronic illnesses, and poor self-rated health) are all associated with lower odds of belonging in the low depressive symptom trajectory.

5.9 Self-Rated Health

5.9.1 Aggregate Self-Rated Health Trend across Age

The aggregate trend in self-rated health over age is relatively stable. Note that, on the vertical axis, 4=excellent self-rated health, 3=very good self-rated health, 2=good self-rated health, and 1=fair/poor self-rated health. Respondents reported an average self-rated health level of three (very good) at age 25, with a slight decrease to 2.5 (between good and very good) by age 85. This aggregate trend implies that self-rated health is rather stable and relatively high across all ages, but there is a noticeable albeit slight decline in self-rated health with increasing age.

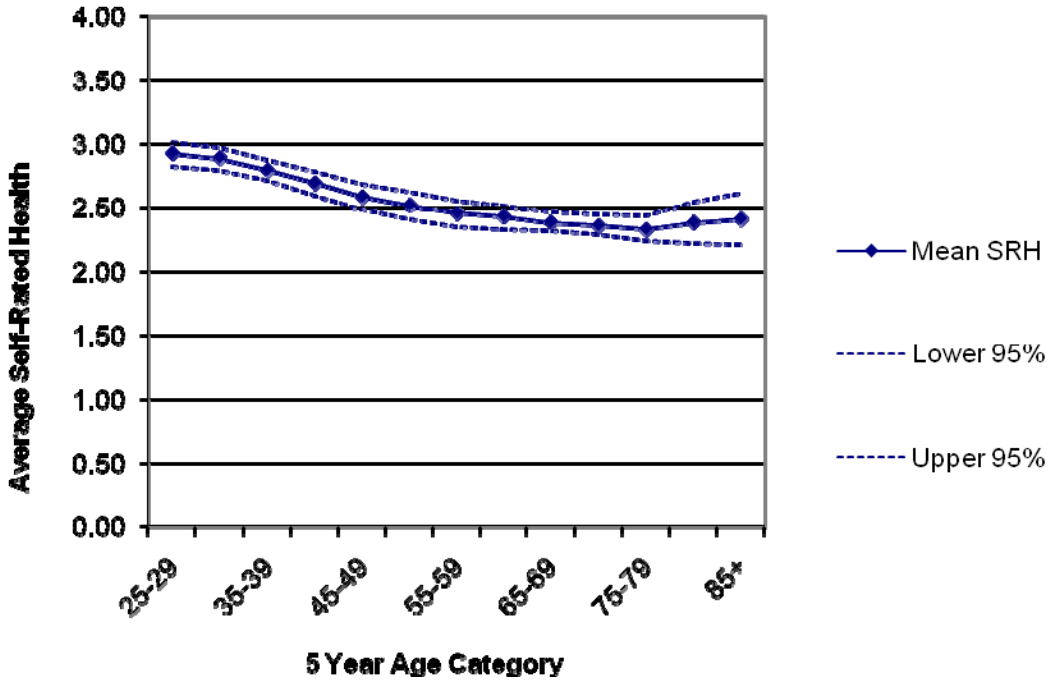

Figure 5.22 Aggregate Self-Rated Health Trend by Age

5.9.2 Latent Class Trajectories

Fit statistics suggest that the five class quadratic solution provides the best model fit (see Figure 5.23). Figure 5.24 presents those five latent trajectories. Like the aggregate pattern, most of the sample experiences a small decline in self-rated health with age. The largest class, "decline to good," (48.4%) begins at age 25 near very good self-rated health and declines to good self-rated health by age 85. The second largest class, "decline to very good," (27.1%) begins at age 25 between very good and excellent self-rated health and declines to very good self-rated health by age 85. The aggregate trajectory presented in Figure 5.22 appears to be an average of these two latent

trajectories of declining self-rated health. The remaining quarter of the sample is expected to experience stable self-rated health throughout the life course, at excellent, very good, and fair/poor levels.

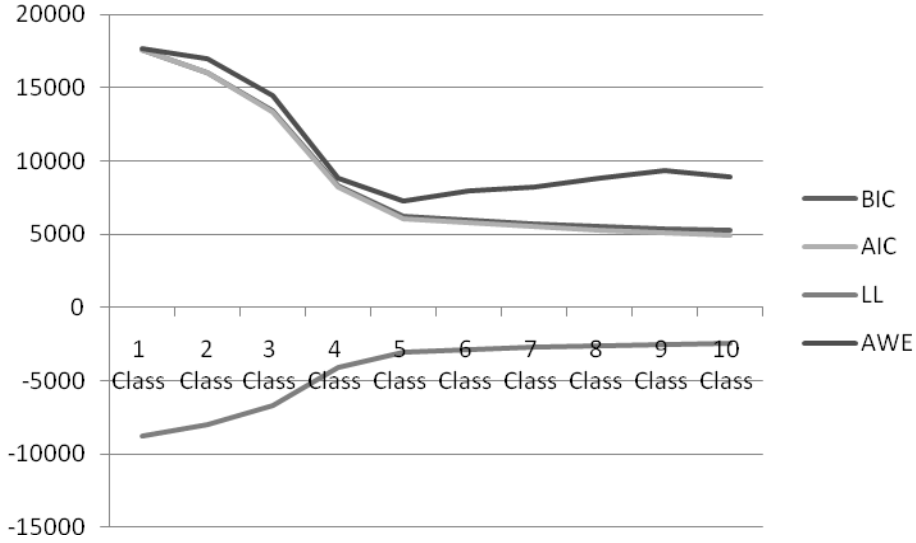

Figure 5.23 Fit Statistics for Self-Rated Health Latent Class Analysis

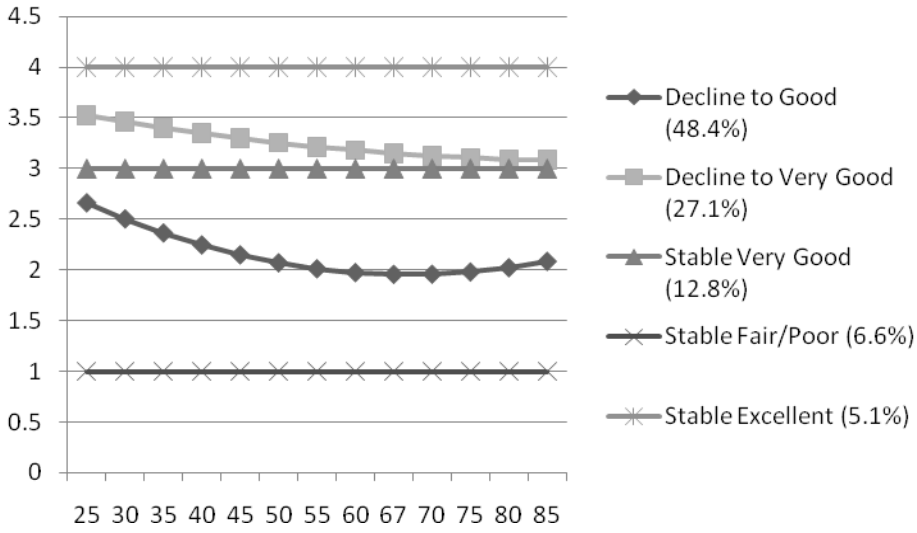

Figure 5.24 Self-Rated Health Latent Class Trajectories

5.9.3 Predictors of Self-Rated Health Trajectory Membership

The reference category for the following analyses is decline to good self-rated health, the most common trajectory, which varies from very good to good self-rated health across age. Column 1 presents relative risk of belonging in the decline to very good trajectory compared to the decline to good trajectory. Parents have lower odds of belonging in the decline to very good trajectory, but satisfied parents have higher odds of belonging in this trajectory; role strain has no effect on self-rated health trajectory. Members of earlier cohorts have higher odds of belonging to the decline to very good trajectory. As would be expected, respondents with poorer health (functionally impaired, higher number of chronic illnesses, and higher number of depressive symptoms) have lower odds of belonging to the decline to very good trajectory compared to the decline to good trajectory.

Column 2 shows similar results for the comparison between the stable good and the decline to good trajectories. Patterns are similar to those in Column 1, with the addition that women have higher odds than men of belonging in the stable good versus decline to good trajectory, and Black respondents have lower odds than White respondents of belonging to the stable good self-rated health trajectory.

Table 5.5 Relative Risk Ratios Predicting Membership in Self-Rated Health Trajectories

	Decline to Very Good	Stable Very Good	Stable Fair/Poor	Stable Excellent
Social Role Variables				
Married	0.90	0.75	1.54	0.56
Parent	0.61***	0.67*	1.99**	0.54*
Worker	1.13	1.26	0.97	0.98
Role Satisfaction				
Spouse Satisfaction	1.00	1.29	0.99	1.32
Parent Satisfaction	1.35**	1.48**	0.69*	1.22
Work Satisfaction	1.16	1.26	0.47**	1.67**
Role Strain				
Spouse Strain	1.15	1.40*	0.97	1.47
Parent Strain	0.97	1.08	0.96	1.05
Work Strain	1.13	0.95	0.62	0.95
15-year Cohort (ref 1947-1961)				
(1932-1946)	1.23*	1.13	2.16***	1.39*
(1917-1931)	2.79***	2.37***	1.45	2.12***
(1891-1916)	4.34***	1.82**	0.96	4.11***
Covariates				
Female	0.98	1.25*	1.02	1.28
Black	0.93	0.67***	1.39**	0.92
Less than HS Education	0.66***	0.52***	1.21	0.51**
Low Income (<$15k per year)	1.18***	1.09	0.61***	1.28*
Frequent Religious Attendance	1.13	1.25**	0.67**	0.97
Functionally Impaired	0.49***	0.25***	2.56***	0.27***
# of Chronic Illnesses (0-10)	0.55***	0.67***	1.47***	0.36***
Health Outcomes				
Depressive Symptoms (0-11)	0.87***	0.88***	1.13***	0.78***

Notes: Decline to good SRH (48.4%) is the reference category. Results are reported as relative risk ratios. Unweighted estimates. N=6,358. *p<.05, **p<.01, ***p<.001. All variables are time-varying except for cohort, female, black, education, income, and religious attendance.

Column 3 shows that parents have higher odds of fair/poor self-rated health, while parents with high satisfaction have lower odds. Workers with high satisfaction also have lower odds of stable poor/fair self-rated health compared to workers with low satisfaction. As expected, respondents with poor health status have higher odds of being in the stable fair/poor trajectory compared to the medium decline trajectory. These patterns are reversed in Column 4 when comparing odds of belonging to the stable excellent trajectory compared to the decline to good self-rated health trajectory.

5.10 Conclusion

The goal of this chapter was to identify trajectories of social role occupancy, characteristics, and health outcomes across the adult life course. To address this goal, I used latent class analysis to identify distinct intra-individual trajectories that represent both change and stability across age. The results presented in this chapter supported two hypotheses set out at the beginning of the analysis.

First, I hypothesized that I would discover a significant amount of change in focal variables across the life course. This hypothesis was supported in two ways. First, aggregate trends showed that the level of all focal variables changed with increasing age. Role occupancy, role strain, and role satisfaction all followed a quadratic age-based pattern, with respondents gaining roles in early adulthood and then losing roles in later life. Depressive symptoms and self-rated health tended to decline with increasing age.

Second, disaggregated trajectories across age showed that some individuals are expected to experience stable role occupancy, strain, satisfaction, and self-rated health across the life course, but a larger proportion of individuals are expected to experience change. These patterns emphasize the value of the life course perspective and the need for longitudinal data to characterize the changing nature of individuals' lives throughout the life course. Static measures are not enough to accurately characterize life course processes. Even change scores are not enough, given the high prevalence of quadratic trajectories.

Second, I hypothesized that there would be significant heterogeneity in intra-individual patterns of change across age. This hypothesis was supported by the fact that latent class analyses revealed more than one disaggregated trajectory for each focal variable. Although aggregate trends are informative, they obscure distinct and differing trends for homogeneous sub-groups within a heterogeneous sample. In most cases, the aggregate trend was revealed to be an average of several latent trends that did not accurately characterize the experience of any sub-group. In other cases, such as role occupancy, the aggregate trend represented the most common trajectory but obscured significant trends of stability across age. Thus, these results emphasize the need to examine disaggregated trends to accurately capture the various ways that individuals experience social factors across the life course.

Multinomial logistic regression analyses estimated how study variables were associated with odds of belonging in certain latent trajectories. Analyses for health outcomes included time-varying measures of social role occupancy and characteristics which provided preliminary clues to the nature of the relationships that will be examined in the following two chapters. However, time-varying measures do not provide insight into the effects of changing social role occupancy and characteristics. For example, time-varying measures of high role strain are associated with decreased odds of belonging in the low depressive symptom trajectory, but this association says nothing about how trajectories of role strain are associated with trajectories of depressive symptoms. The next two chapters provide more detailed analyses about how change and stability in roles and role characteristics are associated with change and stability in health outcomes.

6. Multiple Role Occupancy and Health

This chapter addresses research question #2, *Are trajectories of role occupancy associated with trajectories of mental and physical health and mortality?* To examine this research question, I evaluated role strain and role enhancement hypotheses with binary and multinomial logistic regression methods using trajectories estimated in Chapter 5 as predictor and outcome variables.

The *role strain hypothesis (H3),* drawn from role strain theory (Goode 1960), asserts that multiple role occupancy is inherently stressful. Thus, higher levels of role occupancy should be associated with less favorable health trajectories when compared to lower levels of role occupancy (H3a). Given the five role occupancy trajectories identified in Chapter 5, this means that stable high role occupancy (three roles at all ages) and stable medium role occupancy (two roles at all ages) should be associated with less favorable health trajectories compared to stable low role occupancy (one role at all ages). A second component of role strain theory asserts that role exit reduces role strain. Thus, trajectories that are primarily characterized by role loss should be associated with more favorable health outcomes when compared to stable role occupancy (H3b). Again, given the trajectories identified in Chapter 5, this means that the medium quadratic trajectory should be associated with better health trajectories compared to the stable medium trajectory; similarly, the low quadratic trajectory should

be associated with better health trajectories compared to the stable low trajectory.

