

correlational, not causal, which has implications for transfer and trial outcomes. Third, Thomas tests a novel algorithm for classifying MCI, ushering opportunities to examine training effects on incidence of MCI after up to 20 years post-training. Marsiske then evaluates temporal transfer of training in reasoning ability, concluding that reasoning training and age, but not other baseline demographics, predict maintained alterations in reasoning abilities. Finally, Felix evaluates the stifling role of depressive symptoms on ability to benefit from training. Dr. Wally Boot, a recognized thought leader in transfer of cognitive training, will provide an illuminating discussion of promises and pitfalls of these lines of research.

IADL DIFFICULTY AND MORTALITY IN ACTIVE: IMPLICATIONS FOR TRANSFER OF COGNITIVE TRAINING

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Objectives: Our goals were to externally scale an IADL difficulty scale to the more recognizable Functional Activities Questionnaire (FAQ), and test whether cognitive training attenuates the relationship between IADL difficulty and mortality. **Method:** We leveraged externally available FAQ data from NACC to scale questions about IADL activities administered in ACTIVE (N=2,802) using item response theory. We modeled time to death as a function of IADL difficulty in ACTIVE using survival analysis, testing whether ACTIVE intervention group status modified the association between FAQ and mortality. **Results:** IADL difficulty in ACTIVE, scaled to the FAQ, was associated with a higher risk of death (Hazard Ratio, HR, 1.01, 95% Confidence Interval, CI: 1.001, 1.02). The relationship did not differ by ACTIVE intervention status. **Discussion:** Cognitive training does not modify the relationship between IADL difficulty and mortality, consistent with a hypothesis that proposed relationships between cognitive ability and IADL difficulty are correlational, not causal.

OVERVIEW OF THE ACTIVE STUDY AT 20 YEARS

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ACTIVE (1998-2019), the largest NIA-funded clinical trial of cognitively normal elderly, was designed to test if cognitive intervention maintains functional independence in older adults (N = 2,802, aged 65-94) by improving basic mental abilities. In this paper we overview major aims of ACTIVE to investigate 1) effectiveness and durability (through 1,2,3,5, and 10 years of follow-up) of three cognitive interventions (memory, reasoning, processing speed) in improving basic measures of cognition; 2) if training in specific cognitive abilities improves or maintains cognitively demanding daily living skills (e.g., medication use, driving); and 3) impact of intervention on everyday mobility, health-related quality of life, and health service utilization. We

also review aims of a recent NIA-funded 20-year follow-up of ACTIVE to examine whether improved cognition and daily function results in long-term reduction in dementia risk, years of disability, health care utilization and costs, and increased active years of life in advanced old age.

ACTUARIAL CRITERIA FOR MCI DIAGNOSIS IN ACTIVE: IMPLICATIONS OF ADJUSTMENT FOR RACE

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This study examined the baseline prevalence of mild cognitive impairment (MCI) in the ACTIVE study using actuarial criteria for MCI. Participants (n=2763; 26% Black) were classified as probable MCI cases if they had two observed test scores within the same cognitive domain (memory, reasoning, speed) that were >1SD below a demographically-adjusted expected score (based on the regression weights of a "robust" normal control group). Each score was adjusted using two approaches: Method 1 adjusted for age, sex, and education; Method 2 also adjusted for race. The estimated prevalence of MCI was 33.5% (n=925) in Method 1 and 32.1% (n=887) in Method 2. Adjusting for race reduced the proportion of Black participants classified as probable MCI from 42.3% to 34.9%. Future work will examine whether adjustment for social determinants of health (e.g., education quality, neighborhood/healthcare access) might further improve the utility of this classification method in diverse samples.

LONG-TERM BENEFITS OF REASONING TRAINING: A PREDICTED DIFFERENCE APPROACH

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In 928 ACTIVE participants, we investigated predictors of exceptional reasoning performance ten years post-enrollment. Participants had been randomized into a training arm (memory, reasoning, or speed of processing) or a no-contact control group. Each participant received an age- and education adjusted expected normative trajectory on a reasoning composite score, derived from the untrained control group. They were then classified as within- (n=467, 50%), above- (n=285, 31%), or below-normative expectation (n=176, 19%) ten years post-training. At a p<.001 significance criterion, reasoning training (b=, 0.632, OR = 1.88) and younger age (b=-0.048/year, OR = 1.05) were associated with 10-year above-normative expectations. No other baseline factors considered (other training arms, education, cardiovascular risk, life space, mobility, locus of control, morale, motivation) predicted ten year status, nor did they interact with training arm. Reasoning training appears to have produced long term alterations in reasoning trajectory for many participants.

DEPRESSIVE SYMPTOMS: HAMPERING MAINTENANCE OF COGNITIVE TRAINING GAINS

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