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## Biometric analysis of within-person Flynn Effects

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### ABSTRACT:

The systematic rise in cognitive ability scores across generations, known as the Flynn Effect, is typically documented as a between-subjects phenomenon, either as gains in mean scores across cohorts (cohort effects) or sudden decreases in mean score upon test re-standardization (test version effects). The FE may also operate within-individuals, boosting cognitive growth above what would be expected from age-related cognitive development. However, only one previous study has examined within-person FEs (O’Keefe & Rodgers, 2017), and no study has analyzed the Flynn Effect using a genetically-informed approach. In the present study, we leveraged the unique data structure of the Louisville Twin Study (longitudinal IQ data on twins; 40 years of data collection; three WISC versions) to investigate the FE across ages 7-15 years (N = 1198). Multilevel latent growth curve analyses revealed clear evidence of cohort and test version effects between twin pairs, and also FEs on within-person cognitive growth across age. Individual-level sensitivity to the FE on VIQ was highly heritable (A = .92), whereas sensitivity to the FE on PIQ was predominantly moderated by shared genetic factors (C = .78). Sensitivity to the FE on FSIQ showed substantial additive genetic and shared environmental components (A = .58, C = .29). Implications for understandings of the FE, as well as gene-environment interplay on cognitive development, are discussed.

O’Keefe, P. & Rodgers, J.L. (2017). Double decomposition of level-1 variables in multilevel models: An analysis of the Flynn Effect in the NSLY data. *Multivariate Behavioral Research*.

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