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Historical Influences on Aging and Behavior

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CHAPTER CONTENTS

INTRODUCTION

Like most American psychologists trained in the middle of the twentieth century in the tradition of Midwestern dust-bowl empiricism, I began my work on aging and behavior by treating behavior as a "black box" that could be studied without much attention to the environment or the biological infrastructure of the individual. But my concerns were soon broadened by exposure to the interdisciplinary community of gerontologists (cf. Schaie, 2000). My initial interest in considering historical influences on aging and behavior were stimulated primarily by methodological concerns related to disentangling of the different components of developmental change occurring over the life span and clarifying the distinction of inferences that can be drawn from the study of cross-sectional age differences and longitudinal age changes (cf. Schaie, 1965, 1977, 1988, 1994, 2005b, 2007). While the historical influences implicit in the cohort and period effects were first seen primarily as confounds in both cross-sectional or longitudinal research of aging parameters that needed to be controlled (also see Kuhlen, 1940), these influences sooner or later began to intrigue me as substantive issues worth study in their own right. My exposure to the substantive issues of cohort effects was sharpened by my long and fruitful interaction with the eminent sociologist Matilda Riley (Riley et al., 1972; Riley & Riley, 1994). My interaction with her also led to my launching a series of interdisciplinary conferences on social structures and aging that led to a 20-volume series of topical monographs charting the influence of macro-social structure on individual

DOI: 10.1016/B978-0-12-380882-0.00003-6

aging, beginning with a volume on social structures and psychological processes (Schaie & Schooler, 1989) and ending with a volume on social structure and aging individuals (Schaie & Abeles, 2008).

In trying to explicate my general developmental model I also began to specify broader substantive meaning for cohort beyond simply defining it as a common range of years of birth or defining period as the time of the measurement event (cf. Schaie, 1984, 1986, 2006a). Spurred by the work of the New Zealand political scientist Joseph Flynn (1984, 1987, 1999; Dickens & Flynn, 2001) who rediscovered the cohort effects in human abilities first introduced into sociology by Norman Ryder (1965) and into psychology by this author (1965), I began to think more seriously about the importance of historical influences upon behavior and aging. This interest increased even further during my collaboration with Glen Elder in organizing a conference on the historical influences on lives and aging (Schaie & Elder, 2005).

Since my aging research has largely focused on the adult life-span trajectory of cognitive abilities, I decided to become more focused also in my thinking about historical influences on cognitive abilities as my dependent variables. I therefore began to identify the various historical changes occurring over the past century that might reasonably be sources of major impact (Schaie, 2005a, 2006b, 2008b; Schaie & Achenbaum, 1993; Schaie et al., 2005; Willis & Schaie, 2006a).

In this chapter, I will first marshal some theoretical arguments on why one should pay attention to historical influences in studying the aging process of various psychological constructs as individuals develop from young adulthood to old age to the end of their lives, and I will lay out some of the principal concepts that require attention when studying such historical influences.

I will then examine historical changes in some of the major societal structures that I judge to be particularly prominent in influencing and constraining adult psychological development. The most prominent of these structures is the influence of educational attainment and changes in access to educational opportunities (such as caused by the GI bill, cf. Laub & Sampson, 2005). Second, I will examine the influence of changes in occupational structure caused by the shift from an agricultural and manufacturing economy to one that is highly technologically and service-oriented. Third, I will consider changes in healthcare and lifestyles that favorably impact level and change in optimal psychological functioning or compensate for declines that were common in earlier historical periods (cf. Leventhal et al., 2008). Fourth, I will discuss the influence of historical changes in immigration patterns as they affect the composition of the adult population and hence modify patterns of psychological aging in a given society (cf. Rumbaut, 2005). Fifth, I will briefly mention some other social interventions that have influenced the aging of psychological processes by major social interventions in the United States designed to reduce poverty in various specially targeted population segments (cf. Huston et al., 2005).

Finally, I will summarize the effects of changes in the above historical influences and how they affect the psychological characteristics and rate of change in old age of the elderly and then engage in some modest speculation about how these trends might develop over the next decade or two.

THEORIES AND CONCEPTS

It should be noted that this chapter might have taken a very different form if the editors had elected to commission it to an historian or a sociologist. In the first case the emphasis might have been upon the history of aging as a topic worthy of interest to psychologists and begun with an analysis of G. Stanley Hall's seminal opus (1922) as well as focusing upon the meaning of historical events that may have impacted psychological inquiry (cf. Cole, 1993; Cole et al., 2008). In the second case, the theoretical focus might well have begun with the work of Mannheim (1952; Pilcher, 1994) on the problem of generations and then shifted to the more recent work of the Rileys (1994) on generations moving as convoys through time.

