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RESEARCH BRIEF

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Children's Sensitivity to Facial Emotional Expressions

The Mediating Roles of Maternal Warmth and Home Environment

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BACKGROUND

This brief synthesizes findings from the Environmental Risk (E-Risk) Longitudinal Twin Study. The study tested the association between socioeconomic status (SES) and children's emotion recognition sensitivity. The researchers also examined how potential mediators such as victimization, negative parenting, and maternal environment played a role in how children developed their emotion recognition abilities.

The E-Risk sample was drawn from a birth register of twins born in the United Kingdom (UK). The participant sample consisted of monozygotic (100% shared genes) and dizygotic (50% shared gene) twins and represented a variety of UK families across England and Wales.

The study provides evidence that children from higher SES households show greater emotion recognition sensitivity than lower and middle SES children, with maternal warmth and organized homes emerging as the strongest mediators of this relationship.

OVERVIEW

The ability to recognize emotions in the facial expressions of others is essential in shaping children's social interactions and self regulation. However, differences in home environments create disparities in how accurately children can detect and respond to emotions. Many studies have focused on high-risk children, finding that children exposed to early poverty demonstrate less accuracy in identifying emotional expressions, whereas child victims of physical abuse are more sensitive to angry emotional expressions. These contrasting findings raise the question whether alterations in emotion recognition stem from adversity or from broader home conditions.

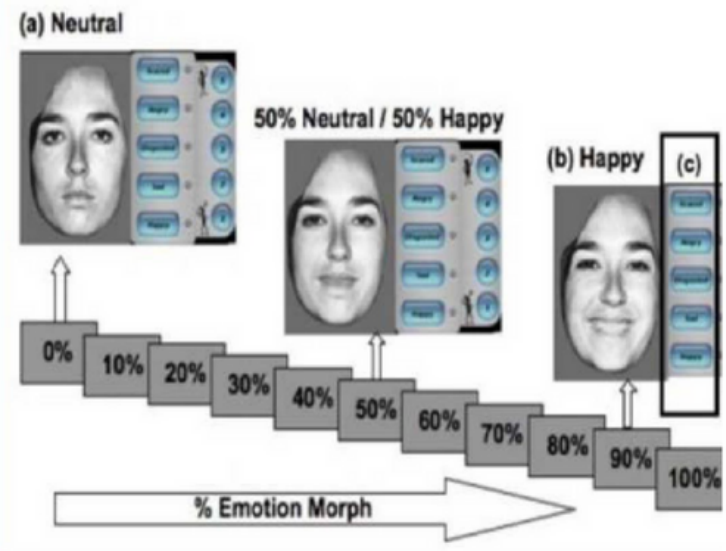
Parents play a fundamental role in socializing children's emotion recognition development. When parents are emotionally blunted or display controlling or intrusive parenting behaviors, children's emotional development is hindered. Additionally, poverty levels may undermine parenting capabilities as stressors alongside low-income families may prevent caregiver warmth and ultimately, emotional recognition development. Without a supportive home environment with consistent and safe displays of emotion, children may miss critical inputs to develop these skills, leading to social interaction challenges later in life.

To address this persisting problem and clarify the mechanisms, this study sought to examine how socioeconomic status (SES) relates to children's emotion recognition abilities and to identify what mediating roles contribute to this association.

STUDY

This study examined a large cohort of twin children in the United Kingdom (UK) through the Environmental Risk (E-Risk) Longitudinal Twin Study. It consisted of twin children followed across time at ages 5, 7, 10, and 12. The cohort was composed of varying socioeconomic statuses and home environments. It was hypothesized that children growing up in lower SES households would exhibit less recognition of emotional expressions compared to higher socioeconomic statuses in combination of healthy parenting and home environment factors. During the age 10 home visit, children were presented with a set of emotion categories (angry, fear, sadness, happiness) with progressing morphing stages *(Figure 1).* The children were scored based on the lowest morph they could identify the emotion, indicating their emotion recognition sensitivity. Additional factors were measured to account for varying home environments with regular home visits as the participants aged to assess development over time. These factors included polyvictimization, maternal warmth, orderly home, negative parenting, maternal depression, and IQ.

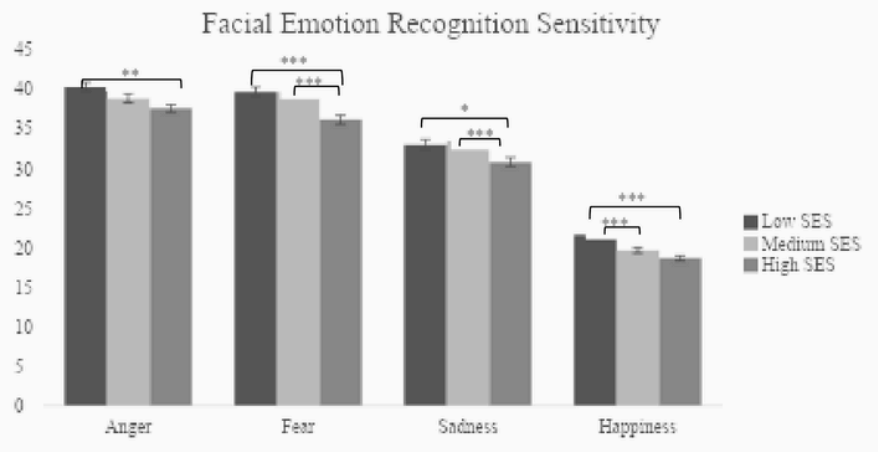
Figure 1. Emotion Recognition Task



FINDINGS

Children from higher SES households demonstrated enhanced recognition sensitivity compared to those from lower SES households, especially in happiness. It was hypothesized that poverty would have a large effect on deficits in emotion recognition capabilities, but results proved there were few differences between children from low and middle-SES households. Instead, children from higher income homes possessed greater emotion recognition sensitivity skills *(Figure 2)*.

