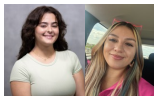
Is infants' manipulation complexity influenced by object affordances?



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BACKGROUND/METHODS:

- Prior literature suggests patterns in how infants use their hands to manipulate objects.
- Infants first begin to use more than one hand, then start to differentiate the roles of the hands, separate one digit from the rest of the hand, and finally can manage multiple objects.
- This **maturational account** suggests that infants will show increasingly complex patterns of manipulation, and in the same order, given any object over time.
- By comparison, an **affordances account** suggests manipulation complexity is variable in order because object properties vary.
- In this study, we examined if manipulation skills can be ranked in 48 infants using a longitudinal design from 9-14 months.
- We compared skill rankings using four contrasting questions for eight objects that had the same end goal but different properties.

We observed most objects showed the same difficulty order for infants' manipulation skills

Toy	Order of Difficulty			
	Q 1	Q2	Q4	Q3
	Q 1	Q2	Q4	Q3
	Q 1	Q2	Q4	Q3
	Q 1	Q2	Q4	Q3
	Q 1	Q2	Q4	Q3
	Q 1	Q2	Q4	Q3
	Q 1	Q2	Q3	Q4
	Q 1	Q3	Q2	Q4

Easy — Somewhat Easy — Somewhat Difficult — Difficult

Q1	Is there more than one hand?
Q2	Are the hands doing different things?
Q3	Is there independent finger movement?
Q4	Is there more than one object?

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DATA ANALYSIS:

- Guttman scale analyses were conducted per object over time to determine the difficulty order of skills.
- Levels of manipulation complexity are cumulative such that the infant can do a category at age *N* only if they also perform all lower ranked categories at age <*N*.

RESULTS:

- Coefficient of Reproducibility (*CR*) ranged from .79 to .98, indicating object skills vary in fit of a cumulative scale for manipulation complexity.
- Skill rankings were mostly similar across objects/time.

DISCUSSION:

- In all objects, using more than one hand was the easiest ranked manipulation skill.
- Independent finger movement was the most difficult skill in 6 of 8 objects.
- Preliminary analyses support the **maturation hypothesis.**

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