

## Paper Summary

# Using Experimental Variation to Examine the Co-Development of Cognitive and Social-emotional Skills in Early Childhood

In Event: *Heterogeneity in Educational Intervention Fadeout and Long-run Mechanisms: Three Analyses of Block-Level Impact Patterns*

**Fri, April 10, 9:45 to 11:15am PDT (9:45 to 11:15am PDT), Westin Bonaventure, Floor: Lobby Level, Beaudry B**

### Abstract

#### Objectives and Theoretical Framework

Questions about the co-development of constructs, skill generalization, and transfer have long motivated psychological and educational research. A multitude of theories have detailed the ways in which social-emotional and cognitive skills may co-develop in early childhood (Miles & Stipek, 2006; Ursache et al., 2012). Despite a proliferation of theory, the field has largely relied on correlational methods and struggled to establish causal effects.

The current study employed a novel method to examine the co-development of child skills, utilizing longitudinal experimental intervention data. Specifically, we examined whether larger intervention-induced improvements in cognitive skills resulted in larger subsequent improvements in social-emotional skills, and vice versa.

#### Methods

We used data from the Head Start Impact Study (HSIS; Puma et al., 2012), in which 4,667 3- and 4-year olds were randomly assigned to receive one year of Head Start preschool services. Critical to our study design, child-level randomization occurred within centers nested within 84 “grantees.” On average, each grantee contained 32 treatment children and 22 control children. To examine whether exogenously generated changes to functioning in one skill domain predicted larger effects in the opposite skill domain, we computed grantee-level estimates of Head Start’s impact on social-emotional and cognitive composites composed of measures assessed consistently at post-test, 1-year follow-up, and 2-year follow-up. We controlled for a robust array of child and family demographic characteristics when computing the grantee-level impacts, including pre-test cognitive and social-emotional composites.

Capitalizing on variation in the effects of Head Start across grantees (Figure 1), we used meta-analytic techniques to test whether grantees that generated larger impacts on social-emotional or cognitive skills at post-test then produced larger impacts on the opposite skill domain at follow-up, controlling for post-test impacts in both domains. Given interest in whether traditional cross-lagged modeling using observational datasets yields biased estimates (Hamaker, 2023), we explored these same cross-lagged associations using child-level data from children in the control group.

#### Results

Overall, we found more consistent support for cognitive to social-emotional skill transfer.

larger impacts on cognitive skills consistently predicted larger subsequent impacts on social-emotional skills one and two years later, at a magnitude of about .20 SD (Table 2 and Figure 2). We found weaker support for social-emotional-to-cognitive-skill transfer. Across all models, our estimates were generally imprecise and statistically nonsignificant.

In comparison to the grantee-level estimates, the estimates generated using observational data produced upwardly biased auto-regressive associations among child skills. However, we were surprised to observe that the observational data produced cross-lagged estimates that were similar, if not smaller, than the grantee-level estimates (Table 3 and Figure 3).

Significance

Taken together, this study provides evidence of longitudinal transfer effects among cognitive and social-emotional development in early childhood, with greater support for effects driven by cognitive than by social-emotional impacts. Given the paucity of research capitalizing on exogenous intervention-generated variation in children’s social-emotional and cognitive skills to examine co-development dynamics, our findings, though imprecise, provide a useful starting place for future investigations. Triangulating across methodological techniques may be a fruitful path forward.

Authors

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