

INTRODUCTION

Joint attention (JA) is an ability to coordinate attention to an object of mutual interest, which develops at the end of a child's first year (Bakeman & Adamson, 1984). There are two forms of JA (Mundy et al., 2007): initiating joint attention (IJA) and responding to joint attention (RJA).

Joint action (JAc) may be defined as "any form of social interaction whereby two or more individuals coordinate their actions in space and time to bring about a change in the environment" (Sebanz et al., 2006), or, in restricted sense, as „an intentional cooperative activity that the children consciously choose and manage on their own, deliberately coordinating their behavior toward a common aim" (Brownell, 2011). The relationship between them may be characterized: JA provides the shared perceptual space in which JAc takes place (Tollefsen, 2005). Moreover, successful performance of some kinds of JAc, namely cooperative JAc, can only be accomplished by making complementary movements – both participants have to choose an appropriate action which meshes with the actions of the partner.

Objective

To identify the developmental relations between the abilities to IJA and RJA at 12 months old and abilities to coordinate JAc at 18 months.

MATERIALS & METHODS

In the Child Development Psychology Laboratory we tested 329 infants when they were 12 months old (M= 52.28, SD= 1.33) and when they were 18 months old (M=79, SD =2.0).

We used:

I. **Early Social Communication Scale (ESCS)** to measure IJA and RJA

lower-level IJA (Lo-IJA) – child's initiation of eye contact, gaze alternations between an active toy and the tester

higher-level IJA (Hi-IJA) - child's pointing at objects or showing them

lower-level RJA (Lo-RJA) - following the proximal point or touch

higher-level RJA (Hi-RJA) - following the line of regard while the tester is pointing to the posters



II. **Joint action task ('tea set')** to measure an ability to perform complementary goal directed actions

- the child and the tester pretended they were drinking tea
- at precisely determined points of the playing, the tester would slow down and cease their activity to wait for the child's reaction
- tester verbally suggested replenishing the cup only when the child did not react to the non-verbal prompt within 3-5 seconds



tester picks the teapot up and without saying anything stops his/her hand with the teapot midway