Instead I decided that as a chapter for a handbook that emphasized psychological change over adulthood as its prime dependent variables, it would be more appropriate to have a psychologist address the impact of historical changes in our society that have had important impact on many of the substantive variables typically studied by psychologists interested in the human aging process (cf. James, 2005; Schaie et al., 2005).

Much of the interest by psychologists in historical influences on behavior has been stimulated by the literature on generational or cohort differences in both level and developmental trajectories of many psychological constructs. Particularly in the field of cognitive psychology it was found early on that the disassociation between the findings from studies of cross-sectional age differences and longitudinal age changes could best be understood by considering what was called the age-cohort-period model in sociology (Ryder, 1965), and the age-cohort-time model in psychology (Schaie, 1965).

The age-cohort-period model suggests that given observation R in a developmental or age-related study of inter-individual differences or intra-individual change is characterized by the form: $R = f(A, C, P)$; where A is the chronological age, C is the birth cohort, and P is the calendar time at which the observation is conducted. These components are confounded, much as temperature, pressure, and volume in the physical

sciences, such that when two of the components are known the third is determined, even though all three may be of interest to the investigator. For the researcher of aging the major issue is that in age difference research (cross-sectional studies) age is confounded with cohort, and in age change research (longitudinal studies) age is confounded with period or time of measurement. Except in animal research, convergence of findings from cross-sectional and longitudinal study only occurs under very special circumstances (also see Ferrer & Ghisletta, Chapter 2; Zelinski et al., 2009).

A number of research designs have been proposed that allow at least partial unconfounding of these components by means of replicated cross-sectional or longitudinal sequences (cf. Schaie, 1977, 2005a, 2007; Willis, 1989). Less attention, however, has been given to provide alternate solutions by freeing the confounded components from their rigid identification by calendar time (Schaie, 1986). This could be accomplished by treating age as a dependent rather than an independent variable to determine the age at which a behavior or event of interest is first observed or the span of ages over which a given behavior endures (cf. Wohlwill, 1970). On the other hand cohort would need to be defined as referring to the common entry into a similar environment at a common point in time, whereas time could be redefined as the event density characterizing a particular period (cf. Schaie, 1984, 1986, 2006a).

When these issues were first identified for students of the psychology of aging, the immediate concerns were to determine how they might confound our understanding of age changes and differences over large periods of the life standing. More recently researchers in the psychology of aging have become more interested in how historical changes in societal influences

CONCEPTUAL FRAMEWORKS

I have previously suggested a conceptual framework for the understanding of cohort differences in intelligence to identify those influences in the historical cultural context that might impact cohort differences in both the mean level and trajectory of mental abilities across adulthood (cf. Schaie et al., 2005). This conceptual framework, adapted from Bronfenbrenner (1986; Bronfenbrenner & Crouter, 1983), is designed for the study of the major domains of influence that would provide possible mechanisms for cohort or generational differences in intellectual performance. While Bronfenbrenner's model is ordinarily presented as a series of concentric circles, our framework is presented as a matrix (see Table 3.1). This conceptual structure is necessary to make explicit multiple systems of influence at different developmental phases (childhood, adolescence, young adulthood, middle age, and old age) across the life span. At the core of our framework are the physical and psychological characteristics of the individual.

Three Environmental Systems

The proposed framework includes three systems of influence at each developmental phase: chronosystem, exosystem, and mesosystem. In the Bronfenbrenner model, after the family, the nearest and most direct environmental system, the *mesosystem*, is given first and primary consideration among the extra-familial systems. However, the ordering of environmental systems is reversed in our framework, given our primary concern with the impact of broad sociocultural events on cohort differences. Thus, we first consider the *chronosystem* that is concerned with the changes and continuities over time in environments that impact the individual's development. Two dimensions of the chronosystem are considered. First, the simplest form of chronosystem focuses on domain-specific life transitions. Two types of transitions have been distinguished in the psychological and sociological literatures (Baltes, 1979; Riley et al., 1972): normative (school entry, puberty, work entry, marriage, child bearing, retirement) and non-normative (death or severe illness, divorce, winning the lottery). These transitions are usually specific to a particular life domain (marriage, work), although there may be spillover to other domains. These transitions are usually defined by a circumscribed relatively brief time period during which they occur. In contrast, a second dimension of the chronosystem deals with cumulative effects of an entire sequence of transitions or events occurring over a more extended time period in the individual's life (e.g., war, depression, technological advances). The impact of such historical or sociocultural life course events on individual development has been an important focus of the work of social psychologists such as Elder (1974), Stewart (2003), and Helson and Moane (1987). However, the developmental outcomes of interest in the prior work have primarily been factors such as well-being, stability, and success in work and marriage, rather than cognitive performance. Of critical importance is the expectation that the relative impact of these long-term historical or sociocultural events will vary depending on the developmental phase of the individual. Thus, the same historical event may result in very different outcomes for different cohorts experiencing the event at different developmental phases.

