

# Foldscope Origami Microscopes: Effect of a Hypothesis-Testing Intervention on Children's Learning and STEM Interest

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## Background

- Gender gap in STEM persists, although there has been progress in many domains (Liben & Coyle, 2014)
- Some STEM domains that were historically male-dominated are now female-dominated (Ericson, 2014)
- Rural children are less likely to have early science experiences & less likely to aspire to scientific careers than non-rural children (Farrigan, 2018)
- Rural parents tend to have more gender-traditional ideas – rural girls may face double obstacles to science experiences (Johnson et al., 2005)

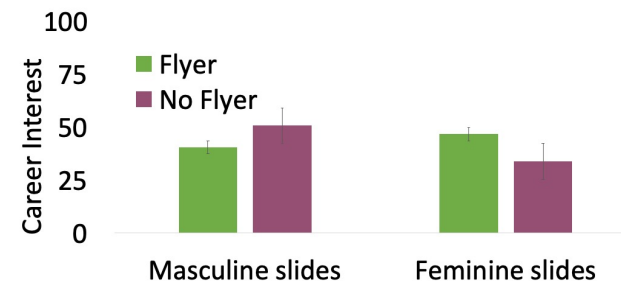
## Method

- $N = 120$  children attending local county fair (VA) or children's day (VA). M age = 8.3 y/o; 55% female
- Matching task between macroscopic items in jars & their microscopic samples on Foldscope slides.
- Random assignment to samples that were (a) feminine-appearing or (b) masculine-appearing.
- After task, children were queried about interest in foldscopes & rural science jobs.
- Random assignment to (a) receive additional information about rural science jobs (flyer) or (b) no additional information.

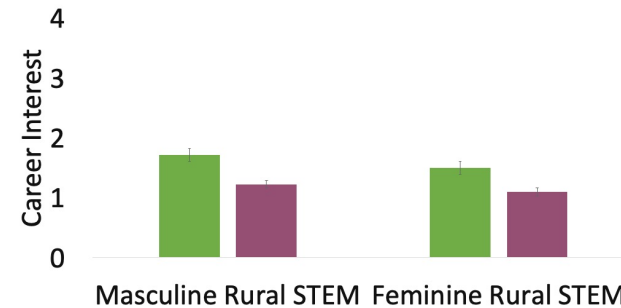


## Results

SS who matched feminine slides & received information about rural STEM jobs self-reported more traditionally feminine career interests than those who matched M slides,  $F(1,83)=4.07, p=.047$



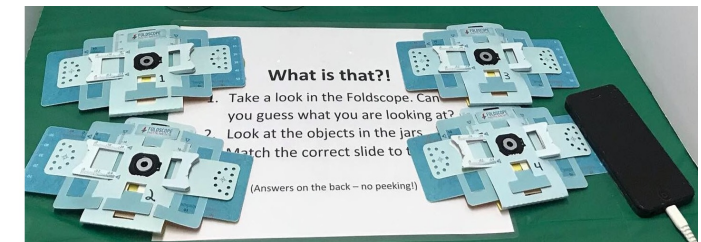
SS who received additional information about rural STEM jobs reported more interest in those jobs than children who received no additional info,  $F(1,100)=8.47$  (M) &  $4.80$  (F),  $p=.004$  &  $.031$



Both boys & girls scored higher matching feminine samples/slides than masculine samples/slides  $F(1,109)=4.41, p=.038$

## Research Question

- Is there a way to present science to rural kids, particularly girls, in a way that would make them excited about science and consider jobs that may keep them in their community?



## Preliminary Conclusions

- Hands-on STEM activities & concrete information about science job qualifications may increase children's interest in STEM careers, including rural STEM jobs
- Further analysis is needed to disentangle the finding that all children, regardless of gender, were better able to match feminine-appearing than masculine-appearing slides and samples.

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