Title: Maternal Responsivity is Associated with Development of Communication Repairs in Children with Fragile X Syndrome

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Introduction: Children with fragile X syndrome (FXS) typically have delayed language development. This is apparent across multiple domains including delayed expressive language and impaired pragmatics. The ability to repair a communicative act following a communication breakdown is an important skill that requires control of verbal and gestural expressive language and pragmatic knowledge. Many adults with intellectual impairment are remarkably good at repairing (Brady et al., 1995), as are many children with autism (Keen, 2003). Typically developing young children demonstrate over 95% mastery of this skill by 21 months of age (Gallagher, 1977). However, little is known about the development of communication repairs in children with FXS. The primary aims of this study were 1) to determine whether children with FXS demonstrate delayed ability to repair, and 2) to identify the developmental trajectory of this ability over time. The secondary aims were to determine what between- and within-person factors may account for differences in children’s ability to repair. Hypothesized factors of interest included maternal responsivity, child’s autism symptom severity, and child’s social and communication skills.

Methods: Fifty-five children with FXS (11 girls) and their biological mothers were followed from toddlerhood into late childhood. Each dyad was visited in the home on five occasions. At time one children were on average 28 months (+/- 9.2) and at time five they were 109 months (+/- 9.25).

Five mother-child interaction contexts were filmed at each home visit including book, craft, snack, and two naturalistic contexts. Mother communication breakdowns, child repairs, and maternal responsivity were measured from these interactions. Standardized assessments were used to measure autism symptomatology, social skills and communication skills at each occasion. Child communication repairs occurred following a maternal communication breakdown in which the mother either requested for clarification or ignored the child’s communication act. Repairs were clarifications of the previously intended message and could take the form of a verbalization, vocalization, gesture, and/or sign.

Results: The development of children with FXS’s ability to repair following a communication breakdown (measured as percent correct) from toddlerhood to late childhood was examined in a series of multilevel models. Occasions in which there were minimal to no opportunities to repair (i.e., fewer than two communication breakdowns occurred) were dropped from the analyses, as were occasions when the children were under 30 months. The mean percent correct over time was 90.1%. Our data and models suggest that children with FXS achieve and maintain over 85% accuracy by 42 months. However, a significant cubic effect of age and a significant random linear effect of age suggest some fluctuation and individual differences in this skill.

Discussion: The ability to repair when a communication breakdown occurs is a vital social communication skill. This was found to be delayed in children with FXS, comparable to their delays in expressive language and pragmatics. Although we hypothesized several influencing factors, we found that only within-person fluctuation in maternal responsivity was predictive of a child’s ability to repair above and beyond maturational/age effects. These findings support previous research suggesting that maternal responsivity plays an important role in language development in children with FXS. Finally, consistent with previous findings (Brady et al., 1995), ability to repair was a robust skill in our sample, with children reaching over 90% accuracy by age four.

References/Citations:

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