The *exosystem* deals with environments that are not directly experienced by the individual, but are important environments for significant others, such as the target individual's parents, spouse, or friends. Such environments "external" to the developing individual are referred to as exosystems. As the Kahn and Antonucci

Table 3.1 Framework for the study of environmental influences

DEVELOPMENTAL PHASE	MESOSYSTEM CONTEXTS OF THE INDIVIDUAL	EXOSYSTEM CONTEXTS OF SIGNIFICANT OTHERS	CHRONOSYSTEM SINGLE-DOMAIN TRANSITIONS & LIFE COURSE OR CUMULATIVE EVENTS
Childhood	1) Family 2) Academic 3) Leisure/Social 4) Media	1) Parents 2) Extended family and Friends	1) Single domain transitions normative and non-normative 2) Life course/cumulative events (economic, political, social, etc.)
Adolescence	1) Family 2) Academic 3) Work 4) Leisure/Social 5) Media	1) Parents 2) Extended family, friends and colleagues	1) Single domain transitions normative and non-normative 2) Life course/cumulative events (economic, political, social, etc.)
Young adulthood	1) Family 2) Academic 3) Work 4) Leisure/Social 5) Media	1) Parents 2) Spouse or significant other 3) Extended family, friends and colleagues	1) Single domain transitions normative and non-normative 2) Life course/cumulative events (economic, political, social, etc.)
Middle age	1) Family 2) Academic 3) Work 4) Leisure/Social 5) Media	1) Parents 2) Spouse or significant other 3) Extended family, friends and colleagues	1) Single domain transitions normative and non-normative 2) Life course/cumulative events (economic, political, social, etc.)
Young-old age	1) Family 2) Academic 3) Work 4) Leisure/Social 5) Media	1) Parents 2) Spouse or significant other 3) Extended family, friends and colleagues	1) Single domain transitions normative and non-normative 2) Life course/cumulative events (economic, political, social, etc.)
Old-old age	1) Family 2) Academic 3) Work 4) Leisure/Social 5) Media	1) Spouse or significant other 2) Extended family, friends and colleagues	1) Single domain transitions normative and non-normative 2) Life course/cumulative events (economic, political, social, etc.)

(1980) model of convoys of social support suggests, the significant others in the individual's life would be expected to change across the life course, progressing from parents, to spouses and extended family, friends, and colleagues. The external environments in the exosystem that impact individual development would thus vary across the life course as the significant others change. In the child literature, the parents' work environment has been shown to impact childrearing practices (Kohn & Schooler, 1983), occupational aspirations of adolescents (Mortimer & Kumka, 1982), and curricular activities (Morgan et al., 1979).

In the Bronfenbrenner model, the exosystem focuses primarily on the concurrent environments of significant others (e.g., parent's work environment) that may impact the developing individual. However, our framework also includes transitions occurring across the adult lives of significant others that may influence the individual. For example, the father's educational or occupational experiences as a young adult and occurring in a particular historical may influence subsequent intellectual functioning of the offspring (Hauser & Featherman, 1976).

The mesosystem involves the principal contexts or environments in which individual development takes place. Given the focus on childhood, the family is considered the primary context of development in the Bronfenbrenner model. However, in our framework, we

include the family as one of the facets of the environments within the mesosystem. Other environments experienced directly by the individual include work, leisure/social context, and media or technology-based contexts. The relative impact of these various environments is expected to vary across the life course and to interact with the personal characteristics of the individual.

It is assumed that long-term cumulative events primarily impact individual development indirectly as mediated by environmental factors in the meso- and exosystem and interact with the personal characteristics (e.g., personality, attitudes, lifestyles) of the individual who is a member of the cohort under investigation.

