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Continuity and Discontinuity in Psychometric Intelligence Over the Adult Life-span

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Most investigations of changes in intellectual abiltiies over the life-span (including our own) have been conducted with test instruments which were designed with regard to the characteristics of adolescents are young adults at a particular point in time. This matter raises serious questions with regard to the validity of studies covering large portions of the life-span and long periods (cf. Schaie, 1978). Of more substantive interest, however, is the issue whether the same pattern of intellectual abilities pertain over the adult life-span of the same individuals or between groups of individuals observed over different time periods, the matter of the invariance of latent ability factor structures. If structural invariance can be demonstrated, it then becomes of interest to determine at what period of life intellectual abilities attain an asymptote, for what periods they remain stable, and over what period behaviorally significant decrement can be noted.

While there may be substantial differences in life course development of various types of intellectual abilities, some general patterns have been found to emerge, which permit at least limited generalizations with respect to the issue of continuity and discontinuity of adult intellectual development. Certain intrinsic and extrinsic variables can then be identified which may mediate apparent discontinuities with sufficiently great incidence so that in group studies they appear to identify normative phenomena.

Our longitudinal-sequential studies now extending over two decades and covering the age range from the twenties to the eighties (cf. Schaie, 1979) permit some broad conclusions with respect to these issues:

First, there is now evidence that the structure of the Primary Mental Abilities (as investigated by means of Joereskog and Soerbom's methods) is basically invariant across cohort groupings, periods and the age range investigated (Hertzog, 1979). However, there are sufficient increments in

ISSBD, Lund, 1979

factor correlations in old age to suggest that there is either progressive dedifferentiation of ability structure or that the test battery (because of speed, test familiarity and other factors) no longer provides as efficient a measurement as at younger ages.

Second, there is a clear pattern that in generally healthy populations and for slightly speeded tests, there is continued growth of intellectual ability until about 40, followed by a period of essential stability until 60, progressive but slow decline to the mid-seventies, and rapid decline thereafter.

Third, there is evidence that decrement in intellectual functions appears earlier (by as much as seven years) in individuals with known cardio-vascular disease (Hertzog, Schaie & Gribbin, 1978; Schaie & Hertzog, 1979) and under unfavorable environmental conditions (Gribbin, Schaie & Parham, 1979).

Fourth, there are significant shifts in generational patterns with greater stability for those individuals who were born between the two world wars, and less stability for the older and more recent cohorts (cf. Schaie & Labouvie-Vief, 1974).

To summarize, it appears that in samples drawn in an American metropolitan area, there is evidence of ontogenetic stability of adult personality as far as structural attributes are concerned, but there is discontinuity in level and direction of function in middle age and early old age. Some qualitative change must further still be considered possible in advanced age, and environmental and health mediators can lead to non-normative patterns for special at risk populations.

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