USE OF THESES

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This thesis describes original research carried out by the author during the tenure of an Australian National University Postgraduate Scholarship in the Department of Psychology of the Australian National University.

Anne Mathew
PREFACE

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A portion of the study reported in this thesis has been accepted for publication.

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ABSTRACT

Infant reaching movements have tortuous handpaths and multipeaked speed curves. It has been hypothesised that these movements comprise sequences of ballistic motor units whose boundaries are marked by troughs in the speed-time curve. Error correction, if any, is assumed to take place between and not within these movement units. This hypothesis was investigated in this study. Samples of reaches were obtained from groups of infants aged 4.5, 6 and 7.5 months as split-screen video recordings, which were then transcribed as sequences of (x,y,z) hand coordinates. There was an improvement in overall efficiency in reaching across the three age groups. Movement paths were examined for evidence of initial aiming and subsequent correction. At all ages, the initial direction of the movement was correlated with target direction, providing evidence that the hand was aimed towards the target. Additionally, changes in movement direction made after the commencement of the movement tended to curve the hand path towards the target, providing evidence of error correction. Local minima of hand speed evident within segments of continuous movement were associated with turn towards the target. However, the movement path was also curved towards the target within the movement elements bounded by these minima. This finding was seen as being consistent with 'continuous' correction of movement errors and as contrary to the suggestion that infant movements are concatenations of ballistic movement units whose boundaries are marked by troughs in the speed profile.