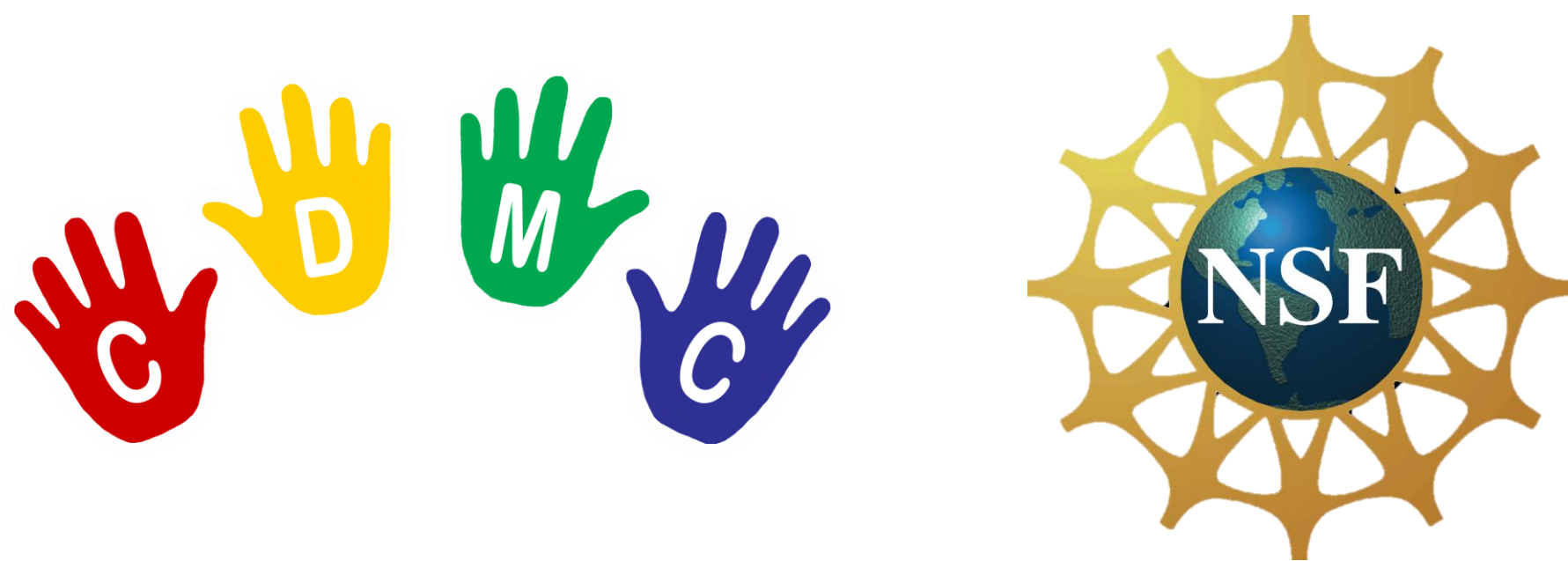


# Same-Sex Intelligent Media Characters Increase Young Children's Early Math Skills



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## INTRO

- Early math skills are predictive of children's academic achievement.<sup>1</sup> Preschoolers use gender schemas to organize, process, and interpret information.<sup>2</sup> Children who engaged in more parasocial interactions about math with an intelligent character demonstrated better math performance.<sup>3</sup>

## METHODS

- Random assignment experiment
- Collected data on latency, parasocial interactions, and transfer task from 90 4-year-olds
- Children matched or did not match the sex of the intelligent character featured in a virtual math game

## RESULTS

Math talk significantly latency to correctly answer math problems in an OLS regression ( $b = -.81 (.11), p < .001$ ). When math talk was interacted with child-character sex match this interaction predicted latency ( $b = -.51 (.18), p < .001$ ) and math talk alone predicted latency ( $b = .57 (.14), p < .001$ ).

The interaction of child-character sex match and math talk predicted the number of transfer task problems children answered correctly in a Poisson regression ( $IRR = 1.02, p < .001$ ).

## DISCUSSION

Activation of gender schemas when interacting with a same-sex character may have increased cognitive processing speed in the game. Social meaningfulness may have facilitated stronger mental representation of the add-1 rule in the transfer task. Engaging in social interactions with intelligent characters can promote learning in the 21<sup>st</sup> century.

