

# The Relationship Between Eye Gaze, Parent-Child Attachment and Language Acquisition

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The process by which infants and young children acquire language is nothing short of complex and astonishing. Environmental elements and social interactions coupled with internal, biologic mechanisms instigate and facilitate language acquisition. Although, it seems that credit should be equally distributed between these processes, the literature suggests the crux of the problem lies within the infant's interactions (e.g., infant communicative attempts, such as eye-gaze), social relationships (e.g., infant-caregiver attachment) and possible internal states (i.e., temperament). That is to say, that these factors have a greater influence on the development of language than predisposed genetic influences. The use of eye tracking as a way to measure and gauge infant attention (i.e., gaze patterns) and to understand very young, prelinguistic children's acquisition of language has gained popularity in recent years (Colombo, 2001; Farroni, Johnson, Brockbank, & Simion, 2000; Hood, Willen, & Driver, 1998). Furthermore, eye tracking has been used to recognize the role of mother's attachment on the child's perception of visual cues (i.e., social cues or linguistic cues) associated with language development (Bruner, 1999; Csibra, 2010; Murray & Yingling, 2006). The purpose of this study was to determine if differences over age exist in infant looking behaviors between familiar and unfamiliar faces. Eye gaze behaviors of 3 month-old infants were recorded and monitored in two-week intervals over a period of one month using the Tobii X120 eye tracker. Infants were seated in a highchair and shown black and white images of their mother and unfamiliar people. Data collected included information on fixation count and duration, visit count and duration, order of fixation and pupil size. Single subject design was used, such that participants two through five served as replications of participant one. Visual analysis of the data indicated similarities and differences between the familiar and unfamiliar experimental conditions on each of the dependent variables across age. For both experimental conditions, the data suggest that internal facial features (i.e., mouth, nose, eyes) are visited more often and have more fixations that are longer in length than external facial features (i.e., hair, shoulders, neck). For the familiar face condition, the data suggests that the nose area of interest (AOI) is a unique area to this condition across age, such that a greater percentage of fixations occurred within this area, as well as a greater percentage of look time occurred at this region. In contrast, for the unfamiliar face condition, a greater total percentage of look time occurred within and a more diverse representation of the AOI regions. This data suggests that within this condition more scanning like behaviors occurred.