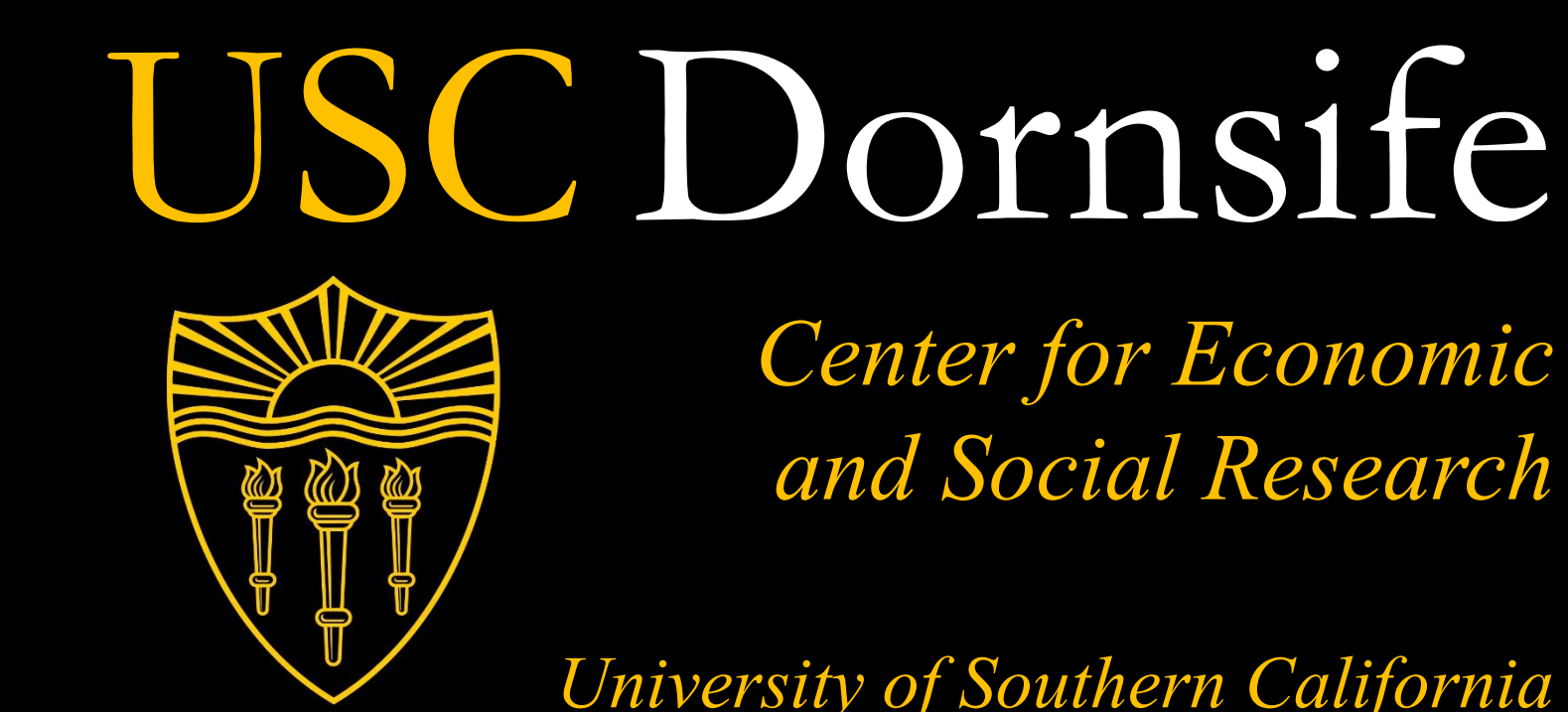


WITHIN AND BETWEEN PAIR DIFFERENCES INDICATE GENETIC EFFECTS OF SES INDICATORS ON LONGITUDINAL CHANGE IN PHYSICAL AGING

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CONCLUSIONS

- Results suggest shared genetic factors explain the association between education and change in physical functioning in early aging (before age 75).
- Education may impact ability to access and leverage health information⁶
- Thus, genes that impact educational achievement may also influence health behaviors and physical aging.

INTRODUCTION

Socioeconomic status (SES) predicts change in health status over age, even after accounting for measured confounders such as environmental and biological risk factors. The source of SES-health associations continues to be heavily debated. Twin studies offer a method for testing causal hypotheses (Figure 1) by incorporating within and between twin pair differences⁷ in latent growth curve models (LGCM) of physical aging on both level of functioning and rate of change with age.