A Co-Constructive Framework

An alternative theoretical approach to the study of historical influences on psychological aging with particular application to cognition has been presented by Willis and Schaie (2006; see also Schaie, 2008a). Both neurobiological and sociocultural influences on development have long been recognized. Co-evolutionary theorists (Boyd & Richerson, 1985; Cavalli-Sforza & Feldman, 1981; Dunham, 1991; Tomasello, 1999) maintain that both biological and cultural evolution has occurred and that recent, cohort-related advances in human development in domains such as intelligence can be attributed largely to cumulative cultural evolution. Cultural activities impact the environment influencing mechanisms such as selection processes; thus allowing humans to co-direct their own evolution (Cavalli-Sforza & Feldman, 1981; Dunham, 1991). Baltes' co-constructionist approach imposes a life span developmental perspective on co-evolutionary theory and provides principles regarding the timing of the varying contributions of neurobiology and culture at different developmental periods and across different domains of functioning perspective proposed by Baltes and colleagues (Baltes, 1997; Li, 2003; Li & Freund, 2005).

Three principles are proposed regarding the relative contributions of biology and culture influences across the life span: (1) The beneficial effects of the evolutionary selection process occur primarily in early life and are less likely to optimize development in the latter half of life. (2) Further advances in human development depend on ever increasing cultural resources. From a historical perspective, increases in cultural resources have occurred via cumulative cultural evolution and have resulted in humans reaching higher levels of functioning. At the individual level, increasing cultural resources are required at older ages for further development to occur or to prevent age-related losses. (3) In old age, the efficacy of increasing cultural resources is diminished due to decline in neurobiological functions.

In a related co-evolutionary approach, Tomasello and others (Dawkins, 1989; Dunham, 1991; Tomasello, 1999) have proposed mechanisms for social transmission of cultural knowledge. Humans have evolved forms of social cognition unique to humans, which have enabled them not only to create new knowledge and skills but more important to preserve and socially transmit these cultural resources to the next cohort/generation. Cultural learning thus involves both social transmission of cultural knowledge and resources developed by one person, and also sociogenesis or collaborative learning and knowledge creation.

Selected Neurobiological and Sociocultural Influences

I shall next briefly review relevant literature documenting cohort and generational trends in cognition and consider sociocultural and neurobiological influences that have been found to account for inter-individual differences in intra-individual cognitive change. I draw upon the conception (Gauvain, 1998; Li, 2003; Tomasello, 1999) of culture to focus on two sociocultural domains: accumulated cultural resources and concurrent culture-based activities. Expanding upon Li's triarchic view of cultural domains, we view accumulated cultural resources as represented by structural variables such as educational level, occupational status, and ability level. These variables reflect the individual's prior acquisition and accumulation of cultural knowledge and skills. In contrast, the second component of the triarchic view of culture focuses on current activities, habits, and beliefs of the individual that are shaped by concurrent social dynamics and processes. The individual's current activities in domains such as health behaviors, cognitive engagement, and the complexity of one's work tasks are viewed as aspects of social dynamics that impact cognitive functioning and cohort differences in cognition. With regard to neurobiological influences, we focus on the two domains of chronic diseases and biomarkers, shown in the next section to impact cognitive change in adulthood.

Secular Cohort Trends in Cognition

For several decades there has been an intensive debate on the nature and directionality of cohort differences in cognition (Alwin, 2009). Cross-sectional data from several Western societies indicate the occurrence of "massive IQ gains on the order of 5 to 25 points in a single generation" (Flynn, 1987, p. 171; 1999). The "Flynn effect" has been documented primarily for post-World War II cohorts born in the 1950s. This massive cohort gain has been documented most clearly for fluid abilities, rather than crystallized abilities. Relatively little rationale has been offered for why fluid rather than crystallized abilities would show these positive trends for post-World War II cohorts.

In contrast, cross-sectional reports on college admission tests indicate negative cohort trends for certain birth cohorts of young adults (Astin & Henson, 1977; Wilson & Gove, 1999). Likewise, Alwin (1991; Alwin & McCammon, 2001), and Glenn (1994) reported negative cohort trends in verbal ability.

To examine cohort-related shifts in the domains of intelligence impacted by culture, an extensive database of multiple cohorts studied over the same developmental ages is needed, such as is present in the Seattle Longitudinal Study (SLS; Schaie, 2005a). Studies, such as Flynn's, highlight some of the serious limitations in prior cohort studies of cognition — focusing only on *level*, rather than developmental *change* in cognitive functioning, on a limited number of cohorts, over a single age period, and with no consideration of cohort-related differences in trajectory patterns (cf. Schaie, 2008b; Schaie et al., 2005; Schaie & Zanjani, 2006).

