papaja_practice_project

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Abstract

From a young age, children are keen explorers of the outside world: They systematically explore surprising findings and test hypotheses during play. However, less is known about whether toddlers are similarly driven to explore and learn about the self. The present study adapts classic exploratory play paradigms to ask whether toddlers are intrinsically motivated to explore their own competence. In an ongoing experiment, 2-year-old toddlers (N = 9) play Montessori practical life games along with their parents; these toys were verified to be developmentally appropriate and equally appealing to toddlers in an independent norming experiment (N = 14 2-year-olds). Toys are presented in pairs. Within each pair, parents guide the toddler's hands while playing with one toy, which provides ambiguous information about the toddler's competence, and take turns playing with the other toy independently, which provides unambiguous information. At the end of each pair, toddlers are asked to choose one toy to play with independently. Preliminary results show that toddlers chose the ambiguous toy in 70% of trials, suggesting that toddlers are intrinsically curious to learn about their own competence.

Keywords: cognitive development, curiosity, intrinsic motivation, competence, exploration
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The authors made the following contributions. Bella Fascendini: Conceptualization, Data curation, Data analysis, Writing - Original Draft Preparation, Writing - Review & Editing; Bonan Zhao: Computational Modeling, Data analysis, Writing - Review & Editing; Natalia Vélez: Writing - Review & Editing, Supervision.

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Introduction

Methods

An a priori power analysis was conducted using G*Power to determine the sample size needed to detect a medium effect size (f = 0.25) with 80% power. The analysis indicated that a sample size of 48 participants would be needed.

Participants

Thus far, 11 two-year-old toddlers have been recruited from the Central New Jersey area. The experimental design is within-subject; all toddlers participated in both conditions. The order of the conditions is counterbalanced across all participants. An additional 3 of trials were excluded due to parental interference (N = 3).

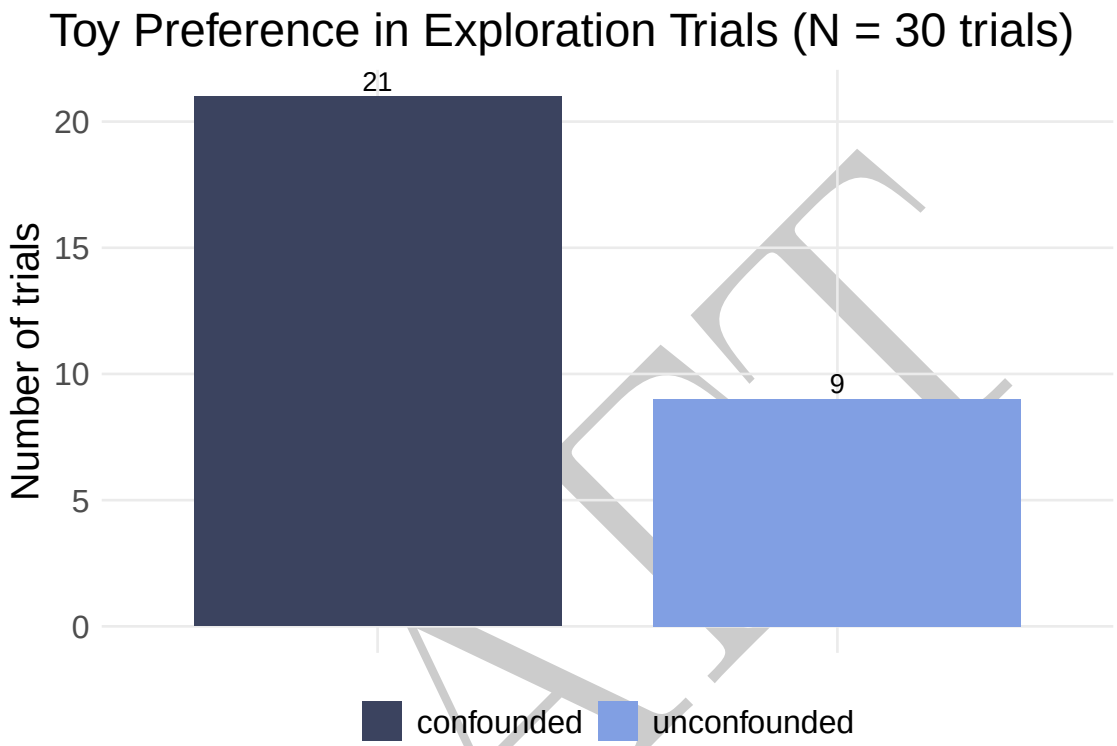
Material

The stimuli used in this experiment consist of six Montessori practical life toys that were verified to be developmentally appropriate and equally appealing to toddlers in an independent norming experiment (N = 24 2-year-olds). The six toys include one extruder loaded with play-doh; five clothes pins and a wooden stick with painted color blocks; two clear 3 x 3 inches containers, one toy spoon, and seven colored pompoms; one toy lock and a key; one busy board with four toy screws; one stuffed animal toy with a zipper.

Procedure

Before the experiment begins, the caregiver is asked to watch a series of instructional videos via a keynote presentation on a laptop that demonstrates how the tasks should be completed using the 6 Montessori toys provided. In the meantime, the experimenter and the toddler engage in a reciprocal game by passing a small ball back and forth in a long cylinder-shaped tube (adapted from (Bridgers, Altman, & Gweon, 2017). This game serves as a warm-up and is designed to help toddlers build rapport with the experimenter and become familiar with receiving instructions from the experimenter, such as taking turns to play (Cortes Barragan & Dweck, 2014). After approximately 5 minutes of playing, the experimenter asks the caregiver to join the toddler and the experimenter at the table, and the experiment begins. Toys are presented in pairs to participants. The three pairs of toys are play-doh - pins, pompoms - lock, and screws - zipper.

Data analysis



Results

Results show that toddlers chose the ambiguous toy in 70% of trials, suggesting that toddlers are intrinsically curious to learn about their own competence.

Discussion

Data collection for the full sample is still ongoing so I will add content to this section when I've analyzed the full dataset.

References

Bridgers, S., Altman, S., & Gweon, H. (2017). How can I help? 24- to 48-month-olds provide help specific to the cause of others' failed actions. *Proceedings of the National Academy of Sciences*, *39*.

Cortes Barragan, R., & Dweck, C. S. (2014). Rethinking natural altruism: Simple reciprocal interactions trigger children's benevolence. *Proc. Natl. Acad. Sci. U. S. A.*, *111*(48), 17071–17074.