The r*ole enhancement hypothesis (H4)*, drawn from role accumulation/enhancement theory (Sieber 1974), asserts that multiple role occupancy is beneficial for individuals. Thus, higher levels of social role occupancy should be associated with more favorable health trajectories (H4a). This hypothesis is in direct contrast with hypothesis H3a, asserting that stable high and stable medium role occupancy should be associated with better health outcomes when compared with stable low role occupancy. The role enhancement hypothesis also implies that dynamic role trajectories primarily characterized by role gain should be associated with more favorable health trajectories compared to static or decreasing role trajectories (H4b). Although both of the quadratic trajectories identified in Chapter 5 include role gain in the beginning of the adult life course, both end with role loss in the latter portion of the life course. Additionally, the degree of role loss outweighs earlier role gain, with members of these dynamic trajectories holding fewer roles at age 85 than they held at age 25. Therefore, I could not test this hypothesis because no trajectories were primarily characterized by role gain. I could, however, test the opposite of H3b, which would predict that trajectories primarily characterized by role loss should be associated with less favorable health trajectories compared to stable role occupancy at the same level (H4c).

Latent class analyses in Chapter 5 produced five dummy variables characterizing

role trajectories across the adult life course: stable high, medium quadratic, stable medium, low quadratic, and stable low. To test the above hypotheses, I estimated two sets of regression analyses with different role trajectories as the omitted reference trajectory: stable medium and stable low. Each analysis tested hypotheses about both level of role occupancy (H3a and H4a) and role loss (H3b and H4c). I tested hypotheses about level of role occupancy by comparing odds ratios for the stable high role trajectory compared to the stable medium and stable low role trajectories and the stable medium trajectory compared to the stable low trajectory. I tested hypotheses about role loss by comparing odds ratios for the stable medium vs. quadratic medium role trajectories and stable low vs. quadratic low role trajectories.

The health outcomes that I examined were: (1) depressive symptom trajectories (high decline vs. low quadratic), (2) self-rated health trajectories (decline to very good, decline to good, stable excellent, stable very good, and stable fair/poor), and (3) odds of dying in the 12-year observation period following the nine-year role trajectory period. I estimated logistic regression equations to predict odds of belonging to the high declining depressive symptom trajectory and dying during the 12-year follow-up period; I estimated multinomial logistic regression equations to predict odds of belonging in the stable fair/poor self-rated health trajectory compared to the other self-rated health trajectories.

6.1 Depressive Symptoms

6.1.1 Bivariate Analysis

Table 6.1 presents cross-tabulations showing the bivariate relationship between role count trajectories and depressive symptom trajectories. Respondents were roughly evenly divided between the two depressive symptom trajectories, but there were significant differences related to the above hypotheses. First, the stable high role trajectory had the lowest percentage of respondents in the high symptom trajectory, while the quadratic and stable low trajectories had the highest percentage of respondents in the high symptom trajectory. Second, there was little difference between the quadratic and stable medium role count trajectories. There was a relatively larger difference between the quadratic and stable low role count trajectories, with the low quadratic role trajectory exhibiting the highest percentage of respondents in the high depressive symptom trajectory. Thus, at the bivariate level, I found that a greater number of roles was beneficial for depressive symptomatology (support for H4a—role enhancement) and that a role trajectory primarily characterized by loss was associated with a worse depressive symptom profile compared to a stable trajectory at the same level, but only for the low, not medium, level of role occupancy (support for H4c—stability was better than role loss).

Table 6.1 Cross-Tabulation of Role Count and Depressive Symptom Trajectories

	Depressive Symptom Trajectory	
	High Decline	Low Quadratic
Role Count Trajectory		
Medium Quadratic	55.48%	44.52%
Stable High	51.94%	48.06%
Stable Medium	55.71%	44.29%
Low Quadratic	59.36%	40.64%
Stable Low	57.19%	42.81%

Overall chi^2 $p<.01$

6.1.2 Multivariate Analyses

Next, I turned to multivariate analyses with nested models that sequentially added age and cohort, socio-demographic, and health covariates to the basic model containing only role trajectories as predictor variables. Because there were only two depressive symptom trajectories, I estimated logistic regression equations producing odds of belonging in the high declining depressive symptom trajectory (1) compared to the low quadratic trajectory (0). Remember from Chapter 5 that the high decreasing trajectory decreased steadily from an average of 5.5 symptoms to four symptoms across the adult life course; the low quadratic trajectory began with two symptoms at age 25, decreased to one symptom in mid-life, and then increased to two symptoms by age 85. I estimated two sets of models with different role trajectories as the reference category to highlight comparisons between different trajectories.

Table 6.2 compares the stable medium role count trajectory (two roles at all ages 25-85) with the other role trajectories. Model 1 contained just role trajectory variables, and indicated that no role trajectories had significantly different odds of belonging in the high declining depressive symptom trajectory compared to the stable medium role trajectory. Note, however, that this model explained very little variance in the dependent variable (pseudo R^2=0.0016).

Model 2 added single year of age and cohort indicators. Members of the WWII (1932-1946) and Depression (1917-1931) birth cohorts had lower odds of belonging in the high depression trajectory compared to the Baby Boomer cohort (1947-1961). Controlling for birth cohort membership affected role trajectory parameters, so that membership in the stable high (three roles) trajectory was associated with lower odds of belonging to the high depressive symptom trajectory compared to the stable medium (two roles) role trajectory (OR=0.85). The addition of age and cohort improved explained variance (Pseudo R^2=0.0046), but this value was still very low.

Model 3 additionally controlled for socio-demographic covariates. As expected based on prior literature, women, Black respondents, and those with low education and low income had higher odds of belonging to the high depressive symptom trajectory compared to their reference categories. The addition of these covariates further

strengthened the comparison between the stable high and stable medium role trajectories, likely because gender and race were significant predictors of role trajectory

Table 6.2 Odds Ratios Predicting High Depressive Symptom Trajectory, Stable Medium Role Count Reference Trajectory

	Model 1	*Model 2*	*Model 3*	*Model 4*
Role Count Trajectory				
Medium Quadratic	0.99	0.99	0.99	0.97
Stable High	0.85	0.85*	0.80**	0.78**
Stable Medium (ref)	--	--	--	--
Low Quadratic	1.16	1.16	1.06	1.02
Stable Low	1.06	1.06	1.00	0.99
Age		1.16	1.00	0.99*
Cohort				
1947-1961 (ref)	--	--	--	--
1932-1946		0.75**	0.75***	0.76**
1917-1931		0.61***	0.59***	0.60**
1891-1916		0.68	0.57*	0.62*
Covariates				
Female			1.33***	1.21**
Black			1.68***	1.59***
Low Education			1.45***	1.20**
Low Income			1.83***	1.69***
High Religious Att.			0.77***	0.79***
Health Variables				
Functionally Impaired				1.55***
Chronic Illnesses				1.21***
Poor Self-rated Health				2.11***
Pseudo R^2	0.0016	0.0046	0.0526	0.0994

Notes: Statistics presented are odds ratios; *p<.05, **p>.01, ***p<.001; age and health variables are time-varying, all other variables are measured at baseline. 6,358 observations

membership (see Table 5.1). Finally, Model 4 included time-varying health measures. The comparison between stable high and stable medium trajectories was further strengthened (OR=0.78), but socio-demographic effects were reduced, indicating that health measures partially mediated the effect of several covariates on depressive symptom trajectory membership. As expected, poor health was associated with significantly increased odds of belonging to the high depressive symptom trajectory. In sum, even when controlling for several highly significant socio-demographic and health covariates, stable high role occupancy was associated with a more favorable depressive symptom trajectory compared to stable medium role occupancy, supporting the role enhancement hypothesis (H4a). Note that the significant difference was between high and medium role occupancy, not medium and low levels of role occupancy. There was no significant difference between the stable medium and quadratic medium role trajectories, providing no support for either role loss hypothesis.

Table 6.3 presents results for similar analyses, this time with stable low role occupancy as the reference trajectory. I omitted results for other covariates because they were identical to those in Table 6.2. Results supported hypothesis H4a, that high role count trajectory membership was associated with more favorable depressive symptom trajectories compared to low role count trajectories. However, there was no significant difference between stable low and stable medium role occupancy trajectories. Thus,

Tables 6.2 and 6.3 supported the role enhancement hypothesis (H4a), but only at the high (three role) level.

There was no significant difference between the stable low and low quadratic trajectories; taken together with the results in Table 6.2, this indicated that dynamic trajectories primarily characterized by role loss were not associated with significantly different health trajectories when compared to stable role trajectories at the same level. Thus, role loss was neither beneficial nor harmful in terms of depressive symptom outcomes, a surprising finding that did not support hypothesis H3b (role loss is good for health) or hypothesis H4c (role loss is bad for health).

Table 6.3 Odds Ratios Predicting High Depressive Symptom Trajectory, Stable Low Role Count Reference Trajectory

	Model 1	*Model 2*	*Model 3*	*Model 4*
Role Count Trajectory				
Medium Quadratic	0.94	0.93	0.99	0.98
Stable High	0.81*	0.80*	0.80*	0.79*
Stable Medium	0.95	0.94	1.00	1.01
Low Quadratic	1.09	1.09	1.06	1.02
Stable Low (ref)	--	--	--	--

Notes: Statistics presented are odds ratios; *p<.05, **p>.01, ***p<.001; 6,358 observations

Remember that role and depressive symptom trajectories were measured over the same time period. Accordingly, associations could be interpreted in a reverse fashion, with depressive symptom trajectories as predictors of role trajectories. Thus, it

is possible that respondents with higher levels of depressive symptoms chose to occupy fewer roles and not manage work, marriage, and parenthood at the same time. This interpretation was supported by Table 5.1, which showed that higher numbers of depressive symptoms were associated with lower odds of belonging in the stable high role trajectory.

6.2 Self-Rated Health

6.2.1 Bivariate Analysis

Table 6.4 shows that, overall, there was no significant bivariate relationship between role occupancy trajectory and self-rated health trajectory. In general, the stable and quadratic low role count trajectories were associated with poor self-rated health trajectories, although this association was not significant. Interestingly, the stable high role trajectory had the second highest percentage of respondents in the stable fair/poor self-rated health trajectory and the second lowest percentage of respondents in the stable excellent self-rated health trajectory.

Table 6.4 Cross-Tabulation of Role Count and Self-Rated Health Trajectories

	Self-Rated Health Trajectory				
	Decline to Good	Decline to Very Good	Stable Very Good	Stable Fair/Poor	Stable Excellent
Role Count Trajectory					
Medium Quadratic	47.69%	28.23%	12.92%	6.06%	5.10%
Stable High	48.06%	27.91%	12.14%	6.98%	4.91%
Stable Medium	45.71%	29.05%	13.57%	5.71%	5.95%
Low Quadratic	48.99%	27.02%	11.62%	8.59%	3.79%
Stable Low	49.05%	25.32%	13.92%	6.01%	5.70%

Overall chi^2 n.s. (p=0.071)

6.2.2 Multivariate Analyses

I used multinomial regression analysis (described in Chapter 5.1.2) to examine the association between role occupancy trajectories and self-rated health trajectories. Because there were five self-rated health trajectories and five role occupancy trajectories, there were many possible comparisons to be made. I tested all possible combinations of self-rated health and role occupancy reference trajectories, and chose to present analyses with the stable low self-rated health trajectory as the reference trajectory because it provided the greatest contrast. For ease of presentation, I did not include nested models in my tables but rather presented models controlling for all socio-demographic and health covariates. Note, however, that models with only role trajectories as covariates explained very little variance in the dependent variable (Pseudo R^2=0.0015).

Table 6.5 presents relative risk ratios predicting odds of belonging in various self-rated health trajectories compared to the reference trajectory of stably fair/poor self-rated health. Stable medium role count (two roles) was the reference category for role trajectories. Columns 1 and 2 show that there was no significant difference between the stable medium role trajectory (reference trajectory) and other role trajectories in the odds of belonging in either the decline to good or decline to very good self-rated health trajectories compared to the stable fair/poor self-rated health trajectory.

Column 3 shows that, compared to the stable medium role trajectory, members of the low quadratic role trajectory had lower odds of belonging in the stable very good self-rated health trajectory compared to the stable fair/poor trajectory. Column 4 shows that members of both the stable high and low quadratic role trajectories had lower odds of belonging in the stable excellent self-rated health trajectory compared to the stable fair/poor trajectory.

Odds ratios for covariates across models provided results in expected directions. Members of earlier cohorts had lower odds of belonging to favorable self-rated health trajectories compared to the stably fair/poor trajectory, while single year of age within cohorts was associated with higher odds of belonging to self-rated health trajectories other than stable fair/poor. Black respondents, respondents with low education, respondents with low income, and functionally impaired respondents had lower odds of

belonging in any of the more favorable self-rated health trajectories compared to the stably fair/poor self-rated health trajectory. Higher levels of chronic illness and

Table 6.5 Relative Risk Ratios Predicting Self-Rated Health Trajectory, Stable Medium Role Count and Stable Low Self-Rated Health Reference Trajectories

	Decline to Good	*Decline to Very Good*	*Stable Very Good*	*Stable Excellent*
Role Count Trajectory				
Medium Quadratic	1.04	0.98	0.94	0.86
Stable High	0.79	0.71	0.65	0.59*
Stable Medium (ref)	--	--	--	--
Low Quadratic	0.75	0.70	0.61*	0.46**
Stable Low	1.10	0.92	1.08	1.01
Age	1.04**	1.05***	1.05***	1.05
Cohort				
1947-1961 (ref)	--	--	--	--
1932-1946	0.25***	0.28***	0.26***	0.33**
1917-1931	0.17***	0.34	0.27**	0.26*
1891-1916	0.17***	0.48	0.17**	0.46
Covariates				
Female	0.96	0.92	1.19	1.19
Black	0.76*	0.69**	0.49***	0.66*
Low Education	0.72*	0.46***	0.37***	0.33***
Low Income	0.60***	0.47***	0.52***	0.49**
High Religious Att.	1.56***	1.73***	1.98***	1.48*
Health Variables				
Functionally Impaired	0.35***	0.17***	0.08***	0.09***
Chronic Illnesses	0.67***	0.36***	0.44***	0.24***
Depressive Sx (0-11)	0.89***	0.77***	0.77***	0.69***

Notes: Stable low self-rated health is the reference category. Statistics presented are odds ratios; *p<.05, **p>.01, ***p<.001; age and health variables are time-varying, all other variables are measured at baseline. 6,358 observations. Pseudo R^2=0.1412

depressive symptoms were associated with lower odds of belonging to the more favorable self-rated health trajectories. High religious attendance was associated with higher odds of belonging to more favorable self-rated health trajectories compared to the stably fair/poor trajectory.

