16 March 2006

Dear Parents,

You may remember that you participated in a study at the Infant Development Research Center. Research is a slow process. Over 180 families participated in this project. Since the last families participated, we have been coding and analyzing the data so we can understand what it may tell us about infant development. We’re writing now to thank you again for your participation and to tell you what we found. We have shown this data at two conferences and information on those can be found at our website: http://web.utk.edu/~idrc.

When you came into our office, your baby participated in three tasks. First, we monitored his/her heart rate and breathing. Then we showed your baby a lot of pictures in a Left-Left-Right pattern followed by a picture of a smiling woman. These three tasks gave us information about your baby’s ability to pay attention, learn spatial rules, and process information.

We wanted to find out what helps babies learn a pattern (Left-Left-Right) and use the pattern to predict where pictures will appear. Babies show us they can do this by anticipating: moving their eyes to where they think the picture will be before it appears. Our findings are very exciting and help us better understand how babies learn from their environment.

There were four primary findings from this study.

- **Anticipation patterns vary**: In the task, there were opportunities for the infant to correctly anticipate and opportunities to incorrectly anticipate. If anticipations reflect learning, then the babies should make more correct anticipations than incorrect anticipations.
  - Some babies learned the rule: Some babies made more correct anticipations than incorrect anticipations.
  - Some babies “sort of” learned the rule: Some babies seemed to learn something about the pattern, but did not learn the entire rule. For example, some infants seemed to learn that things happened more often to the left than to the right and therefore tried to look toward the left whenever possible.
  - No evidence of a pattern: Some babies seemed to anticipate randomly. They made a similar number of correct and incorrect anticipations. Some babies even made more errors than correct responses (which was very surprising to us)! Other babies never anticipated so we don’t know what they did or did not learn.

- **Speed doesn’t matter**: How quickly people process information can affect learning across a range of tasks. However, it did not affect how often or how accurately babies anticipated the pictures in our study. It may be that speed is important for learning content, but not spatial information.

- **Attention is critical**: As we expected, heart rate, our indirect measure of attention, related to the patterning (accuracy) of infants’ anticipations.
  - Infants with heart rate responses that suggested they were better able to pay attention anticipated in a pattern that mirrored the rule, making many correct responses and few incorrect responses.
  - Infants with heart rate responses that suggested they were not able to pay attention well tended to only learn part of the rule or to anticipate randomly.
Boys vs. Girls:
  o If you received our mid study feedback, you may remember that early analyses of the data, before everyone participated, suggested that boys were better at learning the spatial rules than girls.
    ▪ However, in the early part of the study, boys who were not able to pay attention to the task were much less likely to complete the task compared to the other infants.
  o The final analyses suggested that girls were much better at learning the spatial rule than boys.
    ▪ In fact, only girls whose heart rate showed they were very good at paying attention actually learned the rule.
  o These sex differences are very interesting but not completely understood.
    ▪ We expected boys to do better than girls since men tend to be better than woman at learning spatial information. The findings did not support that.
    ▪ One question is whether this sex difference may vary across regions in the country. For example, in Denver boys do seem to learn these rules better.
    ▪ We need to do more research to understand why these differences exist and what they mean for infant (and later) learning.

Right now we do not know how these findings may relate to your child’s later abilities. We are interested in finding out about that. In fact, we are interested in learning whether these very early differences between babies as well as differences in things families do may relate to outcomes such as school readiness.

As a first step to looking at school readiness, someone from my office will call you this spring to ask you about whether your child has participated in daycare or preschool and the quality of those (and home) experiences. Your answers will give us a first look at how things that families do with their children influence school readiness. As always, you do not have to answer these questions or keep participating in the study.

We are very exciting about the findings of this first project and look forward to working again with all of your families. If you want to participate, but your telephone number or address have changed, please feel free to call us at 865-974-9228 or idrc@utk.edu to provide your new contact information. Thank you again for taking the time to help us.

Sincerely,

Tara S. Wass, Ph.D.
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