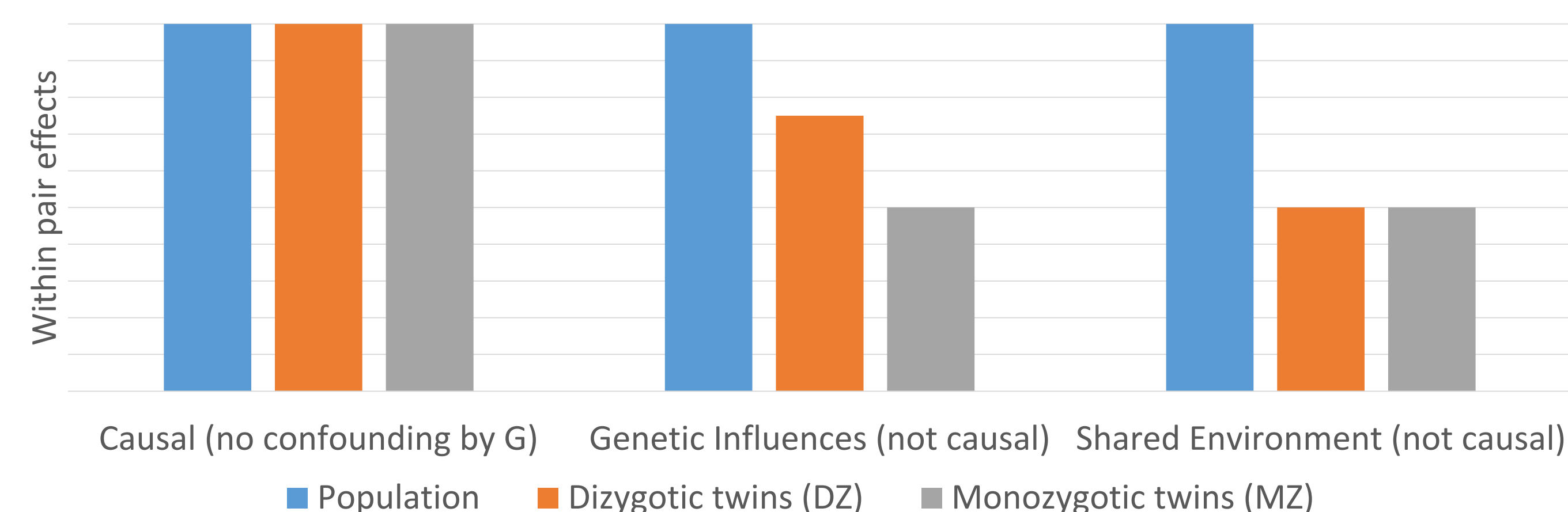


Figure 1. Testing causal models



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METHODS

Participants: twins from 3 longitudinal studies of aging (GENDER, OCTO-Twin, SATSA) from the Swedish Twin Registry⁸ with up to 27 years of follow-up (N = 1695)

- Mean age at intake = 73.6 (SD = 9.3), range = 40 – 93
- 58% female; 71% DZ pairs

Measures:

FAI: Functional Aging Index combines of lung function, grip strength, walking speed, and self-reported sensory functioning (higher scores = worse functioning)⁹

ISCED: International Standard Classification of Education

ISCO: International Standard Classification of Occupation

SEI: Duncan's Socioeconomic Index

FS: Financial Strain measured subjective SES¹⁰

Method: two-slope latent growth curve model with intercept at age 75, within pair difference and between pair mean as covariates to LGCM parameters (Figure 2), corrected for sex and parental SEI.

RESULTS

FS, ISCO, SEI only modified the intercept of LGCM

- MZ (but not DZ) within pair effects were strongly attenuated, indicating genetic confounding

ISCED modified intercept and slope 1 (before age 75)

- MZ (but not DZ) within pair effects were strongly attenuated for both intercept and slope 1, indicating genetic confounding (Figure 3)