The results in Table 6.5 provided conflicting evidence related to role strain and enhancement hypotheses. Members of the stable high role trajectory had lower odds of belonging to the stable excellent self-rated health trajectory compared to the stable medium role trajectory (support for H3a—role strain), but members of the low quadratic role trajectory also had lower odds of very good or excellent self-rated health compared to the stable medium role trajectory (support for H4a—role enhancement). There was no significant difference between stable medium and stable low role trajectories. There was also no significant difference between the stable medium and quadratic medium role trajectories, providing no support for either role loss hypothesis.

Table 6.6 again presents odds of belonging in several self-rated health trajectories compared to the stable fair/poor self-rated health trajectory, this time comparing role trajectories to the stable low role trajectory. Column 1 shows that members of the low quadratic role trajectory had lower odds (compared to the stable low role trajectory) of belonging to the decline to good self-rated health trajectory compared to the stable fair/poor self-rated health trajectory. This finding supports hypothesis H3b, that role

loss is associated with relatively poorer self-rated health compared to stable role occupancy at the same low level. Column 2 shows no significant differences in the odds of belonging to the decline to very good self-rated health trajectory compared to the stable fair/poor trajectory.

Column 3 shows that members of the stable high role trajectory and the low quadratic role trajectories (compared to the stable low role trajectory) had lower odds of belonging to the stable very good self-rated health trajectory compared to the stable fair/poor self-rated health trajectory. Column 4 shows that members of the low quadratic role trajectory had lower odds of belonging to the stable excellent self-rated health trajectory compared to the stable fair/poor self-rated health trajectory.

Table 6.6 Relative Risk Ratios Predicting Self-Rated Health Trajectory, Stable Low Role Count and Self-Rated Health Reference Trajectories

	Decline to Good	*Decline to Very Good*	*Stable Very Good*	*Stable Excellent*
Role Count Trajectory				
Medium Quadratic	0.94	1.07	0.87	0.85
Stable High	0.72	0.77	0.60*	0.58
Stable Medium	0.92	1.09	0.93	0.99
Low Quadratic	0.68*	0.77	0.57*	0.46**
Stable Low (ref)	--	--	--	--

Notes: Stable low self-rated health is the reference category. Statistics presented are odds ratios; *p<.05, **p>.01, ***p<.001; 6,358 observations

In sum, self-rated health analyses provided support for both the role strain and role enhancement hypotheses, with important distinctions based on level of roles. Stable high role occupancy (three roles) was associated with poorer self-rated health compared to both stable medium and stable low role trajectories, but only for certain self-rated health trajectories, providing cautious support for the role strain hypothesis. However, I found clearer support for the role enhancement hypothesis regarding role loss in that the low quadratic role trajectory was associated with poorer self-rated health when compared to both the stable medium and stable low role trajectories. There was no significant difference between stable and quadratic medium role trajectories, indicating that role loss was associated with poorer self-rated health at the low level (one role), but not the medium level (two roles).

As with depressive symptom trajectories, self-rated health trajectories covered the same age range as role trajectories, confusing the direction of association between health and role trajectories. Indeed, self-rated health may be more likely than depressive symptoms to cause role occupancy patterns rather than role patterns causing self-rated health. Interpreted another way, fair/poor self-rated health could be associated with individuals giving up roles, especially the work role, at later ages. Similarly, declining self-rated health could also be associated with giving up roles, either voluntarily or involuntarily, in later life. Regarding the positive association between poor self-rated

health and stable high role occupancy, perhaps respondents with poor self-rated health need to maintain social roles in order to retain support and resources that facilitate quality of life while dealing with poor health.

6.3 Mortality

6.3.1 Bivariate Analysis

Among the 2,146 respondents in the analytic sample, 1,612 (75%) survived the 12-year follow-up period through 2006 and 534 (25%) respondents died. Table 6.7 presents a bivariate comparison between multiple role trajectories and the percentage of respondents in that trajectory that died during the 12-year follow-up period. Note that the difference between role trajectories was not significant, and that there was no clear pattern in survival advantage by role trajectory at the bivariate level.

Table 6.7 Percentage of Role Trajectory Members who Died during Follow-up

	% Died
Role Count Trajectory	
Medium Quadratic	23.44%
Stable High	22.22%
Stable Medium	21.67%
Low Quadratic	24.75%
Stable Low	25.32%

Overall Chi^2 n.s. (p=0.188)

6.3.2 Multivariate Analyses

Table 6.8 presents odds ratios for the risk of dying during the 12-year follow-up period after Wave III. Note that I predicted mortality measured *after* the nine-year role trajectories measured from Waves I-III. Because mortality was measured after role trajectories, and because death is a final health outcome that cannot possibly influence individual characteristics, I was able to make causal arguments about the direction of the relationship between role trajectories and mortality that were not possible when examining health trajectories measured over the same time period as role trajectories.

Model 1 of Table 6.8 contained role trajectories only. Members of the stable low trajectory had higher odds of dying during the next 12 years (OR=1.23) compared to members of the stable medium role trajectory. There was no significant difference between the medium quadratic role trajectory and the stable medium trajectory or between the stable high and stable medium trajectory.

Model 2 added age and 15-year cohort measures. As would be expected, older adults and members of cohorts born in earlier years had significantly higher odds of dying in the next 12 years compared to the younger Baby Boomer cohort. The addition of cohort dramatically increased the amount of variance in mortality explained by the model (from 0.0009 to 0.2358), indicating that age and cohort were far more important for predicting mortality than role trajectory. Controlling for cohort increased the effect

Table 6.8 Odds Ratios for Risk of Mortality, Stable Medium Role Count Reference Trajectory

	Model 1	*Model 2*	*Model 3*	*Model 4*	*Model 5*
Role Count Trajectory					
Medium Quadratic	1.11	1.20	1.17	1.17	1.21
Stable High	1.03	1.14	1.11	1.15	1.15
Stable Medium (ref)	--	--	--	--	--
Low Quadratic	1.19	1.41**	1.38**	1.39**	1.37**
Stable Low	1.23*	1.31*	1.27*	1.29*	1.27*
Age		1.07***	1.07***	1.06***	1.07***
Cohort					
1947-1961 (ref)	--	--	--	--	--
1932-1946		1.46***	1.41*	1.33	1.25
1917-1931		2.02**	2.02**	2.09**	1.91**
1891-1916		3.83***	3.89***	4.25***	4.22***
Covariates					
Female			0.82**	0.71***	0.73***
Black			1.48***	1.43***	1.41**
Low Education			1.29**	1.13	1.10
Low Income			1.05	0.97	0.97
High Religious Att.			0.83**	0.86*	0.96
Health Variables					
Functionally Impaired				1.55***	1.51***
Chronic Illnesses				1.15***	1.15***
Poor Self-rated Health				1.30**	1.24**
Depressive Symptoms				1.01	1.01
Health Behaviors					
Obese					1.28**
Current Smoker					2.04***
Heavy Drinker					1.45
Pseudo R^2	0.0009	0.2493	0.2589	0.2778	0.2893

Notes: Statistics presented are odds ratios; *p<.05, **p>.01, ***p<.001; age and health variables are time-varying; all other variables are measured at Wave I. 6,438 observations.

of stable low compared to stable medium role trajectory slightly (OR=1.31) and revealed that members of the low quadratic role trajectory had increased odds of dying compared to the stable medium trajectory (OR=1.41).

Model 3 additionally controlled for socio-demographic covariates. As expected, women and respondents with high religious participation had lower odds of dying, while Black respondents and those with low education had higher odds of dying compared to their respective reference categories. The inclusion of these covariates improved model fit (Pseudo R^2 =0.251) and only slightly attenuated the effects of role trajectory variables.

Model 4 additionally controlled for health variables. Functional impairment and poor self-rated health increased odds of dying compared to their respective reference categories; each additional chronic illness also increased odds of dying. The addition of health variables did not substantially alter odds ratios for the low level role trajectories, but did partially mediate the effects of socio-demographic variables.

Finally, Model 5 additionally controlled for health behaviors. As demonstrated in the literature review, these variables are often associated with mortality. Being obese and smoking increased odds of dying compared to those who were not obese and did

not currently smoke. The effect of belonging to the low quadratic role trajectory and stable low role trajectories compared to stable medium role trajectory remained stable and significant. Other covariates also remained significant. Even with many strong and significant predictors of mortality in the final model, members of the stable and quadratic low level role trajectories had higher odds of mortality compared to the stable medium role trajectory, supporting the role enhancement hypothesis (H3a). However, there was no significant difference between the stable high and stable medium role trajectories. Therefore, the beneficial effect of multiple role occupancy only applied at the low to medium level, not the medium to high level. There was no significant difference between the stable medium and quadratic medium role trajectories in predicting mortality, providing no support for either role loss hypothesis.

Table 6.9 presents odds ratios predicting risk of mortality with the stable low role trajectory as the reference trajectory. Only the comparison between stable medium and stable low trajectories was significant, with members of the stable medium trajectory exhibiting significantly lower odds of dying compared to the stable low trajectory (OR=0.78). There was no significant difference between the stable low trajectory and the quadratic low trajectory, providing no support for either role loss hypothesis. Additionally, there was no significant difference between the stable low and stable high

trajectories, providing additional evidence that the survival advantage of multiple role occupancy is between low and medium role levels, not low and high levels.

Table 6.9 Odds Ratios for Risk of Mortality, Stable Low Role Count Reference Category

	Model 1	*Model 2*	*Model 3*	*Model 4*	*Model 5*
Role Count Trajectory					
Medium Quadratic	0.90	0.93	0.94	0.92	0.91
Stable High	0.84	0.86	0.86	0.87	0.88
Stable Medium	0.82*	0.78*	0.79*	0.78*	0.78*
Low Quadratic	0.97	1.11	1.12	1.10	1.06
Stable Low	--	--	--	--	--

Notes: Statistics presented are odds ratios; *p<.05, **p>.01, ***p<.001; age and health variables are time-varying; all other variables are measured at Wave I. 6,438 observations.

The approach of using a dichotomous indicator of whether respondents died or not during the follow-up period is not ideal because it wastes information on the timing of deaths and does not incorporate information from censored cases who do not die during the study period (Allison 1984; Singer and Willett 2003). However, survival analyses using discrete-time and Cox methods provided no significant results for role trajectories. Thus, although some role trajectories significantly predicted whether a respondent died or not within the next 12 years, they could not accurately predict more fine-grained mortality measures. This is likely due to the low explanatory power of role trajectories.

6.4 Conclusion

Conclusions about associations between level of role occupancy and effects of role loss differed depending on which health outcomes were tested. For depressive symptom analyses, there was clear support for the role enhancement hypothesis: stable high role occupancy was associated with a more favorable depressive symptom trajectory (low quadratic vs. high decline) compared to both the stable medium and stable low role occupancy trajectories. Note, however, that the beneficial effect of role enhancement only applied to high (three roles) occupancy; there was no significant difference between low and medium level of role occupancy. There was no evidence that trajectories primarily characterized by role loss in later life were associated with better or worse depressive symptom trajectories compared to stable role trajectories at the same level.

Self-rated health analyses provided less clear conclusions. Both stable high and low quadratic role trajectories were associated with poorer self-rated health trajectories compared to stable medium and stable low role occupancy, providing support for both role enhancement and role strain hypotheses. In contrast to depressive symptom analyses, self-rated health analyses did provide insight into role loss versus role stability—role loss at the low level was associated with poorer self-rated health trajectories compared to stable low role occupancy. Thus, these analyses provided

support for the role enhancement role loss hypothesis (H4c), but only at the low, not medium, level of role occupancy. It is interesting to note that all significant comparisons were between stable fair/poor self-rated health and either stable very good or stable excellent self-rated health—there were no significant role effects associated with the self-rated health trajectories that experienced declining but still relatively high levels of self-rated health.

Importantly, the above two analyses included predictor and outcome trajectories measured over the same period of time. Therefore, I was unable to make clear statements about whether role trajectories affected health trajectories or whether health trajectories affected role trajectories. In fact, self-rated health analyses made the most sense when interpreted as health affecting role occupancy. The last set of analyses for mortality provided insight into the causal direction of influence because mortality cannot affect role trajectories. Mortality analyses provided support for the role enhancement hypothesis in that members of the stable medium role occupancy trajectory had lower odds of dying compared to those in the stable low and low quadratic role trajectories. However, this support must be qualified by level of role occupancy—the significant comparisons were between low and medium levels of role occupancy, not between high and low or high and medium levels.

These conclusions must be interpreted with caution. Although I found several significant effects for role trajectories, initial models with only role trajectories as covariates had very low Pseudo R^2 values (less than 0.01). Thus, although some effects were significant, role trajectories explained very little variance in health outcomes. Additionally, it is possible that health affects role occupancy more than the other way around, especially for self-rated health.

7. Role Characteristics and Health

Following the insight of the role context hypothesis that the nature of social roles may matter more than the total number of roles occupied (Moen, Dempster-McClain, and Williams 1989), this chapter examines trajectories of stressful role count and trajectories of satisfying role count and their associations with health outcomes--mortality and trajectories of depressive symptoms and self-rated health. Because role demand (being bothered or upset by a role) and role reward (being satisfied by a role) were explicitly measured in these analyses, I moved away from role strain and enhancement hypotheses and instead tested hypotheses informed by stress process theory.