Generational Differences in Cognition

Studies of secular trends in cognition have focused almost exclusively on unrelated cohorts. The study of biologically related generations is important for several reasons. First, comparison of cohort versus generational data permit examination of whether a similar increase in prevalence of positive developmental trajectories hypothesized to occur across cohorts is also found across generations. More important, the comparison of the relative impact of neurobiological versus sociocultural influences, in biologically related individuals versus cohorts, would inform the relative potency of cultural and genetic influences on intelligence at various developmental periods. For example, the co-constructionist perspective posits that the influence of neurobiological factors increases in old age and exceeds the impact of cumulative cultural influences. A more stringent test of the increased impact of neurobiological factors in old age should be a study of successive family generations in contrast to successive unrelated cohorts given the shared genetics and environment across generations. The increased influence of neurobiological factors in old age is based in part on the assumption among evolutionary theorists that positive selection effects are most clearly manifested early in the life span and that the expression of deleterious genes in old age has been less constrained by the evolutionary process (Finch & Kirkwood, 2000).

EDUCATIONAL INFLUENCES

Educational level is the most consistent nonbiological predictor of both cognitive level and rate of change in prior longitudinal studies and meta-analyses (Albert et al., 1995; Anstey & Christensen, 2000; Schaie, 2005a). Moreover, education predicts cognitive change not only in old age but also throughout adulthood (Farmer et al., 1995; Lyketsos et al.,1999; Schaie, 2008b). Consistent with co-constructionist approaches, education is reported to most consistently predict change in crystallized abilities, memory, and mental status, and is less consistently predictive of change in fluid abilities and speed. The effects of education on cognitive change remain when controlling for factors such as age, gender, race, and health. In the MacArthur study of successful aging, education best predicted change in cognition (Albert et al., 1995).

Secular trends in education are well documented. Educational attainment, particularly in post-secondary education, has increased significantly across birth cohorts in the first half of the twentieth century. In 2000 15% of 65+ elders had attended college, compared to almost 50% of Baby Boomers. Hauser and Featherman (1976) reported a total increase of about 4 years of education from birth cohorts 1897 to 1951. Intergenerational differences in schooling peaked among men born shortly after World War I, and a deceleration has occurred across more recent cohorts. Intergenerational differences between successive generations, approximately 20 to 30 years apart, range from 2 to 4 years (cf. also Willis & Schaie, 2006b).

The Impact of the GI Bill

One of the major historical influences that led to marked increases in educational attainment for a broad segment of the population was the GI Bill, which benefited veterans of World War II and the Korean War (Laub & Sampson, 2005; Sampson & Laub, 1996; Segal, 2005).

Further educational training was provided through GI Bills for veterans of World War II, the Korean War, and the Vietnam War. Study of the effects of the GI Bill on World War II veterans is of particular interest, because a greater proportion of the U.S. male population was involved in World War II than in the Korean or Vietnam wars. The effects of the GI Bill on post-secondary education were most pronounced. Almost half of all veterans of World War II and the Korean conflict used the benefits for education and training, and 82 percent of those veterans who had attended college before the war made use of GI benefits to continue their education (Nam, 1964). Approximately one-third of veterans whose college work was interrupted by military service finished college or went on to graduate or professional school. For veterans who had just completed high school or had barely started college, one-fifth went on to get a college degree and a larger proportion took at least some college work. In comparison, only 10 percent of those who were working at the time of military service acquired at least an academic year of schooling after the war. Sampson

and Laub (1996) reported that GI Bill training as well as in-service schooling enhanced subsequent occupational status, job stability, and economic well-being, independent of childhood differences and socioeconomic background. The benefits of the GI Bill were larger for younger veterans and for those who had evidence of delinquency in military service records.

Moreover, the dramatic numbers of veterans on college campuses after World War II and the Korean War significantly altered academic protocol and curriculum. In 1947, seven out of ten men enrolled in college or universities were veterans of World War II. Similarly, in 1956 one-fourth of all male college students were veterans of the Korean conflict (Nam, 1964). These veterans not only challenged prewar assumptions of who could benefit from a college education, but also challenged the very definition of what higher education should offer. Feeling as though the war had delayed their entry into adult life, veterans demanded streamlined education and that the curriculum be geared to real life in contrast to the more traditional emphasis in higher education on liberal arts and humanities. These veterans pressed academia with the view that the main duty of the university was to train individuals for adult participation in the modern world and to be the vehicle toward a secure job in a large corporation (Vinocour, 1947). Of course, military service may also have other developmental consequences such as effecting subsequent rates of maturation (cf. Aldwin & Levenson, 2005).