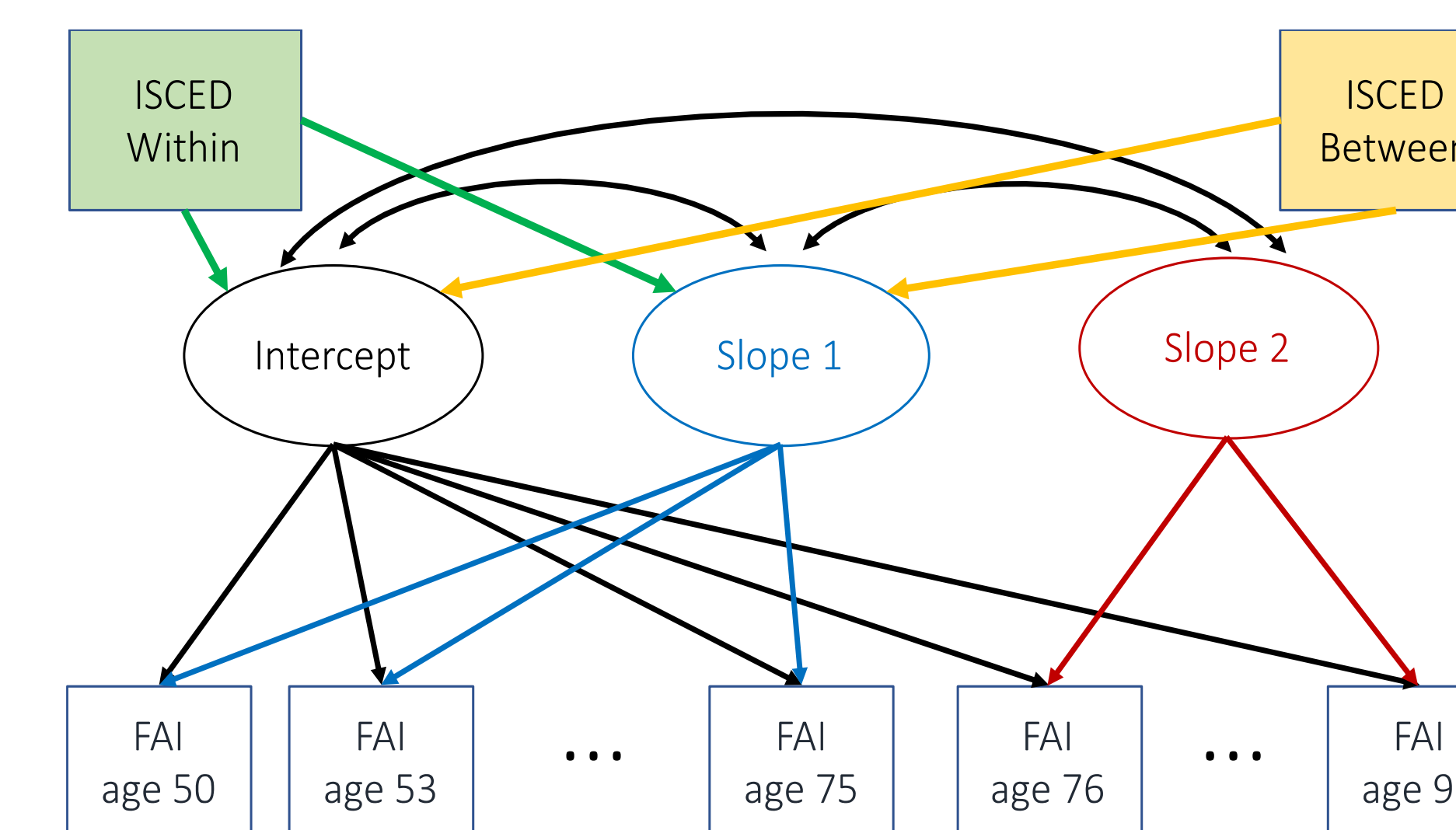


Figure 2. Two-slope latent growth curve model. Pair means (between family effect) and within pair differences (within family effect) included as covariates of intercept and slope 1 (up to age 75)