The first research question that I addressed in this chapter was *RQ3: Are trajectories of role strain and role satisfaction associated with trajectories of mental and physical health and mortality?* I used role strain, role satisfaction, and health trajectories identified in Chapter 5 to test several hypotheses listed below.

I based hypotheses about stressful role count trajectories on stress process theory, which posits that higher levels of stress are associated with poor health outcomes. Accordingly, I hypothesized that higher levels of role strain are associated with less favorable health trajectories compared to lower levels of role strain (H5a). Given the three role strain trajectories identified in Chapter 5, this means that the high quadratic

role strain trajectory should be associated with poorer health outcomes compared to the low slow decline and stable no stress trajectories. Second, I incorporated concepts of change and stability by hypothesizing that trajectories primarily characterized by decreasing role strain are associated with more favorable health trajectories compared to trajectories of stable or increasing role strain. Similarly, trajectories characterized by increasing role strain are associated with less favorable health trajectories compared to trajectories of stable or decreasing role strain (H5b). Among the three role strain trajectories identified in Chapter 5, two were primarily characterized by decreasing strain and one was characterized by stability; no role strain trajectories were primarily characterized by increasing role strain. Thus, I could only test the first part of hypothesis H5b, that trajectories primarily characterized by decreasing role strain (high quadratic decline and low slow decline) should be associated with less favorable health outcomes compared to the stable no stress trajectory.

I advanced opposite hypotheses about role satisfaction trajectories, given that satisfaction is generally conceived as a positive characteristic that should contribute to individuals' well-being. First, I hypothesized that higher levels of role satisfaction are associated with more favorable health trajectories compared to lower levels of role satisfaction (H6a). Given the trajectories identified in Chapter 5, this means that high and medium levels of satisfying role occupancy should be associated with more

favorable health outcomes compared to trajectories of low or no role satisfaction. Regarding change versus stability, I hypothesized that trajectories primarily characterized by increasing role satisfaction are associated with more favorable health trajectories compared to trajectories of stable or decreasing role satisfaction. Similarly, trajectories characterized by decreasing role satisfaction are associated with less favorable health trajectories compared to trajectories of stable or increasing role satisfaction (H6b). Again, I did not identify any satisfying role trajectories primarily characterized by increasing satisfaction across the life course. Given the trajectories identified in Chapter 5, this hypothesis predicts that the medium and low quadratic satisfaction trajectories should be associated with less favorable health outcomes compared to stable satisfaction trajectories at the same level.

I also addressed a final research question in this chapter: *RQ4: Do trajectories of role strain and role satisfaction mediate the relationship between role occupancy trajectories and health?* I hypothesized that, given the inherent importance of role rewards and demands in role strain and enhancement theories, trajectories of role strain and satisfaction would mediate the relationship between role occupancy trajectories and health (H7).

Analyses for role strain and role satisfaction trajectories mirrored those conducted in Chapter 6 for structural role occupancy trajectories. I conducted bivariate and multivariate analyses for three health outcomes (depressive symptom trajectory,

self-rated health trajectory, and mortality), comparing appropriate trajectories based on the hypothesis being tested. To test the mediation hypothesis (H7), I included role occupancy, role strain, and role satisfaction trajectories together in a single mediation model.

7.1 Role Strain Trajectories and Health

As reported in Chapter 5, latent class trajectory analyses produced three distinct age-based trajectories of role strain across the adult life course. The most common trajectory (51.4%) was one characterized by a lower level of strain that decreased slowly through mid-life and then decreased more rapidly in later life. Individuals in this "low slow decline" trajectory were expected to experience just less than one stressful role at age 25, decreasing to just more than zero stressful roles by age 85. The "high quadratic decline" trajectory (30.8% of respondents) experienced an average of 1.6 stressful roles at age 25, increasing to almost two stressful roles by age 45 and then sharply declining to meet the "low slow decline" trajectory at just more than zero stressful roles by age 85. Finally, the "no stress" trajectory (17.8%) was expected to experience a stable trajectory of no stressful roles through ages 25 to 85.

7.1.1 Depressive Symptoms

I first examined the association between role strain trajectories and depressive symptom trajectories using bivariate cross-tabulations presented in Table 7.1. Members

of the low slow decline role strain trajectory had slightly more respondents in the high decline depressive symptom trajectory compared to the low quadratic depressive symptom trajectory. More striking comparisons were evident with the other two role strain trajectories. Among members of the high quadratic decline role strain trajectory, approximately 70% of respondents belonged to the high declining depressive symptom trajectory, while approximately 30% of respondents belonged to the low quadratic depressive symptom trajectory. Among respondents in the stable no stress role strain trajectory, approximately 37% of respondents belonged in the high decline depressive symptom trajectory, while approximately 63% of respondents belonged in the low quadratic depressive symptom trajectory. Thus, at the bivariate level, there is evidence that higher levels of stressful role occupancy are associated with a less favorable depressive symptom trajectory (support for H5a). Regarding change versus stability, both role strain trajectories primarily characterized by decreasing role strain were associated with a less favorable depressive symptom trajectory compared to the stable role strain trajectory, providing no support for H5b that decreasing strain is better than stable strain. However, this was presumably because the stable trajectory included no stressful roles and thus was not a true comparison between decreasing and stable strain at the same level.

Table 7.1 Cross-Tabulation between Role Strain Trajectories and Depressive Symptom Trajectories

	Depressive Symptom Trajectory	
	High Decline	Low Quadratic
Role Strain Trajectory		
Low Slow Decline	55.02%	44.98%
High Steep Decline	70.45%	29.55%
No Strain	37.19%	62.81%

Overall chi^2 p<.001

Turning to multivariate analyses, I conducted two sets of analyses—one with stable no role strain as the reference trajectory and one with low slow decline in role strain as the reference trajectory. Table 7.2 shows that both the low slow decline and high quadratic decline role strain trajectories (compared to the no strain trajectory) were associated with higher odds of belonging in the high depressive symptom trajectory. These results supported hypothesis H5a, that higher levels of role strain are associated with less favorable health trajectories when compared to lower levels of role strain. These results did not support hypothesis H5b, that trajectories primarily characterized by decreasing role strain are associated with more favorable depressive symptom trajectories compared to stable role strain. Again, this lack of support is likely because this stable trajectory represented no stressful roles and was not at a level comparable to either of the decreasing role strain trajectories.

The odds ratios for role strain variables increased in magnitude as covariates were added to the model (but decreased slightly with the addition of health covariates).

This is likely because several socio-demographic covariates were significantly associated with both role strain and depressive symptom trajectory membership, thus suppressing the effect of role strain trajectories when they were modeled without these important covariates. The associations between covariates and likelihood of belonging to the high declining depressive symptom trajectory differed slightly in magnitude from results presented in Chapter 6 but maintained effects in expected directions. Therefore, I will not discuss these results further.

Table 7.3 shows results for similar analyses, this time with the low slow decline trajectory as the reference role strain trajectory. I omitted results for covariates because they were identical to those presented in Table 7.2. Results show that members of the high quadratic decline role strain trajectory had higher odds of belonging in the high depressive symptom trajectory compared to those in the low slow decline role strain trajectory. This finding reinforced support for hypothesis H5a that higher levels of role strain are associated with less favorable depressive symptom trajectory membership. Members of the stable no role strain trajectory had lower odds of belonging in the high depressive symptom trajectory compared to the low slow decline role strain trajectory, again reinforcing that level of strain is important but that, given these particular trajectories, declining role strain is not associated with more beneficial depressive symptom trajectories compared to stable role strain.

Table 7.2 Logistic Regression Predicting High Depressive Symptom Trajectory, No Stress as Reference Role Strain Trajectory

	Model 1	*Model 2*	*Model 3*	*Model 4*
Role Strain Trajectory				
Low Slow Decline	2.07***	2.37***	2.47***	2.39***
High Quadratic Decline	4.04***	4.79***	5.91***	5.89***
Stable None (ref)	--	--	--	--
Age		1.01*	1.01	0.99
Cohort				
1947-1961 (ref)	--	--	--	--
1932-1946		0.67***	0.66***	0.66***
1917-1931		0.68*	0.66*	0.67*
1891-1916		0.93	0.79	0.83
Covariates				
Female			1.31***	1.18**
Black			1.55***	1.47***
Low Education			1.50***	1.24**
Low Income			2.21***	2.04***
High Religious Att.			0.76***	0.78***
Health Variables				
Functionally Impaired				1.73***
Chronic Illnesses				1.19***
Poor Self-rated Health				2.07***
Pseudo R^2	0.0354	0.0407	0.096	0.1401

Notes: Statistics presented are odds ratios; *p<.05, **p>.01, ***p<.001; age and health variables are time-varying, all other variables are measured at baseline. 6,358 observations

Table 7.3 Logistic Regression Predicting High Depressive Symptom Trajectory, Low Slow Decline as Reference Role Strain Trajectory

	Model 1	*Model 2*	*Model 3*	*Model 4*
Role Strain Trajectory				
Low Slow Decline (ref)	--	--	--	--
High Quadratic Decline	1.95***	2.03***	2.39***	2.46***
Stable None	0.48***	0.42***	0.40***	0.42***
Pseudo R^2	0.0354	0.0407	0.096	0.1401

Notes: Statistics presented are odds ratios; *p<.05, **p>.01, ***p<.001.
6,358 observations

Overall, results for depressive symptom outcomes supported hypothesis H5a, that higher levels of role strain are associated with less favorable depressive symptom trajectories compared to lower levels of role strain. I found no support for hypothesis H5b, that trajectories primarily characterized by decreasing strain are associated with more favorable health trajectories compared to stable role strain trajectories. However, although the low slow decline was similar in level to the no stress trajectory, there is a substantial difference between having some level of role stress compared to none. Therefore, the comparison between these two trajectories might not have been the best test of the decline versus stability hypothesis.

Because both predictor and outcome trajectories covered the same age period, I could not determine whether strain trajectories affected depressive symptom trajectories or whether depressive symptom trajectories affected strain trajectories. Thus, it may be the case that individuals with higher levels of depressive symptoms chose to drop

stressful roles (especially work and spouse roles) in order to alleviate depressive symptoms.

7.1.2 Self-Rated Health

Table 7.4 presents a bivariate cross-tabulation between role strain trajectories and self-rated health trajectories. Although the overall chi^2 indicated significant differences, patterns of self-rated health trajectory membership were fairly consistent between role strain trajectories. The most interesting result in this table was that the no stress role strain trajectory had the highest percentage of respondents in both the stable fair/poor and stable excellent self-rated health trajectories. This reflects the possibility that individuals who report no stressful roles may either occupy several roles that are not stressful or occupy few (or no) roles that are not stressful.[1] According to the role enhancement hypothesis, individuals who occupy several roles that are non-stressful are likely to experience excellent self-rated health, while individuals who occupy few roles that are non-stressful are likely to experience poor self-rated health.

[1] Among members of the stable no stress trajectory, 15.75% occupied an average of zero roles, 36.31% occupied an average of one role, 35.52% occupied an average of two roles, and 12.42% occupied an average of three roles over the nine-year study period.

Table 7.4 Cross-Tabulation between Role Strain Trajectories and Self-Rated Health Trajectories

	Decline to Good	Decline to Very Good	Stable Very Good	Stable Fair/Poor	Stable Excellent
Role Strain Trajectory					
Low Slow Decline	48.43%	27.52%	12.31%	6.61%	5.12%
High Steep Decline	49.55%	26.13%	13.87%	6.13%	4.32%
No Stress	47.81%	30.45%	12.86%	7.35%	6.04%

Overall chi^2 $p<0.05$

Multivariate models again tested stable no stress and low slow declining stress as reference trajectories. I excluded stable fair/poor self-rated health as the reference trajectory because it provided the greatest contrast against the other self-rated health trajectories. Unfortunately, however, none of the comparisons in Table 7.5 and 7.6 produced significant differences in the odds of belonging to any self-rated health trajectory compared to the stable fair/poor self-rated health trajectory.

Table 7.5 Multinomial Logistic Regression Predicting Self-Rated Health Trajectories, No Stress and Fair/Poor Self-Rated Health Reference Trajectories

	Decline to Good	*Decline to Very Good*	*Stable Very Good*	*Stable Excellent*
Role Strain Trajectory				
Low Slow Decline	1.15	1.09	0.94	0.78
High Quadratic Decline	1.05	0.99	0.99	0.66
Stable None (ref)	--	--	--	--
Age	1.04***	1.05***	1.05***	1.05**
Cohort				
1947-1961 (ref)	--	--	--	--
1932-1946	0.25***	0.28***	0.26***	0.34**
1917-1931	0.17***	0.33**	0.27**	0.25*
1891-1916	0.17***	0.46	0.17**	0.41
Covariates				
Female	0.94	0.91	1.17	1.17
Black	0.74*	0.68**	0.48***	0.67*
Low Education	0.73*	0.46***	0.37***	0.32***
Low Income	0.60***	0.46***	0.51***	0.47***
High Religious Att.	1.57***	1.75***	2.00***	1.48*
Health Variables				
Functionally Impaired	0.35***	0.17***	0.08***	0.09***
Chronic Illnesses	0.66***	0.36***	0.44***	0.24***
Depressive Symptoms (0-11)	0.89***	0.78***	0.77***	0.70***

Notes: Stable low self-rated health is the reference category. Statistics presented are odds ratios; *p<.05, **p>.01, ***p<.001; age and health variables are time-varying, all other variables are measured at baseline. 6,358 observations. Pseudo R^2=0.1406

Table 7.6 Multinomial Logistic Regression Predicting Self-Rated Health Trajectories, Low Slow Decline as Reference Stress Trajectory

	Decline to Good	*Decline to Very Good*	*Stable Very Good*	*Stable Excellent*
Role Strain Trajectory				
Low Slow Decline	--	--	--	--
High Quadratic Decline	0.91	0.91	1.06	0.84
Stable None (ref)	0.87	0.92	1.06	1.28

Notes: Stable low self-rated health is the reference category. Statistics presented are odds ratios; *p<.05, **p>.01, ***p<.001; 6,358 observations

The non-significant results presented above provided no support for either hypothesis about the association between role strain trajectories and self-rated health trajectories. It is likely that self-rated health is more strongly associated with role occupancy (and that the causal direction may flow from self-rated health to role occupancy) than role strain.

