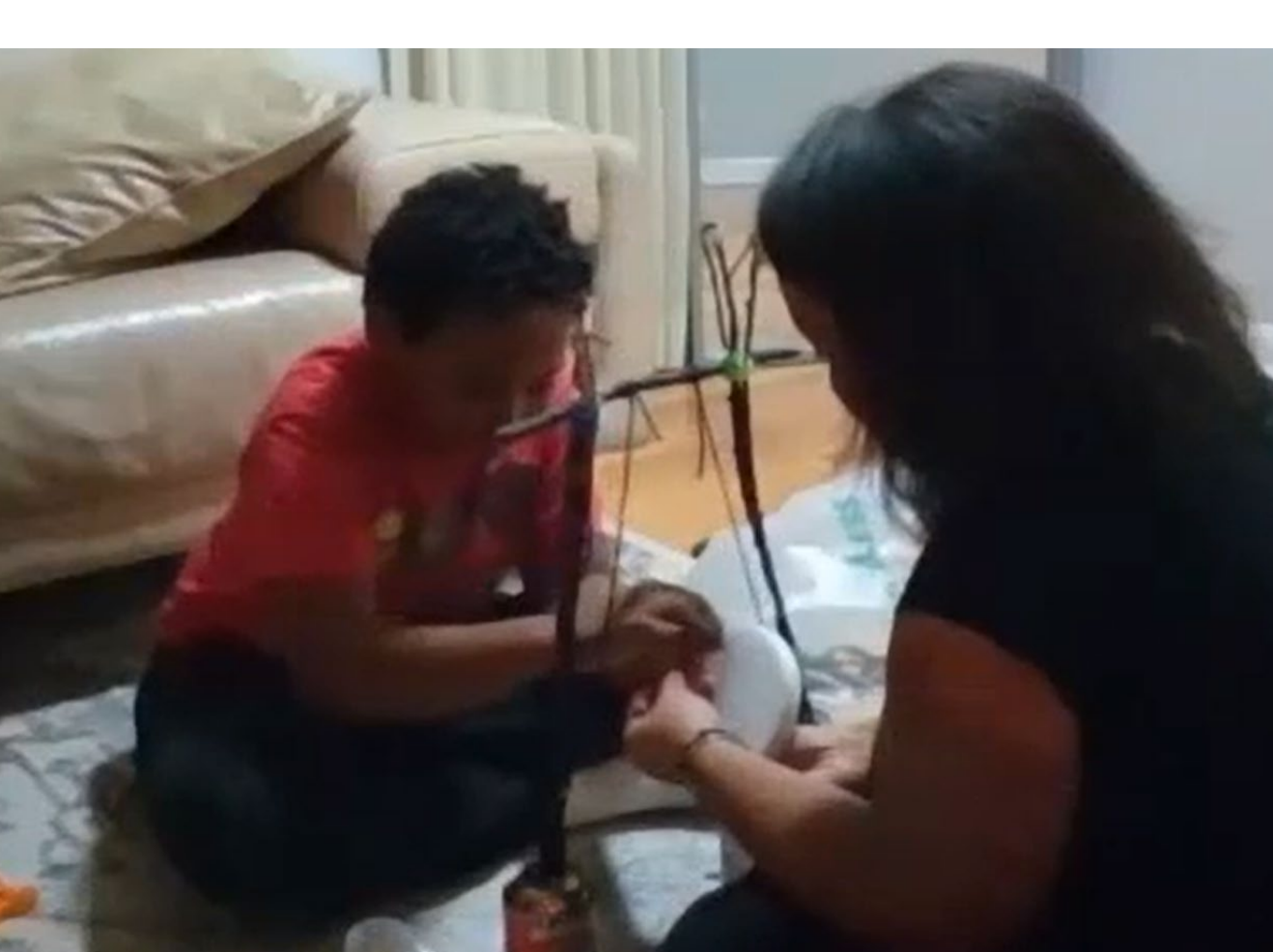




Moment-to-Moment Associations Between Parental Autonomy Support and Children's STEM Engagement During Tinkering

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INTRODUCTION

Given the important role of autonomy support in children's motivation and learning, this study asked whether parents' use of autonomy supportive language (vs. controlling language) was associated with children's engagement in science, technology, engineering and mathematics (STEM) in a bi-directional manner

METHODS

- **STEM Activity:** building a playground ride for a toy friend
- **Participants:** 61 Parent-child dyads were observed at home via Zoom
- Children 4-10- years- old ($M = 8.10$)
- 59% White, 15% African-American, 8.2% Asian, 6.6% Latine and 9.8% Mixed
- Parental education, $M = 18$ yrs., $SD = 2.60$
- **Coding** of parents' management language was adapted from Bindman et al., (2013)

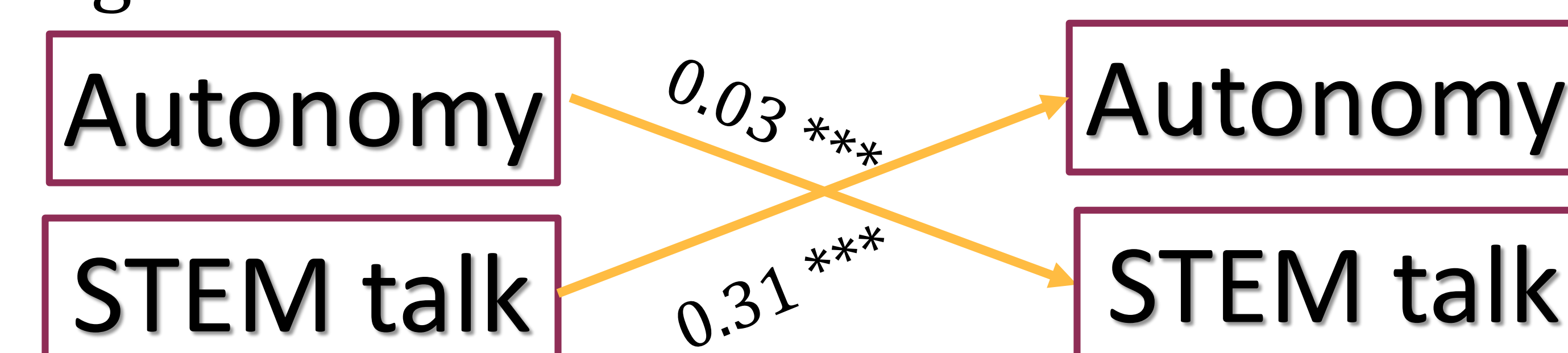
Parents' Management Language			
	Low	Medium	High
Autonomy Support	Options	Single Suggestion	Transfer Statement
Control	Ambiguous Suggestion	Qualified direction	Explicit Direction

Children's Engagement			
STEM Talk	Planning Problem solving	Functions Setting goals	Associations Explanations Science

RESULTS

Bi-directional time-series analysis across 1-min intervals using Hierarchical Linear Models

Figure 1



Deviance test, Model 1, $X^2(5) = 45.45, p < .001$
 Deviance test, Model 2, $X^2(4) = 40.00, p < .001$

- As shown in Figure 1, parental autonomy support was positively associated to children's subsequent STEM engagement
- Children's STEM engagement was associated to subsequent parental autonomy support
- Parents' controlling language was not associated to children's STEM talk $B_{10} = -0.01, p = .10$

CONCLUSIONS

- Parental autonomy support may elicit children's STEM engagement during an informal learning activity
- Children's STEM engagement can influence parental autonomy support in a reciprocal manner
- The study highlights the importance of designing informal educational activities in ways that facilitate autonomy support and engagement in STEM