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“When does age-related cognitive decline begin?”
Salthouse again reifies the “cross-sectional fallacy”

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The author makes three principal assertions in his article:

First, that it is possible to draw conclusions about of age of onset of age decrement in cognition from cross-sectional studies.

Second, that positive age changes reported in the literature on longitudinal studies represent the short-term effects of practice.

Third, that the onset of cognitive decline occurs in the 20s for many abilities.

I would like to suggest that the author has not provided empirical support for any of these assertions in the data reported in this article or other of his publications cited, and that these assertions contradict empirical findings and theoretical arguments presented in the literature on cognitive aging over the past half century, as follows.

Salthouse continues to reify the “cross-sectional fallacy” (cf. Riley, 1973), that age changes within individuals over time (and age) can be inferred from cross-sectional age differences between groups of individuals of different ages measured at the same point in time. Over 40 years ago the formal reasons why this is not possible were explicated in sociology by Ryder (1965) and in psychology by Schaie (1965). Both these authors explicated that age changes and age differences could be identical only if there was a perfectly stable environment over time and no differences in the level of performance between successive birth cohorts at the same age (also cf. Hofer et al., 2002). Neither Salthouse nor anyone else has ever provided empirical

data that would meet these conditions! (Schaie and Hofer, 2001).

Some additional concerns:

1. There is little in this manuscript that makes a case for its relevance for research in neurobiology. The manuscript reports data that are exclusively behavioral in nature. While support for the behavioral findings in this study are sought in the animal and neurobiological literature, the discussion of the relevance of such data is mostly circumstantial. Moreover, the description of the population, materials and methods for the behavioral research is often referred to by citation of the author's other publications that are not necessarily well-known to neurobiologists.
2. Although the author acknowledges that some cognitive domains do not show early decline (nor do they show early adult negative age differences) he appears to generalize his findings and does not pay sufficient attention to those domains that remain stable over the 20–60 year age range.
3. The author dismisses the well-established effects of cohort differences in providing the major cause for discrepancies between cross-sectional age differences and longitudinal age changes (Schaie, 2005, 2008; Schaie et al., 2005 and Willis, 1989). However, his study design does not control for such cohort differences.
4. The author concludes that short-term retest effects (over at most 14 days) account for the difference between the cross-sectional and longitudinal findings. This conclusion is not warranted for two reasons: (a) short term retest reflects intra-individual variation that is a function of both practice and of short-term fluctuation of the individual's observed score about his/her true score; (b) the generally accepted assessment of practice effects involves the com-

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parison of randomly selected groups of individuals of the same age at least two points in time, where one group is tested for the first time and the second group is tested for the second time (cf. Schaie, 1977, 1988). This was not done in this study.

5. The argument is made that there is no difference in the correlation between short-term retest effect and length of the longitudinal retest. I do not believe that the small N's for the longer longitudinal intervals provide sufficient power to support this argument. However, the information provided is not sufficient for a proper evaluation of this issue. In fact other than the figures, there are not detailed results in this article.
6. Although the intervals discussed in the paper represent intervals of 2.7 years, the x-axes are scaled in 5- or 10-year intervals, respectively. Absent tabular information on the 2.7-year intervals this makes interpretation of the findings difficult or impossible.

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