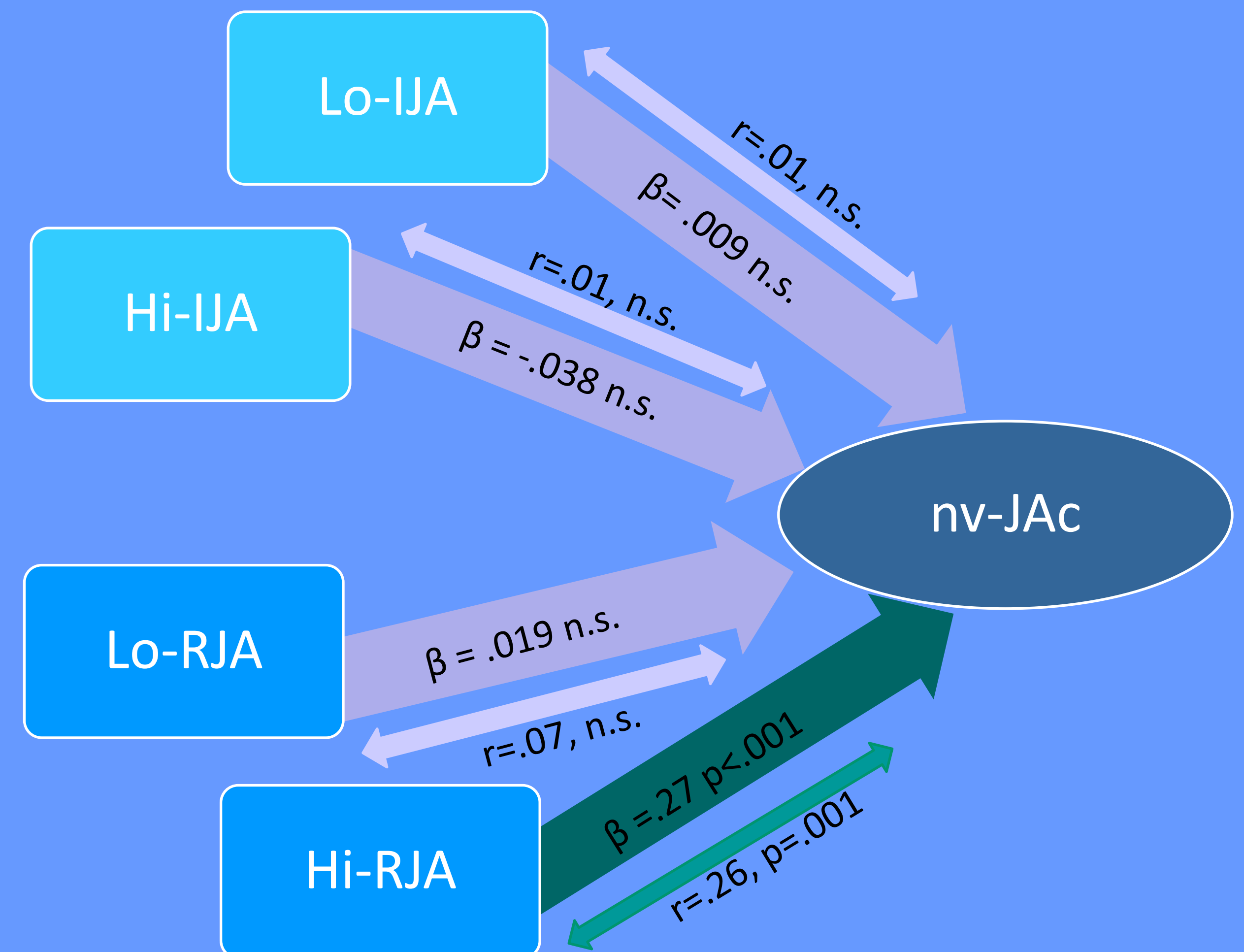


tester picks up his/her cup and stops the hand holding it midway waiting for child's reaction



RESULTS

The analysis covered 279 infants (50 did not engage in the 'tea set' game) and pertained to the relationship between the IJA and RJA levels at the age of 12 months and JAc coordination in reaction to non-verbal prompts (nv-JAc) at 18 months. Correlational (Pearson's r) and causal relations (linear regression with Lo-IJA, Hi-IJA, Lo-RJA and Hi-RJA as an independent variables and nv-JAc as a dependent variable) were explored.



The overall model fit was $R^2 = .072$; $F(4, 276) = 5.309$ ($p < .001$)

CONCLUSIONS & FUTURE DIRECTIONS

- The level of ability to follow the direction of gaze, head turn, and pointing gesture of another person at 12 months old predicts a child's ability to coordinate joint action, in response to a nonverbal prompt, at 18 months.
- Despite the modest strength of the relations identified, establishing them is of interest since they reveal a developmental change in the ability to coordinate joint action by following the deictic actions of another person at 12 months old with the ability to complement and mesh its own actions with those of others at 18 months.
- The extent to which this adequate completion of the actions of other people requires that one infers the other's intention and forms an intention which includes the intentions of the other as the content, and to what extent it only requires the shared task representation and integrating others' actions in one's own action planning, is a question that remains for future investigations.

SELECTED REFERENCES

- Bakeman, R., Adamson, L. (1984). Coordinating Attention to People and Objects in Mother-Infant and Peer-Infant Interaction. *Child Development*, 55, 1278-1289.
- Mundy, P., Delgado, C., Block, J., Venezia, M., Hogan, A., Seibert, J. (2003). A Manual for the Abridged Early Social Communication Scales (ESCS). Available through the University of Miami Psychology Department, Coral Gables, Florida.
- Sebanz, N., Bekkering, H., Knoblich, G. (2006). Joint Action: Bodies and Minds Moving Together. *Trends in Cognitive Sciences*, 10, 70-76.
- Tollefsen, D. (2005). Let's Pretend! Joint Action and Young Children. *Philosophy of the Social Sciences*, 35, 75-97.

ACKNOWLEDGEMENTS

This research was supported by a grant from the Polish National Science Centre (DEC-2011/01/B/HS6/00453).