7.1.3 Mortality

At the bivariate level, respondents in the no stress trajectory had the highest likelihood of dying during the 12-year follow-up period (see Table 7.7). From a stress perspective, this is a surprising finding given that low strain is generally associated with better health outcomes. However, a look back at the predictors of role strain trajectory membership in Chapter 5 (Table 5.2) shows that older adults and respondents who were functionally impaired were more likely to belong in the no stress trajectory compared to

the slow decline trajectory. Additionally, women were less likely to belong in the no stress trajectory compared to the slow decline trajectory. Given this context, the fact that respondents in the no stress trajectory were more likely to die during follow-up is plausible.

Table 7.7 Cross-Tabulation between Role Strain Trajectories and Dying during Follow-up

	% Died
Role Strain Trajectory	
Low Slow Decline	21.32%
High Steep Decline	13.15%
No Stress	44.88%

Overall chi^2 $p<.001$

The following tables present multivariate logistic regression models predicting odds of dying during the 12-year follow-up period based on two different omitted reference trajectories. In line with bivariate results, Table 7.8 shows that respondents in each of the declining strain trajectories had lower odds of dying during the 12-year follow-up period compared to the no stress trajectory. The difference between the high quadratic decline stress trajectory and the no stress trajectory (OR=0.54) was greater than the difference between the low slow decline trajectory and the no stress trajectory (OR=0.76). The addition of covariates substantially attenuated the effects of these role strain trajectories and increased the explained variance in odds of dying. Thus, although role strain trajectories had significant effects on odds of dying through all models, age, cohort, socio-demographic, and health variables were much more important in

Table 7.8 Logistic Regression Predicting Odds of Dying during 12-year Follow-up Period, Stable None as Reference Stress Trajectory

	Model 1	*Model 2*	*Model 3*	*Model 4*	*Model 5*
Role Strain Trajectory					
Low Slow Decline	0.33***	0.84*	0.82*	0.77**	0.76**
High Quadratic Decline	0.19***	0.59***	0.57***	0.54***	0.54***
Stable None (ref)	--	--	--	--	
Age		1.07***	1.07***	1.06***	1.07***
Cohort					
1947-1961 (ref)		--	--	--	--
1932-1946		1.54*	1.48*	1.44*	1.36
1917-1931		1.99**	2.00**	2.00**	1.83*
1891-1916		3.57***	3.66***	3.81***	3.77***
Covariates					
Female			0.83*	0.74***	0.77**
Black			1.56***	1.50***	1.47***
Low Education			1.27**	1.12	1.08
Low Income			1.01	0.93	0.93
High Religious Att.			0.83**	0.85*	0.95
Health Variables					
Functionally Impaired				1.49***	1.44***
Chronic Illnesses				1.17***	1.17***
Poor Self-rated Health				1.33***	1.27**
Depressive Sx (0-11)				1.04*	1.03*
Health Behaviors					
Obese					1.27**
Current Smoker					2.04***
Heavy Drinker					1.44
Pseudo R^2	0.0533	0.2514	0.2613	0.2782	0.2897

Notes: Statistics presented are odds ratios; *p<.05, **p>.01, ***p<.001; age and health variables are time-varying, all other variables are measured at baseline. 6,358 observations

explaining odds of dying. The effects of these additional covariates were similar to those presented in Table 6.8 and will not be further discussed here.

Table 7.9 presents results from similar analyses, this time highlighting comparisons with the slow low decline role strain trajectory. Again, members of the stable no strain trajectory had higher odds of dying compared to the low slow decline stress trajectory (OR=1.31). Members of the high quadratic decline role strain trajectory had lower odds of dying compared to the low decline trajectory (OR=0.71).

Table 7.9 Logistic Regression Predicting Odds of Dying during 12-year Follow-up Period, Low Slow Decline as Reference Stress Trajectory

	Model 1	*Model 2*	*Model 3*	*Model 4*	*Model 5*
Role Strain Trajectory					
Low Slow Decline (ref)	--	--	--	--	--
High Quadratic Decline	0.56***	0.69***	0.70***	0.70***	0.71***
Stable None	3.00***	1.19*	1.22*	1.30**	1.31**
Pseudo R^2	0.0533	0.2514	0.2613	0.2782	0.2897

Notes: Statistics presented are odds ratios; *p<.05, **p>.01, ***p<.001. 6,358 observations

The multivariate results presented in Tables 7.8 and 7.9 did not support role strain hypothesis H5a, that higher levels of role stress should be associated with less favorable mortality outcomes. Members of the high quadratic role strain trajectory had lower odds of dying than members of the low slow decline role strain trajectory. Additionally, members of the no strain trajectory had higher odds of dying compared to

both of the other trajectories. Similarly, I found no support for role strain hypothesis H5b, that members of declining stress trajectories should have lower odds of mortality compared to members of the stable no stress trajectory. I attribute these results to the fact that members of both the high quadratic decline and stable no stress trajectories were likely to be older than members of the low slow decline trajectory, overpowering any potential effects of level or dynamic of strain on mortality.

7.1.4 Conclusion

In most analyses, my hypotheses about level and dynamics of role strain trajectories were not supported. The only analyses that supported any role strain hypotheses were those for depressive symptoms. Higher levels of role strain were associated with higher odds of belonging in the high depressive symptom trajectory, supporting hypothesis H5a. Because latent class analyses did not produce trajectories of change and stability in role strain at comparable levels, I was unable to appropriately test hypothesis H5b and therefore received no support for it.

The fact that analyses with depressive symptom trajectories were the only ones that supported my hypotheses makes sense, however, considering the strong theoretical link between strain and depressive symptoms. While strain can affect self-rated health and mortality, age, socio-demographic characteristics, and health have much stronger effects. Therefore, even when there were significant associations between role strain

trajectories and odds of dying, these effects were likely attributable to the socio-demographic composition of members of the role strain trajectories, not strain itself.

7.2 Role Satisfaction Trajectories and Health

As reported in Chapter 5, latent class analysis produced six distinct role satisfaction trajectories. These trajectories closely mirrored those found for role count, with the addition of a stable no satisfaction trajectory. The most common role satisfaction trajectory was medium quadratic (31.4%), with respondents holding an average of two satisfying roles at age 25, increasing slightly through mid-life, and then declining to an average of one satisfying role by age 85. The second most common role satisfaction trajectory also experienced change over time but at a lower level and with a smaller degree of change; members of the low quadratic satisfaction trajectory (30.1%) were expected to hold just less than one satisfying role at age 25, increasing to just over one stressful role at mid-life and then declining back to an average of less than one stressful role by age 85. The remainder of respondents was expected to experience stable role satisfaction trajectories throughout the life course: stable medium (14.1%), stable low (12.7%), stable high (6.2%), and stable none (4.8%).

7.2.1 Depressive Symptoms

At the bivariate level, there were distinct patterns between role satisfaction and depressive symptom trajectories, as shown in Table 7.10. These patterns are much clearer than bivariate patterns based on role occupancy trajectories presented in Table 6.1. Members of the low quadratic, stable low, and stable none role satisfaction trajectories were much more likely to belong in the high quadratic declining depressive symptom trajectory compared to the low quadratic depressive symptom trajectory. Members of the stable high role satisfaction trajectory were much less likely to belong in the high quadratic decline depressive symptom trajectory. Members of both stable and quadratic role satisfaction trajectories at the medium level were approximately evenly split between the two depressive symptom trajectories.

Regarding change versus stability, members of the stable and quadratic medium satisfaction trajectories were approximately equal in terms of depressive symptom outcome. At the low level, however, individuals with low quadratic (primarily decreasing) satisfaction were more likely to be in the high depressive symptom trajectory than those in the stable low satisfaction trajectory. Thus, at the bivariate level I found support for H6a (high satisfaction is better than low satisfaction) and H6b (stable satisfaction is better than decreasing satisfaction), but only at the low level.

Table 7.10 Cross-Tabulation between Role Satisfaction Trajectories and Depressive Symptom Trajectories

	Depressive Symptom Trajectory	
	High Decline	Low Quadratic
Role Satisfaction Trajectory		
Medium Quadratic	44.94%	55.06%
Low Quadratic	73.11%	26.89%
Stable Medium	43.56%	56.44%
Stable Low	65.07%	34.93%
Stable High	23.48%	76.52%
Stable None	72.96%	27.04%

Overall chi^2 $p<.001$. Row percentages sum to 100%

Multivariate analyses presented in Table 7.11 reinforced the bivariate patterns presented above. In this table, stable low role satisfaction (one satisfying role across the life course) was the reference trajectory. Individuals who belonged to the medium quadratic, stable medium, and stable high satisfaction trajectories all had lower odds of belonging in the high depressive symptom trajectory compared to individuals in the stable low role satisfaction trajectory (OR=0.57, 0.52, and 0.25, respectively). Individuals who belonged in the low quadratic and stable none satisfaction trajectories had higher odds of belonging in the high depressive symptom trajectory compared to those in the stable low role satisfaction trajectory (OR=1.54 and 1.50, respectively). These comparisons remained strong and significant when socio-demographic and health covariates were included in the models. Odds ratios for covariates were similar to those presented in Chapter 6 (Table 6.2) and will not be further discussed here.

These results supported both of the role satisfaction hypotheses advanced in Chapter 3. First, higher levels of role satisfaction were associated with a more favorable depressive symptom trajectory compared to lower levels of role satisfaction (support for H6a). Second, the low quadratic role satisfaction trajectory (primarily characterized by decreasing satisfaction) was associated with a less favorable depressive symptom trajectory compared to stable low role satisfaction at the same level (support for H6b).

A second analysis, this time with stable medium role satisfaction as the reference trajectory, is presented in Table 7.12. Again, several comparisons were significant even while controlling for many significant covariates. Individuals with stable high role satisfaction had lower odds of belonging in the high depressive symptom trajectory compared to the stable medium reference trajectory (OR=0.47), further supporting hypothesis H6a that higher levels of role satisfaction are associated with more favorable depressive symptom outcomes. However, the comparison between the medium quadratic role satisfaction trajectory (which was primarily characterized by decreasing satisfaction in later life) and the stable medium reference trajectory was not significant. Thus, support for hypothesis H6b, that decreasing satisfaction is associated with a less favorable depressive symptom trajectory compared to stable satisfaction at the same level, was only supported at the low level, not the medium level.

Table 7.11 Logistic Regression Predicting High Depressive Symptoms, Stable Low Satisfaction as Reference Trajectory

	Model 1	*Model 2*	*Model 3*	*Model 4*
Role Satisfaction Trajectory				
Medium Quadratic	0.44***	0.41***	0.54***	0.57***
Low Quadratic	1.45***	1.35**	1.50***	1.54***
Stable Medium	0.41***	0.41***	0.52***	0.52***
Stable Low (ref)	--	--	--	--
Stable High	0.16***	0.15***	0.21***	0.25***
Stable None	1.41*	1.38*	1.56**	1.50**
Age		1.00	1.00	0.99*
Cohort				
1947-1961 (ref)	--	--	--	--
1932-1946		0.81*	0.78*	0.79*
1917-1931		0.66*	0.61**	0.63**
1891-1916		0.70	0.61*	0.66
Covariates				
Female			1.24***	1.14*
Black			1.45***	1.39***
Low Education			1.53***	1.28**
Low Income			1.46***	1.38***
High Religious Att.			0.88*	0.91
Health Variables				
Functionally Impaired				1.49***
Chronic Illnesses				1.21***
Poor Self-rated Health				2.01***
Pseudo R^2	0.0719	0.0752	0.0996	0.1393

Notes: Statistics presented are odds ratios; *p<.05, **p>.01, ***p<.001; age and health variables are time-varying, all other variables are measured at baseline. 6,358 observations

Table 7.12 Logistic Regression Predicting High Depressive Symptoms, Stable Medium Satisfaction as Reference Trajectory

	Model 1	*Model 2*	*Model 3*	*Model 4*
Role Satisfaction Trajectory				
Medium Quadratic	1.06	1.01	1.03	1.09
Low Quadratic	3.50***	3.30***	2.89***	2.94***
Stable Medium (ref)	--	--	--	--
Stable Low	2.41***	2.45***	1.93***	1.91***
Stable High	0.40***	0.36***	0.41***	0.47***
Stable None	3.41***	3.37***	3.01***	2.86***
Pseudo R^2	0.0719	0.0752	0.0996	0.1393

Notes: Statistics presented are odds ratios; *p<.05, **p>.01, ***p<.001; 6,358 observations

Again, however, the associations reported in this section can also be interpreted to indicate that depressive symptom trajectories affected role satisfaction trajectories. For example, individuals with fewer depressive symptoms may be better able to maintain highly satisfying roles and the relationships associated with those roles (especially work and marriage). They may also be more likely to rate roles as satisfying because they have a happier outlook on life. Similarly, individuals with higher levels of depressive symptoms may be less able to enter or maintain satisfying roles, or may be less likely to rate social roles as satisfying.

7.2.2 Self-Rated Health

Next, I present bivariate associations between role satisfaction trajectories and self-rated health trajectories. The most striking finding in Table 7.13 was that the stable high role satisfaction trajectory had zero respondents in the stable fair/poor self-rated health trajectory and the highest percentage of respondents in the stable excellent trajectory (10.61%). Additionally, the stable medium role satisfaction trajectory had a higher percentage of respondents in the stable fair/poor self-rated health trajectory compared to the medium quadratic role satisfaction trajectory.

