Where you're going trumps what you're doing: Infants prefer paths over manners in dynamic displays

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INTRODUCTION

• To learn relational terms such as verbs and prepositions, infants must parse dynamic events into components (e.g., *path*, *manner*, *source*, *goal*, *figure*, and *ground*).

• In this study, we focus on *paths*, or the trajectory of a figure relative to an external ground object, and *manners*, or the way a figure moves relative to an internal axis.

• Although *paths* and *manners* are present in the verbs of all languages, some languages tend to package *manners* in verbs (English; e.g., walk, run) while other languages tend to package *paths* in verbs (Spanish; e.g., ascender, salir).

• Research suggests that young children raised in both English- and Spanish-speaking countries discriminate and categorize *paths* (e.g., over) before *manners* (e.g., twist; Pruden, 2006; Pulverman & Golinkoff, 2004).

•*Paths* may be conceptually central to event perception or they might simply be more perceptually salient than *manners*.

• To determine if salience drives *path* primacy, the current study attempts to increase *manner* salience. If infants prefer *manner* when *manner* salience is increased, infant preference is driven by salience. Alternatively, if infants prefer *path* regardless of *manner* salience, *path* is likely a central component of event perception.

RESEARCH QUESTIONS

• Do infants prefer to look toward familiar paths even when the manner of action is highlighted?

• When manner salience is no longer highlighted, does infant preference change?

METHOD

Participants

• 20 English-reared 10- to 12-month-olds (M= 11.06 mo., SD= .87 mo.)

• 18 English-reared 13- to 15-month-olds (M= 14.74 mo., SD= .78 mo.)

• Balanced for gender. Participants were randomly assigned to condition in a between subjects design.

Stimuli

• The current study used the same animated starfish, Starry, as Pruden (2006) and Pulverman and Golinkoff (2004).

• To heighten manner salience, Starry's arms were stretched to half of the original width and twice the original length. Stretched Starry's total circumference was then matched to Original Starry.

• Thus, Original Starry and Stretch Starry traveled along the identical *path* whereas the movement of each *manner* was greater for Stretch Starry.

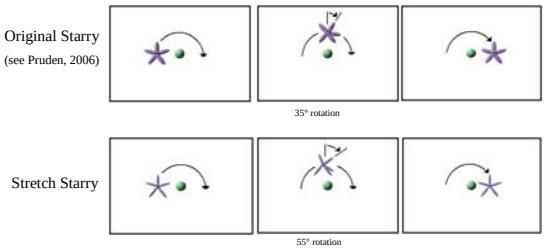

Figure 1. Original Starry (see Pruden, 2006) and Stretch Starry visual stimuli.

Paradigm and Procedure

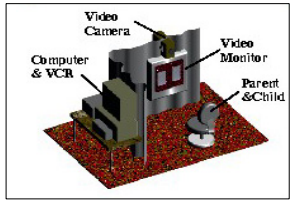

Figure 2. The Preferential Looking Paradigm (see Hirsh-Pasek & Golinkoff, 1996).

• Familiarization Trials (4 trials):

  • Stretch Starry moves around a ball in the center of the screen with a particular *manner* (e.g., twist) in a particular *path* (e.g., over)

  • Importantly, because infants are familiarized (not habituated) to the stimuli, we predict that infants will prefer familiar stimuli at test.

• Test Trials (2 trials):

  • Test trials showed scenes on a split-screen (see Table 1)

  • On one side, Starry moved around the ball in the Old Path (over) with a Novel Manner (spin). On the other side of the screen, Starry moved around the ball in a Novel Path (under) with the Old Manner (twist)

  • One test trial used Stretch Starry and one test trial used Regular Starry

  • Order of test trials was counterbalanced

	Visual Stimuli		Duration
Familiarization (4 trials)	Twist Over		12 sec. for each trial
Test Trial 1 *Stretch Starry*	Twist Under ***Old Manner***, *Novel Path*	Spin Over *Novel Manner*, ***Old Path***	12 sec.
Test Trial 2 *Regular Starry*	Twist Under ***Old Manner***, *Novel Path*	Spin Over *Novel Manner*, ***Old Path***	12 sec.

Table 1. Video Sequence

Coding

• Each child's head and shoulders were videotaped for offline coding of gaze duration.

• Gaze direction was also coded during phases where the child saw a split-screen.

• Significant results differed from the chance looking rate of 50% to either side.

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RESULTS

• Do infants prefer to look toward familiar paths even when the manner of action is highlighted?

  • 10- to 12-month-old infants looked significantly longer toward the familiar path than the familiar manner.

  • 16 of 20 younger infants preferred to look at the familiar path (p = .01)

  • 13- to 15-month-old infants did not significantly look to either side of the screen, but a trend indicates familiar manner preference.

• When manner salience is no longer highlighted, does infant preference change?

  • Both younger and older infants looked similarly in both the Stretch Starry and Regular Starry test trials.

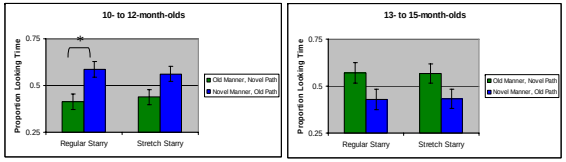

Figure 3. Proportion of looking time to *old manner-novel path* and *old path-novel manner* by 10- to 12- and 13-15-month-olds.

DISCUSSION

• Discrimination of paths and manners provides a foundation for learning verbs in one's native language.

• Young infants attend to the familiar path even when the stimulus parameters are made more salient, suggesting that path may indeed be a central component of events.

• Parallel to previous research (Mandler, 2004; Pruden, 2006) these results suggest that path is among infants' first conceptual primitives.

• The current study also indicates that a shift from path preference toward manner preference occurs between 13 and 15 months of age.

• Further research should investigate this same question with older children to determine if the shift toward manner preference occurs only in manner-biased languages. For example, Maguire et al. (in prep) show that 3-year-old children's preference for manner is determined by their native language.

References

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