National Defense Education Act

In 1957 the Soviet Union launched Sputnik. The national panic generated by this event resulted in Congress passing a federal-aid-to-education bill, known as The National Defense Education Act of 1958. A major provision of the law involving a $15 million grant was the provision of funds to identify talented students and encourage them to pursue higher education. In the 1957–1958 term alone, Congress proposed over 80 laws to establish programs that would seek out bright students and provide them with financial support for schooling.

Historical Change in Educational Curriculum and Pedagogy

There have also been historical shifts in educational pedagogy and curriculum throughout the past century. A marked shift in educational philosophy was the Progressive movement in education that peaked in the 1920s and whose most noted proponent was John Dewey (Emirbayer, 1992). The goal of the movement was development of a "demographic character" equipped for responsible citizenship. This new citizen was to be developed from the "melting pot" represented in the United States during the early 1900s as a result of a large number of immigrants and the movement of the population from rural to urban areas and the growth of industrial centers such as Boston. These educational processes have undergone several trends from the basics to "progressive" to "tracking" and back to basics time and again. In the late 1800s, education was a structured curriculum that included rigid recitations of the 3 Rs: reading, writing, and arithmetic. High schools were not typical and most children ended their education after eight years. Kindergarten did not become the norm until the 1920s.

Tracking continued through the 1940s and the curriculum became even more split between college preparatory classes and industrial training. By the end of World War II, the Scholastic Aptitude Test (SAT) was beginning to replace IQ tests for college admissions and are still used. The SATs were similarly biased against minorities and immigrant children who did not have the same level of language skills or experience the same culture as the white, middle- and upper-middle class students. The Cold War caused another major shift in American public schools. Progressive curriculums had evolved into "life adjustment" courses by the early 1950s.

The Progressive movement advocated what might seem as contradictory initiatives (Emirbayer, 1992). On the one hand, due to the increased number of pupils because of child labor laws and compulsory school attendance, the educational practices of standardized testing and tracking of students was introduced. Standardized testing was viewed as a more "scientific" way of determining children's likely occupational attainment and allocating them into different educational channels (Ackerman, 1995). On the other hand, the Progressive movement also advocated movement away from teacher-directed lecture and rote recitation to increased student–teacher interaction, group exercises, and critical reflection. The Progressive movement also involved the introduction of the kindergarten, manual and vocational education, and evening classes.

Further support for extensive historical changes in curricula taught at different ages is shown in the recent work of Blair and colleagues (Blair et al., 2005). Findings of this research are particularly relevant to discussions of Flynn IQ effects, where the claim is made that IQ gain for the post-World War II cohorts has been primarily in the fluid abilities. Blair and colleagues have documented cohort differences in the age at which students were introduced to visuospatial skills such as traditionally taught in geometry. An 1894 college textbooks included a problem that required the student to draw and cut out a two-dimensional triangle and to fold the triangle to develop a three-dimensional polyhedron. By 1955 this type of problem was included in

the seventh-grade textbook. By 1971 the same concept was taught to third graders, and by 1991 a first-grade textbook included a simplified version of the concept.

CHANGES OF OCCUPATIONAL STATUS AND WORK COMPLEXITY

Major historical changes in the U.S. workforce have occurred across cohorts (cf. Schaie & Schooler, 1998). Currently 20% of workers are in professional occupations, compared to 7% in 1950, while farmers have decreased from 10% in 1950 to 0.6%. The median age of retirement is now 62 years with only 18% of men 65+ working, compared to 46% in 1950. Women's work participation has increased with 52% of women aged 55 to 64 working compared to 27% in 1950 (Blau & Duncan, 1967; Farr & Schwall, 2008).

Occupational experience is related to maintenance of cognitive abilities at older ages (Owens, 1966). Avolio and Waldman (1990) reported that occupational status moderated the relationship between age and cognitive ability with a negative relationship for unskilled workers and no relationship for skilled workers. Salthouse (1990) reported that architects preserved higher levels of spatial ability later in the life span when compared with non-architects of similar ages. Historical shifts in work organization have resulted in fewer hierarchical levels and increased worker self-direction and responsibility for a broader range of tasks. As a result, job complexity has increased. Job conditions involving self-directed, substantively complex work are associated with increased intellectual flexibility and self-direction (Kohn & Schooler, 1983; Schooler, 1990, 1998). Findings indicate that the reciprocal relation between substantively complex work and cognition are even stronger in older men than was found in younger men (Schooler & Caplan, 2008; Schooler et al., 2004). Schooler's work also suggested age/cohort differences in work complexity; older workers, on average, were found to do less substantively complex work. For a theoretical discussion of cognitive plasticity see Willis et al. (2009).