Children who talk more about math with a same-sex intelligent character, compared to an opposite-sex character demonstrate better math performance *virtually and with physical objects.*

Figure 1. Latency by math talk \* child-character sex match interaction coefficient

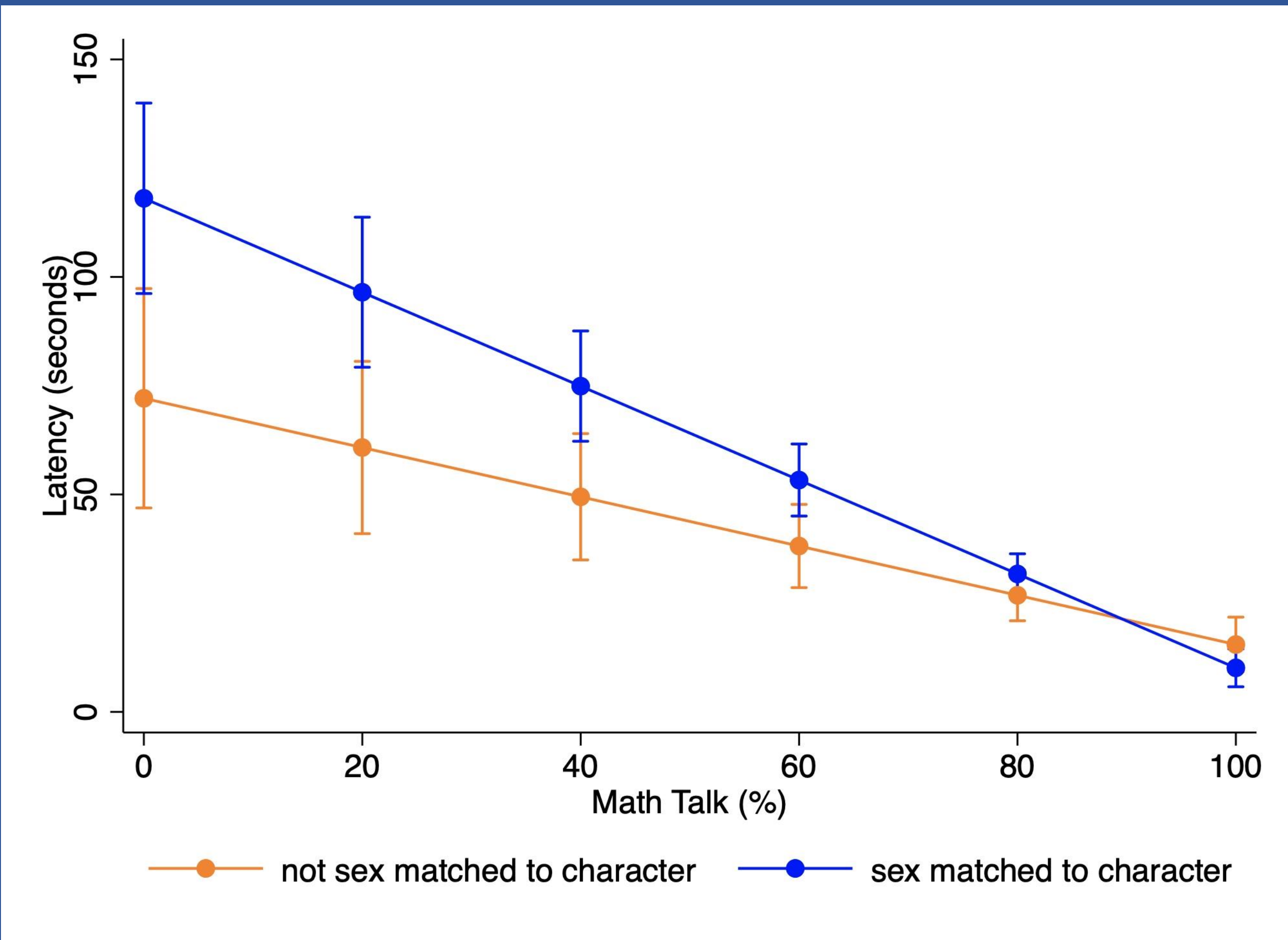
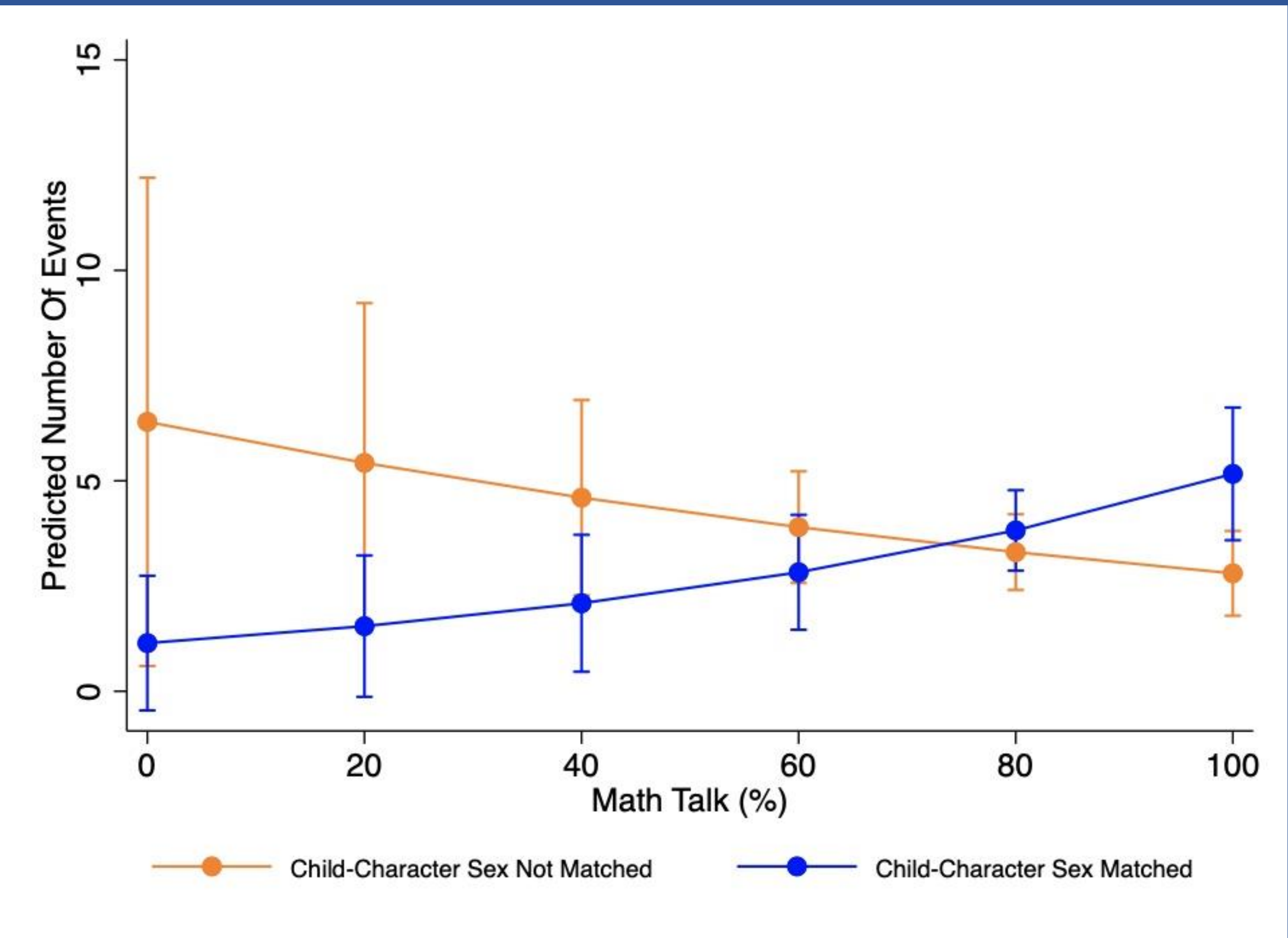


Figure 2. Number of transfer task problems correct by math talk \* child-character sex match interaction coefficient



Sample: 49 girls, 41 boys  
 $M_{\text{years}} = 4.42 (.33)$



Children engaged in similar amounts of math talk with sex-matched and opposite-sex intelligent characters,  $t(88) = .16, p = ns; M_{\text{SexMatch}} = 85.25, SD = 17.86; M_{\text{OppositeSex}} = 85.86, SD = 18.73$ .

**References:** 1) Duncan et al., 2007; 2) Martin & Halverson, 1981; 3) Calvert et al., 2018

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