Table 7.13 Cross-Tabulation between Role Satisfaction Trajectories and Self-Rated Health Trajectories

	Self-Rated Health Trajectory				
	Decline to Good	Decline to Very Good	Stable Very Good	Stable Fair/Poor	Stable Excellent
Role Satisfaction Trajectory					
Medium Quadratic	45.11%	30.36%	15.77%	3.65%	5.11%
Low Quadratic	52.84%	23.96%	10.45%	8.45%	4.30%
Stable Medium	42.24%	30.03%	14.85%	7.59%	5.28%
Stable Low	52.94%	24.26%	8.19%	10.66%	4.04%
Stable High	30.30%	39.39%	19.70%	0.00%	10.61%
Stable None	59.22%	20.39%	5.83%	9.71%	4.85%

Overall chi^2 $p<0.001$

To keep analyses comparable to those in Chapter 6 and role strain analyses earlier in this chapter, I retained stable fair/poor self-rated health as the reference trajectory in multinomial logistic regression analyses. However, as noted above, the

stable high role satisfaction trajectory had zero respondents in the stable fair/poor self-rated health trajectory. Because there were no respondents in this cell to make comparisons (i.e., I could not effectively estimate whether respondents in the stable high role satisfaction trajectory were more likely than respondents in other role satisfaction trajectories to belong in any self-rated health trajectories compared to the stable fair/poor self-rated health trajectory), I omitted stable high role satisfaction from the multivariate analyses below (Garson 2010).[2]

Results in Table 7.14 demonstrate significant role satisfaction comparisons for some, but not all, self-rated health comparisons. Results for the stable medium role satisfaction trajectory compared to the stable low role satisfaction trajectory were contrary to hypothesis H6a in that membership in the medium role satisfaction trajectory (compared to stable low) was associated with lower odds of belonging in the decline to good, decline to very good, and stable excellent self-rated health trajectories compared to the stable fair/poor self-rated health trajectory (OR=0.61, 0.58, and 0.52, respectively). This seemingly contrary finding may be explained by predictors of satisfying role trajectories identified in Chapter 5 (Table 5.3).

[2] When I left stable high role satisfaction in the model, it produced significant but very small and therefore uninterpretable (e.g., 2.49e+08) odds ratios.

Table 7.14 Multinomial Regression Analyses with Stable Fair/Poor Self-Rated Health and Stable Low Role Satisfaction Reference Trajectories

	Decline to Good	*Decline to Very Good*	*Stable Very Good*	*Stable Excellent*
Role Satisfaction Trajectory				
Medium Quadratic	1.05	0.88	1.08	0.68
Low Quadratic	0.83	0.66*	0.68	0.58*
Stable Medium	0.61*	0.58*	0.68	0.52*
Stable Low (ref)	--	--	--	--
Stable None	1.10	0.63	0.52	0.87
Age	1.04***	1.05***	1.05***	1.04**
Cohort				
1947-1961 (ref)	--	--	--	--
1932-1946	0.26***	0.28***	0.26***	0.33**
1917-1931	0.18***	0.35*	0.27**	0.28*
1891-1916	0.17***	0.47	0.17**	0.46
Covariates				
Female	0.96	0.93	1.21	0.21
Black	0.72**	0.67**	0.49***	0.65*
Low Education	0.72*	0.45***	0.36***	0.33***
Low Income	0.61**	0.49***	0.57**	0.49**
High Religious Att.	1.54***	1.65***	1.89***	1.41*
Health Variables				
Functionally Impaired	0.36***	0.17***	0.08***	0.09***
Chronic Illnesses	0.67***	0.37***	0.45***	0.24***
Depressive Symptoms (0-11)	0.89***	0.78***	0.79***	0.69***

Notes: Stable low self-rated health is the reference category. Stable high role satisfaction was omitted because no respondents in this trajectory experienced stable fair/poor self-rated health. Statistics presented are odds ratios; *p<.05, **p>.01, ***p<.001; age and health variables are time-varying, all other variables are measured at baseline. 6,358 observations. Pseudo R^2=0.1423

Although I did not make direct comparisons between stable medium and stable low role satisfaction trajectories, both were compared to medium quadratic role satisfaction. Members of the stable medium role satisfaction trajectory had higher levels of chronic illnesses compared to the medium quadratic trajectory, while there was no difference in chronic illnesses between individuals in the stable low and medium quadratic trajectories. Perhaps this higher likelihood of chronic illnesses explains why members of the stable medium satisfaction trajectory had lower odds of belonging in more favorable self-rated health trajectories compared to those in the stable low role satisfaction trajectory. Additionally, there was no significant self-rated health disadvantage associated with occupying zero satisfying roles compared to one satisfying role (stable low).

I found some support for hypothesis H6b, that decreasing satisfaction was associated with poorer self-rated health, but only for some trajectories; members of the low quadratic role satisfaction trajectory (compared to the stable low role satisfaction trajectory) had lower odds of belonging in the decline to good or stable excellent self-rated health trajectory compared to the stable fair/poor self-rated health trajectory (OR=0.66 and 0.58, respectively). Results for age, cohort, socio-demographic, and health covariates were similar to those presented in Chapter 6 (Table 6.5) and will not be further discussed here.

Table 7.15 presents similar analyses, this time with stable medium role satisfaction as the omitted role trajectory. The result was that members of the medium quadratic role satisfaction trajectory (compared to the stable medium satisfaction trajectory) had higher odds of belonging to the decline to good self-rated health trajectory compared to the stable fair/poor self-rated health trajectory. Given that the quadratic trajectory is primarily characterized by loss in satisfaction, this result did not support hypothesis H6b, that decreasing satisfaction should be associated with poorer self-rated health trajectories compared to stable satisfaction at the same level.

Table 7.15 Multinomial Regression Analyses with Stable Fair/Poor Self-Rated health and Stable Medium Role Satisfaction Reference Trajectories

	Decline to Good	*Decline to Very Good*	*Stable Very Good*	*Stable Excellent*
Role Satisfaction Trajectory				
Medium Quadratic	1.53*	1.22	1.29	1.00
Low Quadratic	1.20	0.90	0.80	0.86
Stable Medium (ref)	--	--	--	--
Stable Low	1.37	1.13	0.85	1.22
Stable None	1.60	0.86	0.61	1.28

Notes: Stable low self-rated health is the reference category. Stable high role satisfaction was omitted because no respondents in this trajectory experienced stable fair/poor self-rated health. Statistics presented are odds ratios; *p<.05, **p>.01, ***p<.001; 6,358 observations. Pseudo R^2=0.1423

As mentioned in Chapter 6, self-rated health is especially likely to affect role trajectories instead of the reverse. Thus, these results could also be interpreted such that individuals with fair/poor self-rated health chose to maintain satisfying roles that are

likely to provide needed resources and support (stable medium satisfaction row of Table 7.14) or that individuals with fair/poor self-rated health were more likely to lose satisfying roles due to their poor health (low quadratic satisfaction row of Table 7.14). Additionally, individuals with declining self-rated health may be more likely to lose roles or to rate roles as less satisfying (Table 7.15).

7.2.3 Mortality

Table 7.16 shows bivariate relationships between role satisfaction trajectories and likelihood of dying during the 12-year follow-up period. Individuals with a high level of satisfying roles had the lowest likelihood of dying, while individuals with the lowest level of satisfying roles had the highest likelihood of dying. Interestingly, members of the stable medium role satisfaction trajectory had a higher likelihood of dying than members of the quadratic (mostly loss) medium satisfaction trajectory; the difference was even greater between members of the stable low and quadratic low trajectories.

Table 7.16 Cross-Tabulation between Satisfying Role Trajectories and Dying during Follow-up

	% Died
Role Satisfaction Trajectory	
Medium Quadratic	21.17%
Low Quadratic	20.74%
Stable Medium	24.75%
Stable Low	37.13%
Stable High	7.58%
Stable None	34.95%

Overall chi^2 $p<.001$

Multivariate logistic regression analyses show that all role satisfaction trajectories except stable none had higher odds of dying compared to the stable low role satisfaction trajectory (Table 7.17). However, the difference between stable low and quadratic low satisfaction trajectories became non-significant with the addition of age and cohort in Model 2, the difference between the two medium satisfaction trajectories and stable low became non-significant with the addition of socio-demographic covariates in Model 3, and even the difference between stable high and stable low became non-significant once health covariates were added in Model 4. Thus, as was discovered in Chapter 6 when examining role occupancy, age and health factors mediated and greatly outweighed the effects of most role satisfaction trajectories on mortality.

Table 7.17 Logistic Regression Analyses Predicting Death during 12-year Follow-up, Stable Low Satisfaction as Reference Trajectory

	Model 1	*Model 2*	*Model 3*	*Model 4*	*Model 5*
Role Satisfaction Trajectory					
Medium Quadratic	0.45***	0.81*	0.84	0.91	0.93
Low Quadratic	0.44***	1.12	1.09	1.11	1.12
Stable Medium	0.56***	0.78*	0.84	0.85	0.87
Stable Low (ref)	--	--	--	--	--
Stable High	0.14***	0.58*	0.61*	0.76	0.82
Stable None	0.91	1.05	1.02	0.99	0.92
Age		1.07***	1.07***	1.06***	1.07***
Cohort					
1947-1961 (ref)	--	--	--	--	
1932-1946		1.50*	1.43*	1.39	1.29
1917-1931		2.09**	2.06**	2.06**	1.87**
1891-1916		3.90***	3.92***	4.11***	4.06***
Covariates					
Female			0.79**	0.72***	0.75***
Black			1.45***	1.40***	1.38***
Low Education			1.28**	1.13	1.09
Low Income			1.01	0.96	0.96
High Religious Att.			0.85*	0.87	0.97
Health Variables					
Functionally Impaired				1.51***	1.47***
Chronic Illnesses				1.15***	1.16***
Poor Self-rated Health				1.28**	1.22*
Depressive Sx (0-11)				1.01	1.01
Health Behaviors					
Obese					1.30**
Current Smoker					2.03***
Heavy Drinker					1.45*
Pseudo R^2	0.0261	0.2513	0.2598	0.2746	0.2861

Notes: Statistics presented are odds ratios; *p<.05, **p>.01, ***p<.001; age and health variables are time-varying, all other variables are measured at baseline. 6,358 observations

When stable medium role satisfaction was the reference trajectory, however, low quadratic role satisfaction had an enduring effect on mortality even when controlling for age, cohort, socio-demographics, health, and health behaviors (Table 7.18). Individuals in the low quadratic role satisfaction trajectory had higher odds of dying during the 12-year follow-up period compared to individuals in the stable medium role satisfaction trajectory (OR=1.28, Model 5). Although the odds of dying for all satisfaction trajectories were significantly different from the stable medium trajectory in Model 1, the effects for all but the quadratic low satisfaction trajectory were reduced to non-significance with the inclusion of more powerful covariates. Thus, the combination of both low and decreasing level of role satisfaction had a significant impact on odds of dying. This finding supported H6a, but did not support H6b, implying that a decreasing low level of satisfaction, but not necessarily decline relative to stability at the same low level, significantly increased odds of dying during the follow-up period.

Table 7.18 Logistic Regression Analyses Predicting Death during 12-year Follow-up Period, Stable Medium Role Satisfaction as Reference Trajectory

	Model 1	*Model 2*	*Model 3*	*Model 4*	*Model 5*
Role Satisfaction Trajectory					
Medium Quadratic	0.82*	1.03	1.00	1.07	1.06
Low Quadratic	0.80*	1.43**	1.31*	1.29*	1.28*
Stable Medium (ref)	--	--	--	--	--
Stable Low	1.80***	1.28*	1.20	1.17	1.14
Stable High	0.25***	0.74	0.72	0.89	0.94
Stable None	1.63**	1.34	1.21	1.16	1.05
Pseudo R^2	0.0261	0.2513	0.2598	0.2746	0.2861

Notes: Statistics presented are odds ratios; *p<.05, **p>.01, ***p<.001. 6,358 observations

7.2.4 Conclusion

As with role strain, hypotheses for role satisfaction were only supported in analyses examining associations between role satisfaction trajectories and depressive symptom trajectories. In reference to depressive symptoms, higher levels of satisfaction and stability of satisfaction (but only at the low level) were associated with more favorable depressive symptom trajectories. Analyses for self-rated health provided support for neither role satisfaction hypothesis. Analyses for mortality provided some support for the hypothesis that higher levels of role satisfaction are associated with better health outcomes, but only when comparing low and medium levels.

7.3 Mediation Models

The final section of this chapter examined research question #4: *Do trajectories of role strain and role satisfaction mediate the relationship between role occupancy trajectories and health?* Because role demands and rewards are implicit in theories about role occupancy and health, I hypothesized that role characteristic trajectories would indeed mediate the relationship between role occupancy trajectories and health outcomes.

There were many possible ways to structure mediation models given the large number of latent trajectories produced in Chapter 5 (i.e., five role count trajectories, three role strain trajectories, and six role satisfaction trajectories, as well as two depressive symptom trajectories and five self-rated health trajectories). To keep analyses consistent with those presented in Chapter 6 and the first two sections of this chapter, I retained high declining depressive symptoms and stable fair/poor self-rated health as reference trajectories for health outcomes. I also retained the role occupancy and role characteristic reference trajectories used in previous analyses (i.e., stable low and stable medium role occupancy trajectories, low slow decline and no strain stressful role trajectories, and stable low and stable medium satisfying role trajectories).

7.3.1 Depressive Symptoms

Models in Table 7.19 tested whether role strain and role satisfaction trajectories mediated the effects of role occupancy trajectories on odds of belonging in the high

depressive symptom trajectory. For each set of trajectories, a low level was chosen as the reference trajectory. Because the effects of each trajectory were explained in detail earlier, I focused instead on whether associations remained significant when different trajectories were added to the models. Model 1 included just role occupancy trajectories and showed that individuals in the stable high role occupancy trajectory had lower odds of belonging to the high depressive symptom trajectory compared to those in the stable low role occupancy trajectory (OR=0.81). Model 2 added role strain trajectories to role occupancy trajectories; the addition of these strong and highly significant strain trajectories increased explained variance in depressive symptom trajectory (Pseudo R^2 = 0.0016 to 0.0373) but did not alter the association between stable high role occupancy and depressive symptom trajectory. Model 3 added role satisfaction trajectories to role occupancy trajectories; the addition of these strong and highly significant satisfaction trajectories increased explained variance even more (Pseudo R^2 = 0.0016 to 0.0733) and slightly attenuated the odds ratio for stable high role occupancy (OR=0.79). Thus, although role occupancy, role strain, and role satisfaction trajectories had independent associations with depressive symptom trajectories, role satisfaction appeared to slightly mediate the effect of role occupancy. Model 4 included all three types of role trajectories, reinforcing the conclusion that role occupancy and role characteristics have significant and independent associations with depressive symptom trajectories and

substantially increasing explained variance (Pseudo $R^2 = 0.1166$). Finally, Model 5 included all covariates and showed that each type of role trajectory still exhibited independent associations with depressive symptom trajectories even when socio-demographic and health covariates were included.