Figure 2. SES Gradient for Recognition of Facial Emotional Expressions



In regards to the potential mediators, polyvictimization, negative parenting and maternal depression failed to mediate the association of SES and emotion recognition in children after accounting for child IQ and sex. Instead, maternal warmth and orderly homes contributed to the children's recognition of negative emotions. Maternal warmth became a uniquely influential factor as siblings who experienced higher levels of warmth from their mother exemplified stronger abilities to recognize facial emotions. The siblings are growing up in the same family with the same socioeconomic and housing backgrounds, underscoring how maternal behavior can significantly impact children's emotional development even between siblings. Similarly, children growing up in organized and safe homes also displayed higher levels of emotion recognition. These findings indicate structured and predictable home environments provide the stability necessary for children to develop their sensitivity to facial emotions. Overall, the study strongly highlights the importance of warm maternal behavior and structured homes in children's emotional growth, explaining why children in high SES households often demonstrate stronger emotion recognition development.

PRACTICE IMPLICATIONS

There are many promising intervention programs to improve children's emotion recognition. Notable and effective programs are Izard's Emotion-Based Prevention (Izard et al., 2004) and Tuning in to Kids (Havighurst et al., 2025) that aim to improve parental socialization of emotion. The goal of these programs ties in with this study's findings of parental and family factors that contribute to children's emotion recognition skills. Another intervention program that aims to foster maternal warmth is the Nurse-Family Partnership home visiting program (Olds, 2006). In addition to improving prenatal care, this program strives to help low-income mothers improve their maternal life course through increased workforce participation and decreased dependence on public assistance. This way, mitigating low SES conditions can foster maternal warmth and an orderly home.

POLICY IMPLICATIONS

In the United States, the Maternal, Infant, and Early Childhood Home Visiting (MIECHV) program provides important support to young children and families through home visiting, but it reaches only a fraction of families in need (HRSA, 2025). Currently, there is no unifying national program that ensures equal support to families with home-visiting services. While MIECHV is a federal initiative to coordinate and standardize these efforts, most home visiting programs still rely heavily on state and private funding, leading to significant disparities in per capita resources (HARC, 2024). This leaves some states with minimal home visiting programs, depending on their state funding allocation. Considering the inequities in parenting and child development resources across the nation, there is no consistent pathway for families to access government support.

Findings from the present study highlight the need for policies that promote positive parenting through centralized federal and state support for programs like home-visiting. Current efforts and government initiatives often address issues only after they arise, but research demonstrates that preventative strategies are more effective at reducing risks and cultivating greater child emotional development (Portilla et al., 2025). The evidence indicated that children in well-resourced and emotionally supportive households show stronger development progress. With a policy for a unified outlet of resources, low and middle income families can achieve comparable outcomes, leading to population-wide benefits and addressing inequities for children across socioeconomic groups.

REFERENCES

HARC. (2024, July 12). *About home visiting*. https://hvresearch.org/about-home-visiting/

Havighurst, S. S., Ambrosi, C. C., Harley, A. E., & Kehoe, C. E. (2025). Tuning in to Kids: Theoretical basis, program description, and factors impacting effectiveness. *Journal of Applied Developmental Psychology, 98*, 101797. https://doi.org/10.1016/j.appdev.2025.101797

Hawkins, J. D., Jenson, J. M., Catalano, R., Fraser, M. W., Botvin, G. J., Shapiro, V., ... & Stone, S. (2016). Unleashing the power of prevention. *American Journal of Medical Research, 3*(1), 39-74.

Health Resources & Administration Services (2025). *FY25 Maternal, Infant, and Early Childhood Home Visiting (MIECHV) Program Awards*. https://mchb.hrsa.gov/programs-impact/programs/home-visiting/maternal-infant-early-childhood-home-visiting-miechv-program/fy25-awards

Izard, C. E., Trentacosta, C. J., King, K. A., & Mostow, A. J. (2004). An emotion-based prevention program for Head Start children. *Early Education & Development, 15*(4), 407-422. https://doi.org/10.1207/s15566935eed1504_4

Olds, D. L. (2006). The nurse–family partnership: An evidence-based preventive intervention. *Infant Mental Health Journal, 27*(1), 5–25. https://doi.org/10.1002/imhj.20077

For full text and references, see Milojevich, H. M., Dickerson, K. L., Arseneault, L., Caspi, A., Kim-Cohen, J., Danese, A., ... & Odgers, C. (2025). Children's Sensitivity to Facial Emotional Expressions: The Mediating Roles of Maternal Warmth and Home Environment. *Developmental Science, 28,* e70077. DOI: 10.1111/desc.70077