CHANGES IN HEALTHCARE, CHRONIC DISEASE AND LIFESTYLES

I focus here on the chronic diseases of hypertension, cardiovascular disease, and diabetes not only due to their high prevalence in old age, but because of the related changes in lifestyles expressed through improved health behaviors (cf. also Leventhal et al., 2008; Schaie et al., 2002).

Hypertension

Hypertension is associated with poorer cognitive performance at all adult ages, primarily on fluid-type tests (e.g., attention, learning, memory, executive functions; Elias & Robbins, 1991; Elias et al., 1987; P. Elias et al., 1995; Waldstein & Elias, 2001); crystallized abilities are less affected. Chronic hypertension is associated not only with level of cognition but also with accelerated longitudinal decline (Elias et al., 1996; Elias et al., 1998; Knopman et al., 2000). Hypertension impacts cognitive decline in young adults as well as the aged (P. K. Elias et al., 2004). In a 20-year longitudinal study, cognitive decline was 12.1 percent greater for hypertensives compared to normotensives. Prospective cohort studies reported that the higher blood (Swan et al., 1992). Moreover, antihypertensive therapy has increased two- to threefold in recent cohorts and consideration of the impact of long-term antihypertensive therapy on the relation between hypertension and cognition is critical in longitudinal studies (Elias et al., 1998).

Cardiovascular Disease

Atherosclerosis contributes to mild but consistent deficits in cognitive performance in midlife and old age (Waldstein & Elias, 2001). Community-based studies of dementia (Lim et al., 1999) have found that cerebrovascular pathology often co-occurs with Alzheimer's disease (AD) pathology (Snowdon et al., 1997). Up to 45 percent of community-based incident dementia cases with autopsy-proven AD have co-occurring cerebral infarctions (Lim et al., 1999). In cases with vascular disease, less AD neuropathology is necessary for similar severity of clinical dementia (Snowdon et al., 1997), especially at earlier stages of the disease (Esiri et al., 1999). However, most of this evidence comes from cross-sectional studies with few longitudinal studies relating cognitive performance and atherosclerosis.

Diabetes

Case control studies of Type 2 diabetes in older adults have found cognitive impairment, most commonly for fluid-type abilities of learning and memory (Hassing et al., 2004a,b; Strachan et al., 1997). Large-scale epidemiological studies support the findings of case control studies, but most have been cross-sectional. An exception is the Framingham Health Study, which reported evidence of a causal relationship between diabetes and cognitive dysfunction (Elias et al., 1997). Duration of diabetes was related to poorer performance on verbal memory and abstract reasoning tests.

Health Behaviors

Health behaviors are considered sociocultural influences since these behaviors are acquired through socialization and are highly related to education (Markus et al., 2004). Substantial similarity in health behaviors across generations within families has also been reported (cf. Maitland, 1997). Self-regulatory health behaviors also differ markedly across ethnic and racial groups (cf. Jackson & Knight, 2006). The impact of health behaviors such as exercise, smoking, and alcohol consumption on maintenance of cognitive ability has been mixed (Anstey & Christensen, 2000). Colcombe and Kramer (2003) reported fitness effects to be selective with aerobic fitness training having a greater positive impact on tasks associated with executive control. In the MacArthur successful aging study (Albert et al., 1995) strenuous daily physical activity was a significant predictor of positive cognitive change. There is a paucity of studies on cigarette smoking and cognition. A systematic review found decreased AD risk in case-control studies but increased risk in prospective cohort studies (Kukull et al., 2002). Obesity has been associated with atherogenesis, hypertension, and diabetes and was found to increase risk for cognitive decline or AD (Sarkisian, 2000). More recent studies indicated that a U- or J-shaped curve may describe the relationship between level of alcohol use and cognitive functioning (Hendrie et al., 1996). Some studies find the association between cognition and moderate drinking stronger for women than for men. The MIDUS midlife study found educational differences in health behavior practices with college educated reporting a higher rate of exercise and lower rates of smoking (Markus et al., 2004), suggesting positive cohort trends in health behaviors. Support for healthier lifestyles appears also to be offered by participation in religious communities (Krause, 2008; Schaie et al., 2004). More recent cohorts of elderly have also experienced increased access to activities and resources that provide healthier lifestyles and better healthcare (cf. Schaie & Pietrucha, 2000; Schaie et al., 2003). The evidence seems clear that historical trends in extending preventive health practices and positive lifestyle changes have led to substantial health benefits for successive generations of elderly individuals (cf. Leventhal et al., 2008; Schaie et al., 2002). A large number of laboratory studies that showed the effectiveness of cognitive training interventions to slow cognitive decline in the elderly have now reached the level of clinical trials (e.g., Willis et al., 2006).

