

The Salience of Actions over Faces for Young Infants

**Lorraine E. Bahrick, Mariana Vaillant-Molina,
Melissa A. Shuman, Laura C. Batista, Lisa C. Newell,
Irina Castellanos, & Traci S. Williams**

Florida International University, USA

Although faces are salient social stimuli and almost always occur in the context of people engaged in actions, there is little research on infants' perception of faces in the context of dynamic activities. Previously, we (Bahrick, Gogate & Ruiz, 2002) demonstrated that 5-month-old infants were able to discriminate and remember a dynamic activity, but not the face of the individual performing the activity. Following familiarization with a particular woman engaged in a specific activity (e.g., brushing hair, brushing teeth, blowing bubbles), infants showed a preference for a novel activity but not a novel face, and they remembered the action but not the familiar face after a 7-week delay. Further, infants discriminated the faces only in static poses. Prior research has demonstrated exceptional face recognition skills by infants when tested with static displays. Why do 5-month-olds demonstrate such poor face recognition in dynamic activities? We tested an attentional salience explanation for infants' discrimination of actions at the expense of faces. It was hypothesized that the reported failure of face discrimination did not reflect an inability to perceive faces in the context of dynamic events. Rather, it was a result of greater attentional selectivity to the action.

Methods & Results

Stimulus Materials

The events (see Figure 1) consisted of video displays of four different women of different ethnicities (Caucasian, Chinese, Indian, and Hispanic) performing four different repetitive actions: brushing teeth, blowing bubbles, brushing hair, and applying makeup.

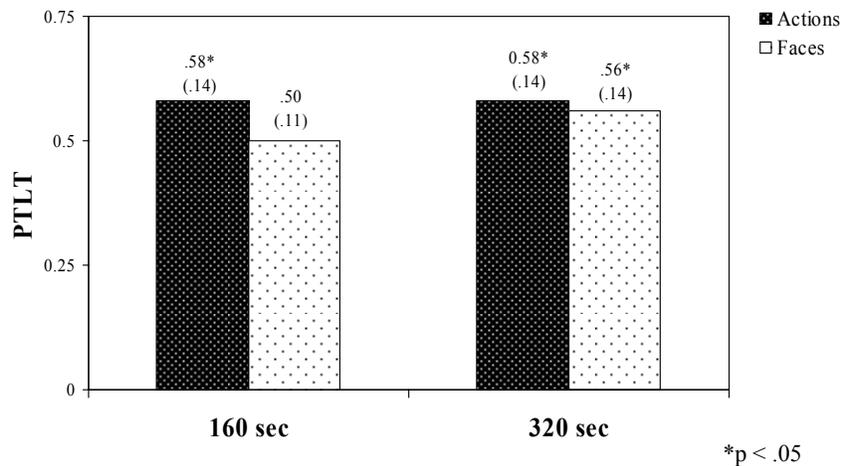


Figure 1. Still images of activities

Experiment 1

Experiment 1 assessed whether, with longer exposure time to the events (320 rather than 160 s), infants' interest in the actions would decrease, facilitating attention to the faces. Twenty-four 5.5-month-olds were familiarized to eight 40-s trials of one of three video displays of a woman performing one of the three repetitive actions. One minute later, infants received a novelty preference test consisting of four 30-s trials, two of a novel face performing the familiar action (face test), and two of the familiar face performing a novel action (action test).

Results (see Figure 2) indicated a significant proportion of total looking time (PTLT) to the novel actions, $t(23) = 2.95, p < .01$, and a significant PTLT to the novel faces, $t(23) = 2.18, p < .05$. These findings demonstrate that when familiarization time was increased twofold, infants discriminated the faces as well as the actions. Thus, infants are able to discriminate faces in the context of actions, but this requires longer exposure time than does discrimination of actions.



