

2. *Journey turmoils.* The journey between phases of development may last for months or years. Growth or individuation proceeds as a person resolves the doubt, disorientation, and gnawing pain or guilt while forming a stronger sense of what he or she wants and how to get it. If it is the person's first solo journey into self-development, the turmoils may be terrifying; the young person may need some support from new friends or a mentor.
3. *Renewal peaks.* These are those "magic" moments when one knows that one has created a new way of living, feeling, relating, and caring. Each successful transition represents a "rebirth" and another opportunity for looking at oneself and others with continued freshness of appreciation.

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BONDING AND ATTACHMENT LIFE SPAN DEVELOPMENT MIDDLE AGE

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ADULT INTELLECTUAL DEVELOPMENT

Why do some individuals retain their behavioral competence well into advanced old age, whereas others show early decline? This question has long been a central topic in the psychology of adult development and aging (cf. Cunningham, 1987; Labouvie-Vief, 1985; Schaie, 1977-1978, 1990a; Willis, 1985).

Relative to this question, the manner in which adult intellectual competence has been typically measured will be described, five central questions will be asked and well-supported, relevant findings from current research literature will be provided.

The questions are

1. Does intelligence change uniformly through adulthood or are there different life-course ability patterns?
2. At what age is there a reliably detectable age decrement in ability, and what is the magnitude of that decrement?
3. What are the patterns of generational differences, and what are their magnitudes?
4. What accounts for individual differences in age-related change in adulthood?
5. Can cognitive decline in old age be reversed?

THE MEASUREMENT OF ADULT INTELLIGENCE

Most large-scale studies of adult intelligence conducted during the past few decades have used either the Wechsler Adult Intelligence Scale (WAIS) (Matarazzo, 1972) or one of its derivatives (cf. Schmitz-Scherzer & Thomae, 1983; Siegler, 1983) or a derivative of Thurstone's work on the primary mental abilities (cf. Ekstrom, French, Harman, & Derman, 1976; Schaie, 1985; Thurstone, 1938). Findings of these studies differ markedly, however, depending on whether age comparisons have been

made in a cross-sectional manner or whether the same individuals have been followed longitudinally.

DIFFERENTIAL PATTERNS OF CHANGE

There does not seem to be a uniform pattern of age-related changes across all intellectual abilities: studies of overall intellectual ability (IQ) have, therefore, been found insufficient to monitor age changes and age differences in intellectual functioning for either individuals or groups. Age difference work with the WAIS suggests that verbal abilities are maintained well, whereas performance tests show early on age differences favoring younger adults (Matarazzo, 1972). Longitudinal data on the WAIS also show high levels of stability of verbal behaviors into advanced old age, while performance scales begin to decline in midlife, with substantial decline into old age (Corsini & Fassett, 1953; Field, Schaie, & Leino, 1988; Siegler, 1983). Data from studies with the primary mental abilities lend some support to the notion that active or fluid abilities tend to decline earlier than passive or crystallized abilities (cf. Horn, 1982). There are, however, important ability-by-age and ability-by-cohort interactions that complicate matters. For example, women tend to decline earlier in the active abilities, whereas men do so on the passive abilities. In addition, although fluid abilities begin to decline earlier, crystallized abilities appear to show steeper decrement once the late 70s are reached (cf. Hertzog & Schaie, 1988; Schaie, 1990a; Schaie & Hertzog, 1983, 1986). More fine-grained analyses suggest substantial gender differences and differential changes for those who decline compared with those who remain stable when age changes are decomposed into loss in accuracy or speed (cf. Willis & Schaie, 1988).

AGE LEVEL AND MAGNITUDE OF AGE-RELATED INTELLECTUAL DECLINE

Cross-sectional studies with the WAIS suggest that significant age differences favoring young adults can be found by the 30s for performance tests and by the 60s for verbal tests (Matarazzo, 1972). These differences, however, confound cohort effects in education and health status. By contrast, in longitudinal studies, reliably replicable average age decrements in intellectual abilities are rarely found before age 60 but are observed for all intellectual functions at least by age 74 (Schaie, 1990a; Schaie & Hertzog, 1983). Analyses of individual differences in intellectual change, however, demonstrate that even at age 81 less than half of all observed individuals showed reliable decremental change over the preceding 7 yr. (Schaie, 1984; 1990c).

With respect to magnitude of decline, average decrement until age 60 amounts to less than 0.2 standard deviation (SD), but by age 81, average decrement reaches a magnitude of at least 1 SD for most intellectual abilities (Schaie, 1983, 1984, 1990a).

GENERATIONAL DIFFERENCES

The existence of generational (cohort) differences in intellectual abilities has been conclusively demonstrated (Flynn, 1984; Schaie, 1990b; Willis, 1989). Almost linear positive cohort shifts have been observed for inductive reasoning, with more spasmodic positive shifts for verbal ability and spatial orientation. A curvilinear cohort pattern has been found for number skills, which reach a peak for birth cohorts born in the 1920s and then follow a largely negative slope. A similar curvilinear cohort pattern has been observed also for word fluency (Schaie, 1990b). As a consequence, using cross-sectional studies of intellectual aging tends to underestimate age changes before age 60 for abilities with negative cohort gradients and to overestimate age changes for abilities with positive cohort gradients.

