# Do preschoolers engage in rational non-reconsideration?

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SCAN FOR POSTER

Early Childhood Cognition Lab

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## Introduction

- Models of rational action assume that agents maximize reward and minimize costs. These principles guide children's exploration and their expectations of others. [1-3]
- Yet, children and adults at play also find it rewarding to invent and pursue new goals, even at cost and without extrinsic incentive.[4] Why?
- We propose goals scaffold thinking and learning:
  - We may value our goals not only for their particular content or potential reward associated with achievement but because goals define satisfaction criteria for actions and ideas. [5]
  - By providing constraints on hypothesis generation and planning, adopting a goal can reduce the complexity of planning and decision-making.
- Here we compare children's willingness to pursue chosen goals at cost (*non-reconsideration*) vs. switch to an equally valuable goal with lower action cost (*rational reconsideration* [6]).

**Experiment 1**: Will participants value their chosen goals beyond associated action costs?

**Experiment 2:** Will participants reconsider when their original goal is resolved?

## Participants

- We recruited children from ChildrenHelpingScience.com, Lookit, and social media for a 25 minute Zoom study.
- Adults were recruited over MTurk and completed a Qualtrics survey
- **Exp. 1**, between-subjects:
  - **Children**: n=44 of 60 pre-registered (osf.io/et6gs); **Adults**: n=56
- **Exp. 2**, within-subjects:
  - **Children**: n=21 of 41 preregistered(osf.io/5skga); **Adults**: n=41

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## Methods

Child participants completed 4 Familiarization/Inclusion trials and 4 Test trials.

**Familiarization Trials**

*Which do you want to copy?*

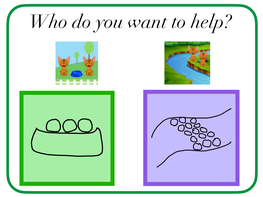
*Which do you want to copy?*

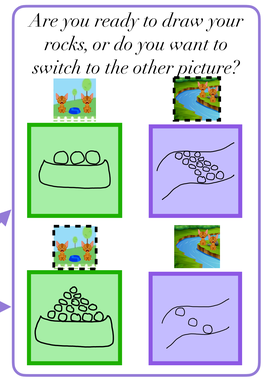
*Which is harder to draw?*

*Which is easier to draw?*

**Test Trials**

**Goals + Costs**



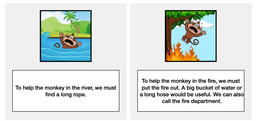

**Goals First**

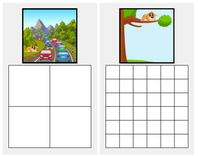

**Goals Devalued**

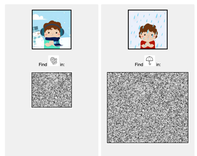
*Hold on, it looks like Sam also chose to help the hungry kittens, and they already drew the cat food! The hungry kittens already got help.*

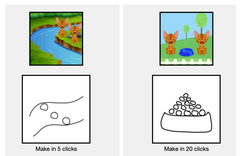
Adult participants completed 3 Familiarization/Attention check trials and 4 Test trials.

Action cost was easy to tell:

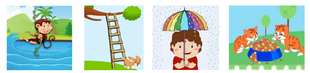




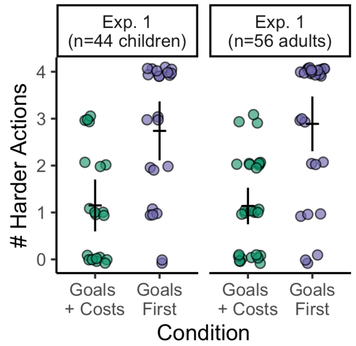



To devalue goals, we showed an image of the goal being resolved (e.g. *it looks like someone already helped …!*):



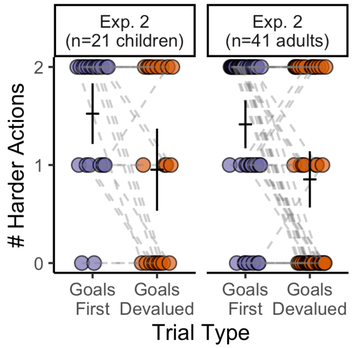
**References:** (1) Mill, 1863; Bentham, 1879 (2) Kidd et al. 2013; Leonard et al 2017, 2019; Lucca et al. 2019; (3) Gergely & Csibra 2003; Jara-Ettinger et al. 2017; Liu et al. 2017; (4) Chu & Schulz. 2020 *CogSci*; Diggs-Galligan, Chu, Tenenbaum, & Schulz, 2021 *CogSci*; Hart et al 2022; (5) Chu & Schulz, 2020; (6) Bratman 1987; Holton 2004

## Results




**Experiment 1**
Participants in the Goals+Costs condition preferred the easier action, but those in the Goals First condition preferred to maintain their initial goal and complete the harder action.

Error bars show 95% CIs around condition means.




**Experiment 2**
In a within-subjects contrast, participants continue to persist with original goals in the Goals First trials but not in the Goals Devalued trials.

## Conclusions

- Young children, like adults, rationally consider action costs when adopting a goal. After the adoption of a goal, they resist switching to a less costly goal.
  - Yet, participants readily switch goals when their initial goal is resolved.
- Open question: what costs and/or rewards can we attribute to goals, independent of the associated plans?
  - We propose goals hold value in their ability to scaffold plans and thoughts, independent of their content or the probability of achievement.

**Future Directions**

- We plan to replicate this experiment with less morally/affectively-laden goals.
- Resource Rationality: *How* does pre-committing to a goal reduce the cost of planning? What other factors impact the trade-off between thought & action?
  - Aim: Disentangle cognitive utility (constraints on planning) from action utility.