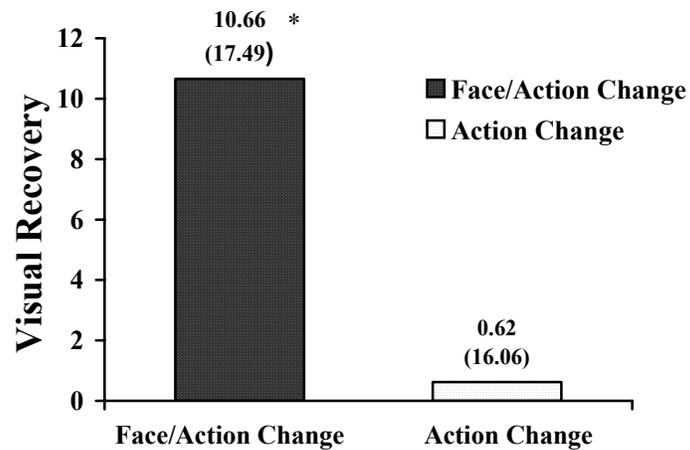
Bahrick, Gogate, & Ruiz (2002)

Experiment 2

In Experiment 2, 24 5.5-month-old infants were habituated (in an infant control procedure) to videos of the same woman performing three different activities. Because the face was invariant across actions, this should recruit attention to the face and allow generalization across actions. Following habituation, infants received a change in face and action (face test) and a change in action only (control test).

Results (see Figure 3) indicate that infants showed visual recovery to the face/action change, $t(23) = 2.99, p < .01$, but not the action change alone, $t(23) = .19, p = .85$, and visual recovery to the face/action change was significantly

greater than to the action change alone, $t(23) = 2.72$, $p < .05$. The results demonstrate that faces are discriminated when they are invariant across different activities.



* $p < .05$, groups are significantly different from each other

Experiment 3

Experiment 3 was a replication of the original study (Bahrick et al., 2002) with 7-month-old infants, investigating whether with age and experience infants are able to detect both actions and faces in the context of dynamic actions. Twenty-four 7-month-olds were familiarized during four 40-s trials to one of three displays of a woman performing a repetitive activity. Face and action test trials were presented one minute after familiarization, identical to the procedure for Experiment 1.

Results (see Figure 4) indicated a significant PTLT to both the novel action, $t(23) = 2.5$, $p < 0.05$, and the novel face, $t(23) = 2.77$, $p < 0.05$.

Discussion

Results indicate that for young infants, actions are more salient than the faces of people engaged in the actions. Three experiments demonstrated that perception of faces in the context of dynamic activities was enhanced when infants received additional exposure time to the events (Experiment 1), when one face was invariant across several activities (Experiment 2), and when infants were older and more experienced (Experiment 3). These findings are consistent with an attentional salience hypothesis. During early infancy actions are highly salient, drawing attention away from the face of the individual who performs the activity. However, with additional exposure time, training with one woman engaging in several activities, or additional experience in the world, the salience of actions over faces diminishes, allowing faces to be discriminated in the context of actions. These findings of infant perception of dynamic face events

contrast with those of static face displays and highlight the importance of limiting research generalizations to the domain under study.

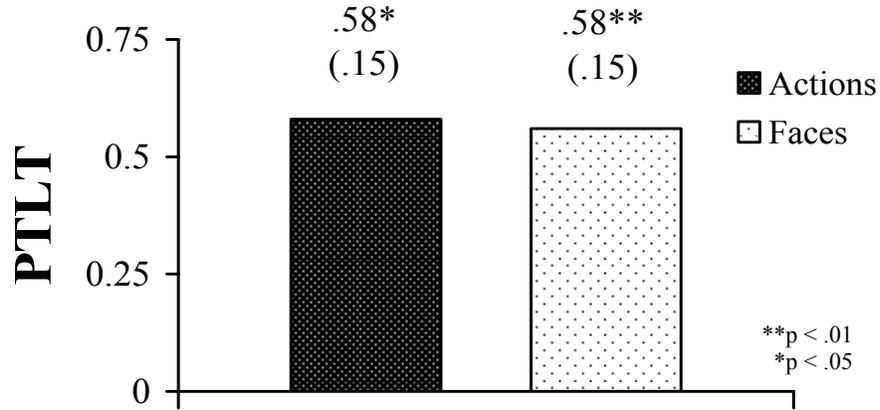


Figure 4. Proportion of total looking time (PTLT) to novel actions and faces

References

Bahrick, L.E., Gogate, L.J., & Ruiz, I. (2002). Attention and memory for faces and actions in infancy: The salience of actions over faces in dynamic events. *Child Development, 73*, 1629-1643.

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