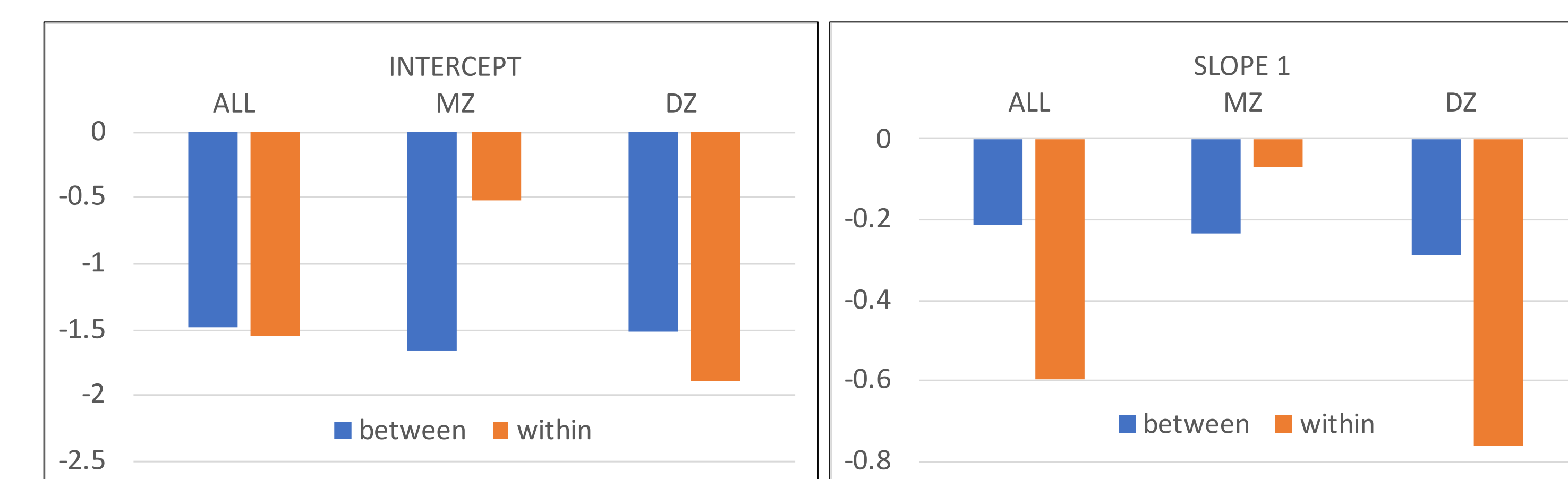
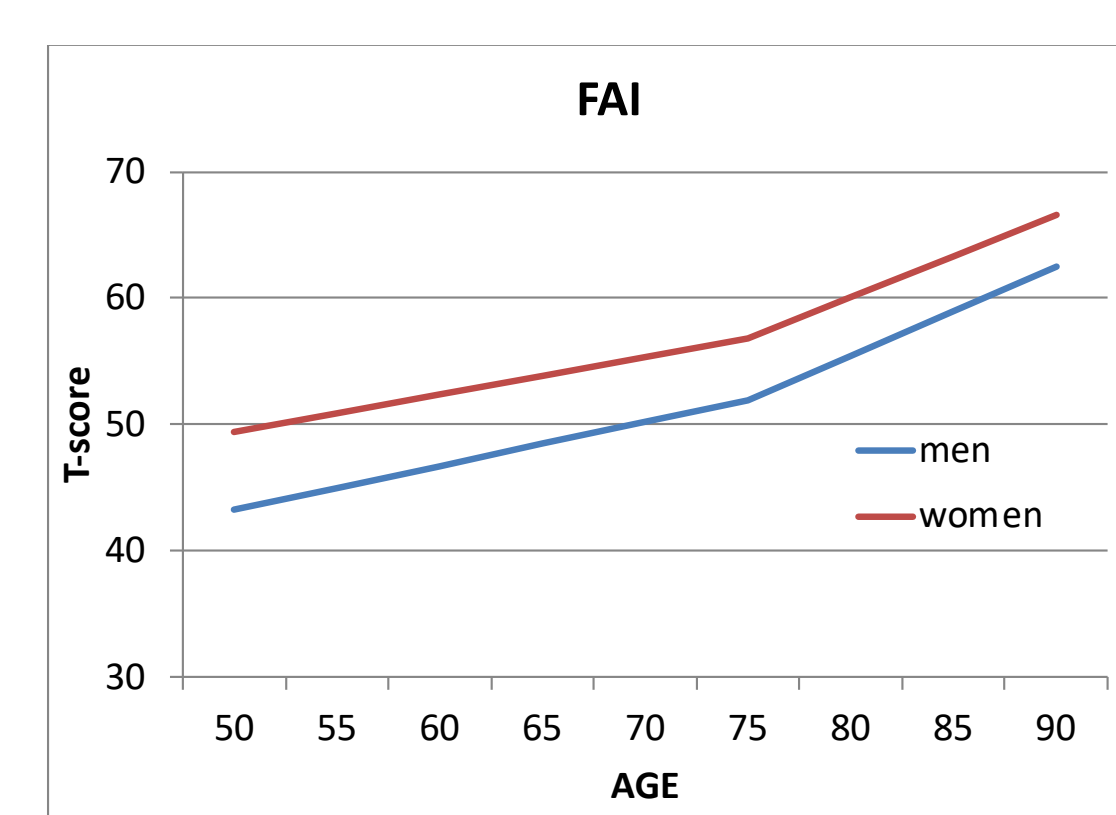


Figure 3. Estimates of Within and Between effects on Intercept (at age 75) and slope 1 (up to age 75) of the LGCM of FAI. FAI was not associated with slope 2. Model corrected for sex and parental SEI. Attenuation of within MZ pair effects indicates genetic confounding.

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Longitudinal changes in mean FAI

Best fitting LGCM is two slope model with intercept at age 75; sex differences in intercept. Higher scores indicate worse performance.

