Infants' Anticipation of Others' Action in Edited Film Sequences

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Background

Adults [1] as well as 12-month-old babies [2] perform goal-directed, anticipatory eye movements when observing real and filmed actions performed by others. For anticipating future actions segmenting event into units is critical. Infants in their 1st year of life can segment a continuous action sequence based on sequential predictability alone [3]. The stimuli used in the above mentioned infant studies present actions recorded from one camera angle in a single run (no cut). However it is not known whether infants can still anticipate the goal of the perceived action, when the action is recorded from different camera angles and edited together as presented in popular media.

Method

12-month-old infants (n=24), 18-month-old infants (24) and adults (n=24) were shown 16 film clips depicting simple actions in one long single shot (b) or as segmented into sub actions through multiple film shots(a1/a2). Objects were moved by an agent (a/b) or move by themselves(c/d). All film clips end with a long single shot pauses when the last object in the middle of its trajectory and this freeze frame lasts for 2000ms. Half of the participants saw only freeze frames. Eye movements were recorded with Tobii TX300. Data were included in the analysis if subjects fixated the Starting Point AOI after the object had moved for 200 ms. Total fixation duration in the Goal AOI 200 ms before (only for single shot conditions) or up to 2000 ms after the action is paused were compared within the conditions.

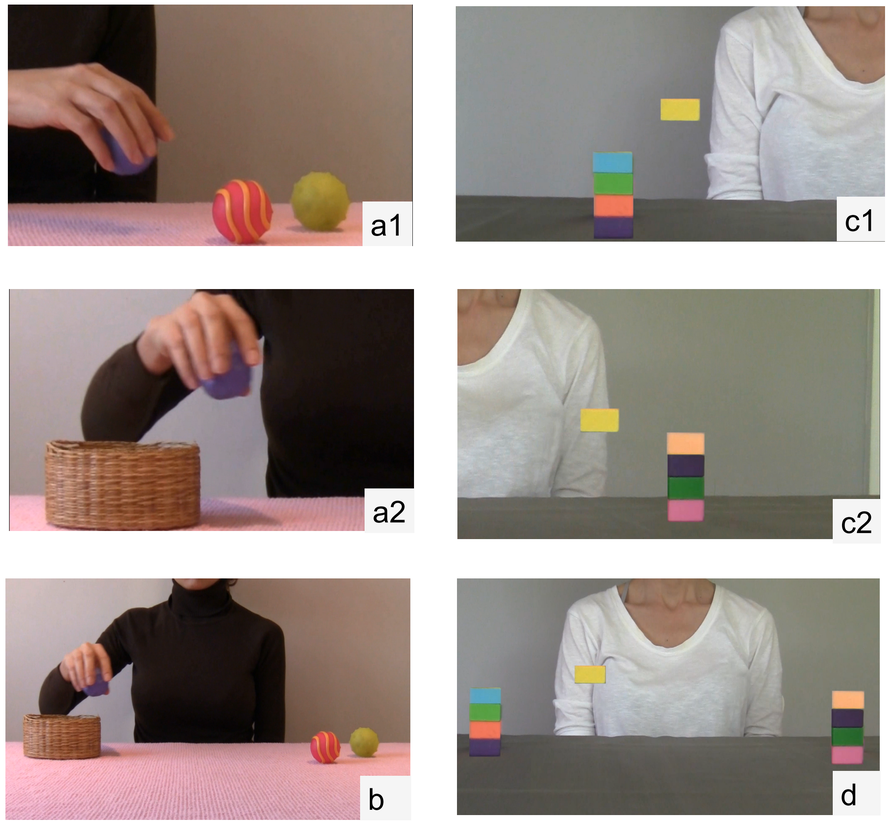


Figure 1: Sample pictures of stimulus videos for 4 conditions. (a) Multiple_Agent, (b) Single_Agent, (c) Multiple_Ghost, (d) Single_Ghost

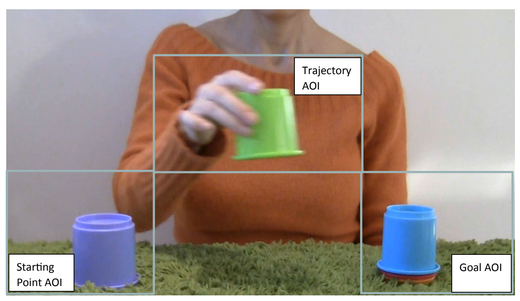
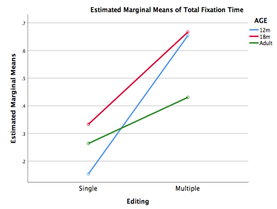
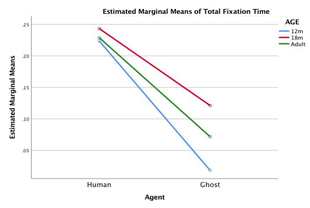


Figure 2: Area of Interests for one of the video sets

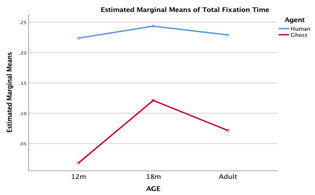
Results



Edit Type*Action Type
Multiple Agent vs Single Agent F(1)=6.328 p=.014
Multiple Ghost vs Single Ghost F(1)=15.065 p=.000



Action Type* Edit Type
Single Agent vs Single Ghost F(1)=6.327 p=.018
Multiple Agent vs Multiple Ghost not significant p=.385



Age*Edit Type
No significance between AGEs

Age*Action Type
Agent/Ghost is not significant for Multiple
Agent/Ghost is significant for Single : F(1)=6.327 p=.018

Conclusions

1. Prediction success was significantly different between editing types. For babies it was easier to predict an action when it was presented in multiple close-up shots.
2. All age groups were better when the action was performed by a human agent.

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References

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