THE ROLE OF IMMIGRATION

Particularly in view of the dramatic decline of the American fertility rates in recent cohorts, the role of immigration has once again increased in importance in determining our society's age structure, as well as determining many characteristics of the aging population (DeJong, 2005; Fuligni, 2005; Gibson & Lennon, 1999; Rumbaut, 2005; Treas & Batalova, 2007). The recent interest in projecting the proportion of elderly immigrants as well as the aging of the immigrant of the American populations has led to some interesting conclusions.

First, it appears that current projections of the foreign-born population represent underestimates of the proportion of foreign-born within the elderly populations. Second, immigrants in general and older immigrants in particular contribute to the increasing racial and ethnic diversity in American society. Third, social and cultural incorporation of older immigrants appears to be a function of the length of time they have spent in the United States. Hence relatively recent older immigrants tend to be disadvantaged as compared to immigrants who have spent a major portion of their lives in the United States (Hirschman, 2007). They are less likely to be fluent in English, are less likely to live in homes they own, and they have much lower incomes. On the other hand, long-term immigrants are more similar to their native-born counterparts (cf. Treas & Batalova, 2007).

SOCIETAL INTERVENTIONS TO REDUCE POVERTY IN TARGETED POPULATIONS

Until fairly recently reaching advanced ages was limited to the socioeconomically favored and powerful in society (e.g., Achenbaum, 1993). But as life expectancy has increased for larger segments of the population, poverty has often characterized advanced old age (Haber, 1993). Therefore, beginning in the late nineteenth century, most industrial nations began to implement public retirement and pension systems to provide some income security for that period of life when increasing frailty, chronic disease, and disabilities ended participation in the world of work for most individuals (Gratton, 1993; Hayward, 2005; Plakans, 1989; Ransom et al., 1993; Vinovkis, 1989, 2005b). Most of the public plans providing reliable financial support for older persons are based on some understanding of an intergenerational contract that assumes that succeeding generations will provide for the old age of those who preceded them (Street & Quadagno, 1993).

Other interventions that have targeted earlier life stages and specific geographic areas have also had indirect effects on leading to the targeted cohorts reaching old age in better health, with fewer disabilities, and greater educational and financial resources. Such programs have included President Lyndon Johnson's attempts to reducing Appalachian poverty,

the Head Start program (Vinovkis, 2005a), and the changes in welfare and employment policies enacted under the Clinton administration (cf. also Duncan, 2005; Hayward, 2008; Huston et al., 2005).

SUMMARY AND FUTURE DIRECTIONS

In this chapter I have tried to identify and discuss some of the major historical influences that might provide explanatory mechanisms for a better understanding of cohort and period differences in psychological aging processes. To do so within the confines of a single chapter I had to be selective rather than exhaustive in my inclusion of possible influences. Hence, I first proposed some theoretical arguments for why one should pay attention to historical influences in studying the aging process of various psychological constructs as individuals develop from young adulthood to old age and the end of their lives, and I then laid out some of the principal concepts that require attention when studying such historical influences. I next focused on historical changes in educational attainment, occupational structures, healthcare and lifestyles, the role of immigration, and the impact of social interventions to reduce poverty.

Out of necessity, I primarily covered historical influences that occurred in the United States. This, of course, led to a major omission by not attending to some of the major political changes that have transformed life and made a major impact upon psychological aging in other countries. Here I refer the reader to other more recent contributions that have discussed the impact on individual development by political events such as the German reunification (Silbereisen et al., 2005) or the collapse of the Soviet Union (Smyth, 2005; Titma & Tuma, 2005). Other historical influences that I slighted in this chapter and that deserve future exploration in relation to their influence on aging processes include changes in family structure (Hagestad & Uhlenberg, 2007; Hughes & Waite, 2007), and the cultural transformation of the meaning of the aging experience (cf. Fry, 2008), as well as the dramatic changes in retirement expectations and practices (cf. Eckerdt, 1998, 2008). I have also not attended to historical transformations of the meaning of adult development in non-Western cultures (e.g., Ikels, 1989; Sangree, 1989; Usui, 1989).

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