Table 7.19 Mediation Model Predicting High Depressive Symptoms, Low Level Reference Trajectories

	Model 1	*Model 2*	*Model 3*	*Model 4*	*Model 5*
Role Count Trajectory					
Medium Quadratic	0.94	0.94	0.96	0.97	0.98
Stable High	0.81*	0.81*	0.79*	0.79*	0.76**
Stable Medium	0.95	0.98	0.93	0.96	1.01
Low Quadratic	1.09	1.13	1.07	0.12	1.07
Stable Low (ref)	--	--	--	--	--
Role Strain Trajectory					
Low Slow Decline		2.08***		2.55***	2.72***
High Quadratic Decline		4.08***		5.51***	6.76***
Stable None (ref)		--		--	--
Role Satisfaction Trajectory					
Medium Quadratic			0.44***	0.31***	0.46***
Low Quadratic			1.45***	1.04	1.28*
Stable Medium			0.41***	0.34***	0.47***
Stable Low (ref)			--	--	--
Stable High			0.17***	0.11***	0.22***
Stable None			1.41*	1.72***	1.91***
Pseudo R^2	0.0016	0.0373	0.0733	0.1166	0.1842

Notes: Statistics presented are odds ratios; *p<.05, **p>.01, ***p<.001. 6,358 observations. Model 5 includes all covariates but odds ratios are omitted from the table

Table 7.20 reports results for a similar analysis with medium level trajectories as reference trajectories. Again, all associations that were significant in individual role

occupancy, role strain, and role satisfaction analyses remained significant when all three types of trajectories were combined into one model. These results did not support my hypothesis that role strain and satisfaction trajectories would mediate the association between role occupancy and depressive symptoms.

Table 7.20 Mediation Model Predicting High Depressive Symptoms, Medium Level Reference Trajectories

	Model 1	*Model 2*	*Model 3*	*Model 4*	*Model 5*
Role Count Trajectory					
Medium Quadratic	0.99	0.95	1.04	1.01	0.97
Stable High	0.86	0.82*	0.85	0.82*	0.76**
Stable Medium (ref)	--	--	--	--	--
Low Quadratic	1.16	1.15	1.15	1.16	1.06
Stable Low	1.06	1.02	1.08	1.04	0.99
Role Strain Trajectory					
Low Slow Decline (ref)		--		--	--
High Quadratic Decline		1.96***		2.16***	2.49***
Stable None		0.48***		0.39***	0.37***
Role Satisfaction Trajectory					
Medium Quadratic			1.06	0.92	0.98
Low Quadratic			3.52***	3.09***	2.73***
Stable Medium (ref)			--	--	--
Stable Low			2.43***	2.96***	2.14***
Stable High			0.40***	0.34***	0.46***
Stable None			3.43***	5.11***	4.07***
Pseudo R^2	0.0016	0.0373	0.0733	0.1166	0.1842

Notes: Statistics presented are odds ratios; *p<.05, **p>.01, ***p<.001. 6,358 observations. Model 5 includes all covariates but odds ratios are omitted from the table

7.3.2 Self-Rated Health

To simplify the presentation of the multinomial logistic regression analyses, I displayed results for the full model with role count, role strain, role satisfaction, and covariates (Table 7.21 and Table 7.22). The few significant odds ratios from analyses for individual role trajectories (i.e., role occupancy in Chapter 6, role strain and satisfaction earlier in this chapter) remained significant and in the same direction. Thus, my hypothesis that role strain and role satisfaction would mediate associations between role occupancy and self-rated health was not supported.

Table 7.21 Mediation Model with Fair/Poor Self-Rated Health as Reference Trajectory, Low Level Role Reference Trajectories

	Decline to Good	*Decline to Very Good*	*Stable Very Good*	*Stable Excellent*
Role Count Trajectory				
Medium Quadratic	0.92	1.03	0.83	0.84
Stable High	0.68	0.74	0.58*	0.55*
Stable Medium	0.88	1.03	0.90	0.95
Low Quadratic	0.66*	0.74	0.55*	0.45**
Stable Low (ref)	--	--	--	--
Role Strain Trajectory				
Low Slow Decline	1.18	1.09	0.93	0.83
High Quadratic Decline	1.06	1.00	0.97	0.70
Stable None (ref)	--	--	--	--
Role Satisfaction Trajectory				
Medium Quadratic	1.07	0.90	1.11	0.72
Low Quadratic	0.84	0.67*	0.70	0.62*
Stable Medium	0.61*	0.58*	0.68	0.54*
Stable Low (ref)	--	--	--	--
Stable None	1.17	0.66	0.53	0.88

Notes: Stable fair/poor self-rated health was the omitted self-rated health trajectory. Statistics presented are odds ratios. *p<.05, **p>.01, ***p<.001. 6,358 observations. All models contain all covariates. Stable high role satisfaction was omitted due to no respondents with fair/poor self-rated health. Pseudo R^2=0.1442

Table 7.22 Mediation Model with Fair/Poor Self-Rated Health as Reference Trajectory, Medium Level Role Reference Trajectories

	Decline to Good	*Decline to Very Good*	*Stable Very Good*	*Stable Excellent*
Role Count Trajectory				
Medium Quadratic	1.03	0.97	0.92	0.88
Stable High	0.78	0.70	0.64	0.58*
Stable Medium (ref)	--	--	--	--
Low Quadratic	0.75	0.69	0.60*	0.46**
Stable Low	1.13	0.93	1.09	1.04
Role Strain Trajectory				
Low Slow Decline (ref)	--	--	--	--
High Quadratic Decline	0.90	0.90	1.03	0.84
Stable None	0.84	0.91	1.08	1.21
Role Satisfaction Trajectory				
Medium Quadratic	1.56*	1.24	1.33	1.04
Low Quadratic	1.22	0.92	0.82	0.89
Stable Medium (ref)	--	--	--	--
Stable Low	1.38	1.12	0.84	1.17
Stable None	1.71	0.90	0.62	1.25

Notes: Stable fair/poor self-rated health was the omitted self-rated health trajectory. Statistics presented are odds ratios. *p<.05, **p>.01, ***p<.001. 6,358 observations. All models contain all covariates. Stable high role satisfaction was omitted due to no respondents with fair/poor self-rated health. Pseudo R^2=0.1442

7.3.3 Mortality

Finally, I tested mediation models for mortality (Tables 7.23 and 7.24). Again, all results for individual analyses remained the same when included in a final mediation model.

Table 7.23 Mediation Model Predicting Death during 12-year Follow-up, Low Level Reference Trajectories

	Model 1	*Model 2*	*Model 3*	*Model 4*	*Model 5*
Role Count Trajectory					
Medium Quadratic	0.90	0.88	0.87	0.85	0.97
Stable High	0.84	0.83	0.83	0.82	0.88
Stable Medium	0.82*	0.75**	0.77*	0.72**	0.76*
Low Quadratic	0.97	0.94	0.95	0.92	1.03
Stable Low (ref)	--	--	--	--	--
Role Strain Trajectory					
Low Slow Decline		0.33***		0.35***	0.73***
High Quadratic Decline		0.18***		0.20***	0.50***
Stable None (ref)		--		--	--
Role Satisfaction Trajectory					
Medium Quadratic			0.45***	0.56***	0.99
Low Quadratic			0.44***	0.59***	1.22
Stable Medium			0.55***	0.59***	0.86
Stable Low (ref)			--	--	--
Stable High			0.14***	0.16***	0.83
Stable None			0.91	0.73*	0.84
Pseudo R^2	0.0009	0.0546	0.0272	0.0707	0.2927

Notes: Statistics presented are odds ratios; *p<.05, **p>.01, ***p<.001. 6,358 observations. Model 5 includes all covariates but odds ratios are omitted from the table

Table 7.24 Mediation Model Predicting Death during 12-year Follow-up, Medium Level Reference Trajectories

	Model 1	*Model 2*	*Model 3*	*Model 4*	*Model 5*
Role Count Trajectory					
Medium Quadratic	1.11	1.17	1.13	1.18	1.27*
Stable High	1.03	1.11	1.08	1.14	1.16
Stable Medium (ref)	--	--	--	--	--
Low Quadratic	1.19	1.25*	1.22*	1.28*	1.36**
Stable Low	1.23*	1.33**	1.29*	1.40**	1.31*
Role Strain Trajectory					
Low Slow Decline (ref)		--		--	--
High Quadratic Decline		0.56***		0.58***	0.69***
Stable None		3.03***		2.86***	1.37***
Role Satisfaction Trajectory					
Medium Quadratic			0.82*	0.95	1.14
Low Quadratic			0.79*	0.99	1.41**
Stable Medium (ref)			--	--	--
Stable Low			1.81***	1.69***	1.16
Stable High			0.25***	0.27***	0.96
Stable None			1.64***	1.24	0.98
Pseudo R^2	0.0009	0.0546	0.0272	0.0707	0.2927

Notes: Statistics presented are odds ratios; *p<.05, **p>.01, ***p<.001. 6,358 observations. Model 5 includes all covariates but odds ratios are omitted from the table

7.3.4 Conclusion

The above mediation models provided absolutely no support for my hypothesis that role strain and satisfaction trajectories would mediate the association between role occupancy trajectories and health. For each health outcome, results for all three types of trajectories did not change when other trajectories were added to the model. This

implies that role strain and satisfaction do not drive the relationship between role occupancy and health. Instead, trajectories of role occupancy, role strain, and role satisfaction each have independent, albeit not always significant or intuitive, associations with health trajectories and mortality. Although I did not receive support for the mediation hypothesis, these findings are important because they show that social role occupancy is more than strain or satisfaction. The effect of structural role occupancy on health is consistent even when considering characteristics of those roles.

7.4 Conclusion

Similar to the chapter on role occupancy, conclusions about role strain and satisfaction hypotheses differed by health outcome. Analyses with depressive symptoms, the health outcome with the strongest theoretical link to strain and satisfaction, provided the only support for the role strain hypotheses. Higher levels of strain were associated with poorer depressive symptom trajectory membership, supporting H5a (high levels are worse than low levels of strain). I did not find support for hypothesis H5b (decreasing strain is better than stable strain), but this is likely because the strain trajectories did not provide a precise comparison between stability and decline at the same level of strain. For role satisfaction, I found support for both hypotheses. Higher levels of satisfaction were associated with more favorable

depressive symptom trajectory membership (H6a); stable satisfaction was better than decreasing satisfaction, but only at the low level.

Results for self-rated health and mortality analyses provided little evidence for either role strain or role satisfaction hypotheses. With self-rated health, when there were significant associations, it made more sense to conclude that self-rated health affected role characteristics rather than role characteristics affecting self-rated health. For mortality analyses, the few associations that were not overpowered by age and health were likely due to the socio-demographic composition of different strain and satisfaction groups.

Given the general lack of support for the strain and satisfaction hypotheses, it is not surprising that the mediation hypothesis received little support. Trajectories of role strain and satisfaction did not produce results consistent with stress process theory (with the exception of depressive symptoms), and therefore did not represent demands and rewards that would potentially mediate the relationship between role occupancy and health. As noted above, however, this finding importantly shows that role occupancy, role strain, and role satisfaction are independent constructs that are associated with health in different ways.

8. Conclusion

The goal of this dissertation was to provide a more nuanced test of role strain, enhancement, and context theories about multiple role occupancy and health by examining disaggregated intra-individual trajectories of role occupancy, stressful role occupancy, satisfying role occupancy, and health outcomes including depressive symptoms and self-rated health. At the same time, I provided a more general test of role occupancy theories by utilizing a sample that covered a broad range of the adult life course and focusing on three core work and family roles. As a result, this study provided additional support for role enhancement theory while also considering change and stability across age within a nationally representative sample of U.S. adults.

8.1 Major Findings

My first research question examined disaggregated trajectories of level, change, and stability across age for several focal variables: multiple role occupancy, stressful role occupancy, satisfying role occupancy, depressive symptoms, and self-rated health. Latent class analyses showed that, for each focal variable, there were several typical trajectories that individuals were likely to experience across the adult life course. Some trajectories indicated expected stability across age. However, I identified several trajectories of quadratic change across the life course. The fact that some individuals experience stability while others experience significant change across age implies that

there is a significant amount of life course heterogeneity in both level and change that is not accurately captured by most research designs. These conclusions demonstrate the importance of the life course perspective and within-person analysis. Without these frameworks, I could not accurately depict the heterogeneous experiences of individuals across age.

My second research question examined whether trajectories of social role occupancy were associated with mortality and trajectories of depressive symptoms and self-rated health. I found support for role enhancement theory in that higher levels of social role occupancy were associated with a more favorable depressive symptom trajectory and lower odds of dying when compared to lower levels of role occupancy. Analyses for self-rated health provided conflicting conclusions, perhaps because self-rated health was more likely to influence role trajectories than the other way around. Trajectories primarily characterized by role loss were not associated with poorer health outcomes compared to stable role trajectories at the same level, except when analyzing self-rated health. These conclusions demonstrate that role enhancement theory stands up to the more stringent and at the same time more general tests described in the beginning of the chapter. They also demonstrate that role loss in later life is not associated with poorer mental health and mortality outcomes compared to stable role occupancy at the same level. This shows the continued utility of the selective

optimization with compensation theory, that role loss is fairly normative and not necessarily detrimental in later life.