INDIVIDUAL DIFFERENCES IN AGE-RELATED CHANGE IN ADULTHOOD

Individual differences are large at all ages, such that substantial overlap among samples can be found from young adulthood into the mid-70s (cf. Schaie, 1988b). Very few individuals decline on all or most abilities. Indeed, maintenance of functioning on one or more abilities is characteristic for most individuals well into advanced old age (Schaie, 1989a; Schaie & Willis, 1986). Longitudinal data permit investigation of individual differences in antecedent variables that differentiate persons who experience early decrement from others who maintain high levels of functioning into advanced age (cf. Schaie, 1989a). A number of factors have been identified that account for such individual differences, some of which have been shown to be amenable to experimental intervention. Variables found to be predictive of favorable cognitive aging include (1) absence of cardiovascular and other chronic disease (Hertzog, Schaie, & Gribbin, 1978; Schaie, 1990a), (2) favorable environment as indicated by high SES (Gribbin, Schaie, & Parham, 1980; Schaie, 1984, 1990a), (3) involvement in a complex and intellectually stimulating environment (Dutta, Schulenberg, & Lair, 1986; Gribbin, Schaie, & Parham, 1980), (4) flexible personality style at midlife (Schaie, 1984), (5) high cognitive status of spouse (Gruber & Schaie, 1986), and (6) maintenance of level of perceptual processing speed (Schaie, 1989b).

REVERSIBILITY OF COGNITIVE DECLINE

Present understanding of individual differences in cognitive decline suggests that unless neurological pathology is present, cognitive interventions may serve to remediate known intellectual decline and reduce cohort differences in those individuals who have remained stable in their own performance over time but who have become disadvantaged compared with younger peers. The effectiveness of cognitive interventions has been demonstrated in various laboratory studies (cf. Baltes & Willis, 1982; Denney, 1979; Willis, 1987; Willis & Schaie, 1986b; Yesavage, 1983). Cognitive decline in many older people may well be the result of disuse of specific skills that can be reserved by appropriate training regimens. In two studies, approximately 66% of the experimental subjects showed significant improvement, and about 40% of those who had declined significantly over 14 yr were returned to their predecline level (Schaie & Willis, 1986; Willis & Schaie, 1986b, 1988). Moreover, it was shown that training occurred at the ability (latent-construct) level and that training did not disturb the ability factor structure (Schaie, Willis, Hertzog, & Schulenberg, 1987).

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ADULT DEVELOPMENT AGE DIFFERENCES COGNITIVE ABILITIES PRIMARY MENTAL ABILITIES SEQUENTIAL METHODS VOCABULARY TESTS

K. W. SCHAIE

ADVERTISING

Advertising is a communication tool designed to inform a mass audience of available products and services. Beyond the basic function to inform,

it serves as an extension of the sales force, presenting a specific product "as effectively . . . as possible without overstepping the boundaries of honesty, truthfulness, and good taste" (S. R. Bernstein, 1980, p. 28).

Effective advertising depends heavily upon effective consumer research. A research knowledge of consumer characteristics, desires, buying habits, and life styles enables the advertiser to tailor the message and target the audience for maximum receptivity and impact. This knowledge further enables the advertiser to skillfully select the appropriate communication channel, to monitor consumer satisfaction after the sale, and to initiate future product modifications or new product entries (S. R. Hall, 1921).

HISTORY

The earliest ad on record is a sheet of papyrus in Thebes (3000 B.C.), advertising for a runaway slave (Burt, 1938). Advertising and its function have moved through several stages of development since that time. Brand names and trademarks (i.e., shields) emerged during the Middle Ages, and newspaper advertising had its formal beginnings in seventeenth-century England. Newspaper advertising in the United States was an eighteenth-century development frequently attributed to Benjamin Franklin (S. W. Dunn, 1969). With the post-Civil War advent of the Sears, Roebuck catalog, print advertising experienced still another breakthrough. In a direct sense the personal salesman had now been replaced (S. R. Bernstein, 1980). Advertising agents as a distinct entity emerged in 1841 (Volney Palmer, Philadelphia), and the agent's early role was simply to promote the use of advertising.

The time period 1875-1905 has been called an "Era of Bold Enterprise" in advertising. With transcontinental railroads came the development of national markets and national advertising plans. With rapid growth in national advertising, ethics concerns were soon to follow. In 1911 the Associated Advertising Clubs of America adopted a code of ethics for truthful advertising, and *Printer's Ink* magazine drew up legal statutes for penalizing false and misleading advertising practices. In 1914 the Federal Trade Commission was established to "stop unfair competition" through advertising. The first two decades of the twentieth century had been an "Era of Reexamination" (S. W. Dunn, 1969).

The 1920s spawned rapid and dramatic growth in advertising. With radio emerged a major new medium, and the nation's first sponsored radio network broadcast was made in 1924. By the late 1940s television brought a vast new media dimension, and the rapid growth of the television market brought equally rapid growth in advertising revenues. From a \$100 million revenues market in 1950, television surpassed \$5 billion/year by 1975 (Sterling & Haight, 1978).

Two periods of general consumer unrest surfaced within this rapid growth picture. The 1930s brought attacks on the existence of advertising and led to the Wheeler-Lea amendment to the Federal Trade Commission Act of 1938. With consumer resistance came polling techniques and attention to consumer thoughts, values, wants, and needs. The 1960s brought consumer unrest relating to a range of product and environmental issues. Spearheaded by Ralph Nader's *Unsafe at any speed: The designed-in dangers of the American automobile* (1965), the concerns included environmental and personal harm from pesticide use, population growth, ecology awareness, and food/hunger/nutrition issues (S. E. Cohen, 1980). The effect of consumerism in each instance was to heighten advertiser awareness and sensitivity to consumer thoughts and feelings. Revenues themselves continued their general and dramatic growth (C. Endicott, 1980).

PSYCHOLOGY OF ADVERTISING

Walter Dill Scott's pioneering work, *The psychology of advertising* (1908), set the stage and tone for the relationship between the academic discipline and the applied field. What had been an awkward new relation-