Instrumental Activities of Daily Living


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*See*

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**INTELLIGENCE**

Maintaining intellectual competence assumes major importance for the quality of life of many older persons. Assessment of intellectual competence is often required to provide information relevant to
questions of retirement for cause (in the absence of mandatory retirement at an early age), sufficient competence for independent living, or for the control and disposition of an individual's property.

Changes in competence that represent actual intra-individual decrement must be differentiated from performance that has remained stable over time but that is now below the average performance of today's younger persons. The latter finding would not represent an older person's decline, but instead reflects the obsolescent functioning of older cohorts when compared to younger peers. Researchers and practitioners want to know at what age developmental peaks in intelligence occur in the level of performance and rate of age change, and why some individuals show intellectual decrement in early adulthood while others maintain or increase their level of functioning on some ability variables well into old age.

The intellectual processes required for the acquisition of cognitive structures and functions in childhood are not necessarily relevant to the maintenance of functions and the reorganization of structures that may be needed to meet the demands of later life. However, certain basic concepts relevant to the understanding of intelligence in childhood retain relevance throughout life, while the manner in which observable behaviors (phenotypes) express such constructs (genotypes) may change with age in pattern and organization.

Intellectual Development in Old Age

Most data on adult intellectual development is based on work with the Wechsler Adult Intelligence Scale (WAIS; Matarazzo, 1982) or with Thurstone's Primary Mental Abilities test. Studies with the WAIS have focused upon a so-called classical pattern that shows a plateau reached in the 20s age cohort, with maintenance of performance on verbal subtests such as vocabulary and comprehension until the 60s, but early adult decline on performance tests such as block design or object assembly. More recent studies, however, suggest that in healthy individuals WAIS performance may hold up well into old age (Busse, 1993).

Age comparisons on the WAIS are compromised by the finding that the factorial structure of that battery changes from early adulthood to old age (Cohen, 1959). By contrast, it has been established that the structure of the primary mental abilities remains rather stable across adulthood (Schaeie, Maitland, Willis, & Intrieri, 1998). Data for the PMA indicate continued gains for most abilities until the persons reached ages of late 30s or early 40s. Thereafter a plateau is maintained until the early 60s, with the exception of the highly speeded measure of word fluency (vocabulary recall) that shows significant decline in the 50s. Gender differences have been reported that suggest earlier decline for spatial ability in men and word fluency in women. The average magnitude of intellectual decline, however, is quite small during the 60s and early 70s and is probably of little significance for the competent behavior of the young old. However, substantial average decline for most abilities are observed once the 80s are reached (Schaie, 1996, 2004).

Individual Differences in Adult Intellectual Development

The data on average age changes tend to conceal a most important item. It might indicate to the casual observer that intellectual decrement in old age is universal and unavoidable. Data from the Seattle Longitudinal Study (Schaie, 2004) argues to the contrary. Only about one-third of individuals studied declined reliably over a 7-year period from age 60 to 67, and about 40% declined from age 67 to 74. Even by age 81, about 50% of the members of the longitudinal panels maintained their functional level over a 7-year period.

What accounts for these individual differences in intellectual change over time? In addition to factors that might be genetic in nature, other attributes characterize individuals who do not decline in old age; (1) they are free of cardiovascular and other chronic disease, (2) their perceptual speed has declined less than average, (3) they have at least average socioeconomic status, (4) they exhibit a stimulating and engaged life style, and (5) they describe themselves as having flexible attitudes and behaviors at mid-life (Schaie, 2004).

Can Intellectual Decrement be Reversed?

In studies related to optimal or adaptive intellectual functioning, it has been recognized that older adults
Interference
can be disadvantaged in at least 2 different ways. First, some age-related decline may occur through disuse, whether by personal choice or environmental restrictions. Second, some people may be disadvantaged because of rapid sociocultural and technological change. Cross-sectional cognitive training research has strongly suggested the modifiability of older adults’ performance on a number of intelligence dimensions. However, the cross-sectional nature of this research made it impossible to examine one fundamental question: to what extent did training procedures result in remediation of age-related decline versus the acquisition of new performance levels in subjects experiencing no decline?

Within the context of a longitudinal study it has been found that reliably documented 14-year decrement could be reversed in approximately 40% of subjects undergoing a cognitive training program and significantly reduced in an additional 25% of participants (Schaie & Willis, 1986). Performance levels were enhanced also in substantial numbers of persons whose performance had remained stable. The effects of training were maintained over as long as 14 years (Schaie, 2004; Willis, 2001). The data suggest that for many older persons intellectual decline or cohort-related disadvantage (compared to younger peers) may be largely experiential in nature and can be modified by modest intervention efforts.

Intelligence in the Everyday World

Attention has turned to the question of how traditional measures of intelligence relate to performance in real-life circumstances. Measures of so-called practical intelligence often appear to assess situation-specific competence rather than basic components of intelligence that would be widely generalizable. Hence, the application of intelligence to everyday situations will always require different combinations of more basic intellectual abilities. For an examination of practical intelligence from various points of view, see Schaie & Willis (1999).

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References


INTERFERENCE

Interference is a general term for the disruptive effects of irrelevant information. This irrelevant information may come from environmental distractors, or it may be internally generated, such as currently irrelevant thoughts or memories or “strong but wrong” habitual responses that are inappropriate for the current situation. Interference is said to occur when such irrelevant information reduces the accuracy of or slows response. As a general rule, older adults are more susceptible to interference effects than young adults (Hasher & Zacks, 1988; Hasher, Zacks, & May, 1999; McDowd, Oseas-Kreger, & Filion, 1995).

Older adults’ vulnerability to interference from environmental distraction can be seen on a variety of tasks including visual search, reading, problem-solving, and categorization. Age differences in distractor interference are especially large when there are many distractors, and when it is difficult to