My third research question examined whether trajectories of role strain and role satisfaction were associated with focal health outcomes. I found that the role strain trajectory with the highest level of strain was associated with a less favorable depressive symptom trajectory compared to lower levels of strain. I did not reach any definitive conclusions about the associations between role strain trajectories and self-rated health or mortality, presumably because socio-demographic and health covariates overpowered any effects that strain may have on these health outcomes. I also found that higher levels of role satisfaction were associated with a more favorable depressive symptom trajectory compared to lower levels of satisfaction, and that decreasing satisfaction was associated with a less favorable depressive symptom trajectory compared to stable satisfaction at the low level. As with role strain, I did not reach any definitive conclusions regarding associations between role satisfaction trajectories and self-rated health or mortality. These conclusions support the importance of stress process theory in explaining depressive symptom trajectories. They also highlight the *process* in stress process theory by focusing on both level and change/stability across age.

Finally, my fourth research question examined whether strain and satisfaction trajectories mediated the relationship between role occupancy trajectories and health. I

found no evidence of mediation. All associations that were significant in previous models remained significant when included together in a mediation model. Thus, multiple role occupancy represents more than just rewards and demands associated with each role. These conclusions demonstrate that role enhancement and stress process theories pertain to independent phenomena that affect individual health. Role occupancy and attachment to social structure confer benefits beyond the rewards associated with those roles.

8.2 Substantive Contribution

The major substantive contribution of this study is that role occupancy is robustly associated with health outcomes, even when controlling for trajectories of role strain and role satisfaction. Although I hypothesized that levels of reward and demand would mediate the relationship between role occupancy and health, I found that this was not the case. Thus, social integration is important for health even when that integration brings demands and strains on an individual. This conclusion supports hypotheses about social integration and multiple role occupancy dating back to Durkheim, but with a more sophisticated analysis that ruled out the potential influence of role strain.

8.3 Methodological Contributions

The first major methodological contribution of this study is the within-person approach to examining trajectories of level, change, and stability in focal variables across age. Latent class analyses uncovered significant heterogeneity in expected trajectories that are obscured in analyses relying on aggregate trajectories. Aggregate trajectories typically represent either the most common trajectory within a sample or the average of two or more trajectories. Thus, this aggregate trajectory does not accurately characterize most individuals. This point was most clearly made when analyzing depressive symptom trajectories. Latent class analyses produced two trajectories of depressive symptom change across age, providing support for both sides of the debate about the age-dependence of depression. For some individuals, depressive symptoms decrease with increasing age (Blazer, Burchett, Service, and George 1991). For other individuals, depressive symptoms follow a life-cycle pattern, declining through mid-life and then increasing in later life (Mirowsky and Ross 1992).

Second, although I was not able to explicitly test causation versus selection, my analyses provide support for the conclusion that role occupancy affects health more extensively than health affects role occupancy. First, I chose social roles that are not easy to give up and are often lost due to circumstances external to the individual (e.g., death of a child, death of a spouse, norms for retirement in later life). Most existing studies of

multiple role occupancy have examined several roles like friend and volunteer, which are easier to give up in the face of declining mental or physical health. Second, I used mortality as a health outcome, which cannot influence patterns of role occupancy. Thus, although I did find some evidence for selection when analyzing self-rated health, I am more confident in the causation interpretation for analyses regarding depressive symptoms and mortality.

8.4 Limitations

This study was not without limitations. First, my methods may have overestimated stability in role occupancy. The latent class trajectories across the adult life course were estimated based on data from three interviews over a nine-year period. There were three years between the first and second interview (1986 and 1989) and five years between the second and third interview (1989 and 1994). This relatively large time period between interviews may have obscured some role transitions between waves. For example, someone who was married in 1989, divorced in 1991, and remarried in 1993 would appear to be stably married between Wave II and Wave III. Additionally, someone who was divorced between waves but also became employed during the same period would appear to occupy a stable number of roles. Thus, I may have overestimated the amount of stability in multiple role occupancy.

Second, latent class analyses produced no trajectories that were primarily characterized by role gain across the life course. Thus, I was unable to test hypotheses about the benefits of role gain relative to stable role occupancy or role loss. This was likely due to the fact that I estimated trajectories from age 25 to age 85. Because role loss is most prominent in later life, it is not surprising that many respondents were expected to experience role loss but not role gain.

Third, among role strain and satisfaction trajectories that were primarily characterized by loss, I was unable to distinguish whether role strain and satisfaction were actually decreasing over age or whether individuals were losing stressful and satisfying roles, respectively. Thus, change in role characteristics was confounded with change in role occupancy.

8.5 Directions for Future Research

This study provides several directions for future research. First, researchers should look more closely at gender differences in this framework for within-person change over age that also considers role strain and satisfaction. A long-standing theory in medical sociology is that women's role occupancy is not as rewarding and is more stressful than men's role occupancy, leading to a higher prevalence of mental illness among women (Gove 1972). A later investigation of this theory specific to marriage

found that men and women receive similar benefits from marriage, but that women experience more emotional distress with the loss of the spouse role compared to men (Simon 2002). Similarly, men and women tend to receive equal benefit from occupying multiple roles (Thoits 1986). Several studies have found that, among married women, the addition of the work role does not provide any additional health benefit compared to women who just hold family roles (Aneshensel, Frerichs, and Clark 1981; Gore and Mangione 1983). I did examine main effects of gender, but future research should explicitly consider how the relationship between role occupancy and characteristic trajectories and health trajectories may differ between men and women.

Second, future research should incorporate data on role meanings, especially when considering gender and race differences. Some prior research has found that married, employed women identify more with family roles and give preference to those roles when balancing work and family while married employed men give greater preference to work roles (Bielby and Bielby 1989). Several researchers, most notably Robin Simon, have emphasized the need to consider the meanings that individuals attach to social roles, especially when considering differences in role accumulation between men and women. In a qualitative study, women were more likely than men to experience work-family conflict, guilt, and negative self-evaluations when combining work and family roles (Simon 1995). Additionally, there are significant differences in

both role meanings and expectations between Black and White adults (Rushing, Ritter, and Burton 1992). The ACL did not provide data on role meanings, but future research should explore data sources that offer these important measures.

Finally, future research should investigate differences between voluntary and involuntary role loss. It is likely that involuntary role loss (e.g., divorce initiated by the partner or being fired from a job) would have a greater impact on health than voluntary role loss (e.g., mutually decided divorce or retirement). The ACL does include data on the nature of role losses, but they were not incorporated into this study because they were not central to the theories being tested.

Appendix A. Supplementary Analyses for Chapter 4

A.1 Time-Varying Vs. Time-Invariant Covariates

The following supplementary analyses correspond with Study Design section 4.3.4, Covariates. To decide whether variables should be time-varying or time-invariant, I estimated unweighted pair-wise correlation coefficients for Wave I and Wave II, Wave II and Wave III, and Wave I and Wave III. Tables A.1 through A.7 show that most covariates had high correlations across study waves, indicating stability over time. Although the degree of change over time is not unsubstantial, baseline measures are adequate for my purposes as covariates. One exception is functional impairment, which had lower correlation coefficients than the other covariates. I also use a time-varying measure of functional impairment for a substantive reason: declining or improving functional ability is likely to be related to role transitions, especially transitions in and out of work. Thus, it is important to include changes in functional ability over time.

Table A.1 Family Income: Correlations across Waves

	Wave II	Wave III
Wave I	0.7372	0.6433
Wave II		0.7187

Table A.2 Religious Participation: Correlations across Waves

	Wave II	Wave III
Wave I	0.7372	0.6433
Wave II		0.7187

Table A.3 Functional Impairment: Correlations across Waves

	Wave II	Wave III
Wave I	0.7372	0.6433
Wave II		0.7187

Table A.4 Chronic Conditions: Correlations across Waves

	Wave II	Wave III
Wave I	0.7372	0.6433
Wave II		0.7187

Table A.5 BMI: Correlations across Waves

	Wave II	Wave III
Wave I	0.7372	0.6433
Wave II		0.7187

Table A.6 Current Smoking Status: Correlations across Waves

	Wave II	Wave III
Wave I	0.7372	0.6433
Wave II		0.7187

Table A.7 Number of Drinks per Month: Correlations across Waves

	Wave II	Wave III
Wave I	0.7372	0.6433
Wave II		0.7187

A.2 Weighted Descriptive Statistics

The following supplementary analysis corresponds with Study Design section 4.3.6, Descriptive Statistics. As noted in the text, weighted descriptive statistics differ in several ways from unweighted descriptive statistics.

Table A.8 Descriptive Statistics (Weighted)

	Wave I (1986)	Wave II (1989)	Wave III (1994)
Social Role Variables			
Married (%)	71.3% (0.01)	71.4% (0.01)	69.8% (0.01)
Parent (%)	82.7% (0.01)	83.4% (0.01)	85.9% (0.01)
Worker (%)	72.7% (0.01)	71.5% (0.01)	61.2% (0.01)
# of Roles (0-3)	2.27 (0.02)	2.27 (0.02)	2.17 (0.02)
Role Strain			
Spouse Strain (%)	24.2% (0.01)	24.5% (0.01)	26.1% (0.02)
Parent Strain (%)	59.5% (0.01)	55.4% (0.01)	48.4% (0.02)
Work Strain (%)	53.8% (0.02)	54.0% (0.02)	54.5% (0.02)
# of Stressful Roles (0-3)	1.06 (0.02)	1.03 (0.02)	0.93 (0.03)
Role Satisfaction			
Spouse Satisfaction (%)	85.1% (0.01)	84.6% (0.01)	83.4% (0.01)
Parent Satisfaction (%)	82.8% (0.01)	80.6% (0.01)	83.7% (0.01)
Work Satisfaction (%)	67.4% (0.02)	64.3% (0.02)	64.9% (0.02)
# of Satisfying Roles (0-3)	1.78 (0.03)	1.74 (0.03)	1.70 (0.03)
Life Course Variables			
Age (25-85)	44.8 (0.36)	47.4 (0.36)	52.4% (0.36)
15-year Cohort (%)			
(1947-1961)	45.9% (0.01)		
(1932-1946)	26.2% (0.01)		
(1917-1931)	20.9% (0.01)		
(1891-1916)	7.0% (0.004)		
Covariates			
Female (%, vs. Male)	53.4% (0.01)		
Black (%, vs. White)	10.4% (0.01)		
Less than HS Education (%, vs.	20.3% (0.01)		

HS+)			
Low Income (%, vs. >$15k per year)	24.3% (0.01)		
Frequent Religious Attendance (%, vs. < once per week)	37.1% (0.01)		
Functionally Impaired (%, vs. no)	10.8% (0.01)	12.6% (0.01)	15.7% (0.01)
# of Chronic Illnesses (0-10)	0.9 (0.03)		
BMI (15-55)	25.7 (0.13)		
Current Smoker (%, vs. non-smoker)	30.1% (0.01)		
# of Drinks per month (0-80+)	16.4 (1.16)		
Health Outcomes			
Depressive Symptom Count (0-11)	3.5 (0.08)	3.3 (0.08)	2.4 (0.07)
Self-Rated Health (1-4)	2.8 (0.03)	2.6 (0.02)	2.6 (0.03)
% Died=15.1% (0.01)			
Observations=2146			

Notes: Numbers in parentheses are standard errors. Role strain and satisfaction estimates are conditional on holding the role. Weighted estimates.

A.3 10-Year Cohort Age Representation

Table A.9 Age Representation by 10-Year Cohort

	W1 (1986)	W2 (1989)	W3 (1994)	W4 (2001/2)
Cohort 1	**Age 25-34**	**Age 27-38**	**Age 31-44**	Age 39-52
(1952-1961)	**n=742**	**n=586**	**n=567**	n=483
Cohort 2	**Age 35-44**	**Age 36-48**	**Age 41-53**	Age 49-61
(1942-1951)	**n=589**	**n=498**	**n=478**	n=404
Cohort 3	**Age 45-54**	**Age 47-59**	**Age 52-64**	Age 59-70
(1932-1941)	**n=389**	**n=310**	**n=309**	n=249
Cohort 4	**Age 55-64**	**Age 57-69**	**Age 62-75**	Age 69-80
(1922-1931)	**n=684**	**n=576**	**n=506**	n=353
Cohort 5	**Age 65-74**	**Age 66-81**	**Age 71-91**	Age 79-98
(1912-1921)	**n=773**	**n=604**	**n=497**	n=236
Cohort 6	**Age 75-84**	**Age 77-88**	**Age 81-92**	Age 90-99
(1902-1911)	**n=362**	**n=254**	**n=142**	n=34
Cohort 7	**Age 85-95**	**Age 87-97**	**Age 92-102**	n/a
(1892-1901)	**n=72**	**n=32**	**n=13**	n=0
Total	Age 25-95	Age 27-97	Age 31-103	Age 39-99
	n=3,614	n=2,860	n=2,512	n=1,759

Note: Unweighted

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Biography

Jessica Marie Sautter was born on February 7, 1982 in Landstuhl, Germany. She graduated with honors from The College of New Jersey in May 2004 with a B.A. in Sociology and Psychology. She received an M.A. in Sociology from Duke University in 2006 and a Graduate Certificate in Health Policy from Duke University in 2008.

Jessica has published three co-authored articles in peer-reviewed journals: (1) "The Social Demography of Internet Dating in the United States" (2010) with Rebecca Tippett and S. Philip Morgan in *Social Science Quarterly*; (2) "Sociodemographic and Health Correlates of Sleep Quality and Duration among Very Old Chinese" (2010) with Danan Gu, Robin Pipkin, and Zeng Yi in *Sleep*; and (3) "Frailty and Mortality among Chinese at Advanced Ages" (2009) with Danan Gu, Matthew Dupre, Haiyan Zhu, Yuzhi Liu, and Zeng Yi in the *Journal of Gerontology: Social Sciences*. She also co-authored a book chapter titled "Social Network Types, Intimacy, and healthy Longevity among the Chinese Elderly" in *Social Sciences in Health Care and Medicine* in 2008.

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