# Scientific symposium theme: Relationships among factors underlying AD, MCI, and cognitive decline: Some thoughts inspired by our speakers

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# Studying aging is tough: study design matters!

Note: all speakers reported cohort studies! A core requirement for study of aging. Each study has unique added strengths:

- MAP, ROS: very detailed annual exams; availability of post-mortem neuropathology.
- WHICAP: diverse cohort, attention to comorbidity, especially vascular.
- BAS: extremely long-term follow-up.
- Olmsted County: population-based representative sample.

# Complicated trajectories of change require thoughtful analysis.

All speakers noted statistical challenges of studying relationship between predictors and MCI, AD and cognitive decline.

- Transitions between clinical status categories (normal, MCI, AD) map loosely to cognitive decline trajectory.
- Analytic strategies are different, but complementary: making use of both kinds of information may be helpful.
- Progression is not necessarily linear!
- Not everyone starts from same point!
- Predictors may relate both to where you start and how fast you change (and not necessarily in the same way.)
- Predictors may also act as moderators or mediators.

# The findings of our speakers complement each other.

- Wilson: Risk factors (genetic, personality, social) have similar impacts on trajectory and on transitions.
- Wilson and Lipton: Nonlinear decline, depending on disease stage more than age.
- Lipton: Non-normative decline rate reflects both underlying pathology and protective factors.
- Lipton and Luchsinger: Trajectories may be quite complicated, and this may result from heterogeneity.
- Luchsinger: Notes possible mediators or moderators.
- Luchsinger and Petersen: Single out vascular disease as a relevant comorbidity.
- Petersen: Imaging findings may reflect different underlying pathologies and thus predict different dementia trajectories.