



Study Summary

Using Eye-tracking Technology to Identify Patterns of Attention and Underlying Behavior Problems

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Who sponsored this study?

This research was supported by the Environmental influences on Child Health Outcomes (ECHO) program, Office of The Director, National Institutes of Health.

Why was this study needed?

Humans tend to give more attention to emotional information than neutral information. Past research indicates departures from this pattern typically occur in children with socially withdrawn behaviors. However, this research is limited because it has been conducted mostly in controlled settings among primarily White children from urban areas.

In this study, ECHO researchers examined the extent to which two eye-tracking–based measures could be used cross-culturally to assess attention biases and how these biases might relate to children’s socially withdrawn behaviors.

Who was involved?

To evaluate whether eye-tracking technology could be applied effectively across cultures, researchers compared information from two ECHO cohorts that were very different demographically, geographically, racially, and culturally.

The researchers analyzed data from 125 children from the Navajo Birth Cohort Study, a cohort of indigenous children with relatively low socioeconomic status (SES) living in rural tribal lands, and 70 children from the Illinois Kids Development Study (IKIDS), a primarily Non-Hispanic White and high-SES cohort living around the University of Illinois at Urbana-Champaign campus in central Illinois.

What happened during the study?

Children between the ages of 3.5 years to 5.5 years completed two eye-tracking tasks that measured their attention to photos of human faces with positive, negative, and neutral expressions. Indigenous children were assessed in different locations in the Navajo territory, whereas IKIDS children came to a research laboratory in the University campus. Mothers also reported on children’s socially withdrawn behaviors, such as avoiding eye contact, using the Child Behavioral Checklist—a survey commonly used in research and clinical settings to evaluate risk for behavioral and emotional problems in children.

What were the study results?

Patterns of attention were similar across the two groups of children despite the differences in their cultures, demographics, or assessment settings. Overall, children paid more attention to emotional faces compared to neutral faces. They were particularly quick to identify angry faces, which might be an adaptive response to a perceived threat. These findings replicate previous research results with both adults and children.

Indigenous children with socially withdrawn behaviors avoided emotional faces—a response observed in children with higher levels of socially withdrawn behaviors from other populations.

Footnote: Results reported here are for a single study. Other or future studies may provide new information or different results. You should not make changes to your health without first consulting your healthcare professional.

Impact

This work suggests that eye tracking can be used as an objective measure of attention patterns in children across different settings and cultures, which can help researchers and clinicians more reliably identify children with early behavior problems. Because eye tracking technology does not rely on clinical observations or parents' reports, it can be used as an unbiased measure across different communities to validate data collected through clinical assessments and parent reports in hard-to-reach communities.

What happens next?

The researchers will look at how the responses they see in these young children change with age and determine whether eye tracking continues to be an unbiased tool for assessing attention throughout development.

Where can I learn more?

Access the full journal article titled “Cross-Cultural Applicability of Eye-Tracking in Assessing Attention to Emotional Faces in Preschool-Aged Children” published in the [Emotion Journal](#).

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