THE DEVELOPMENT OF SPATIALLY-ACCURATE REACHING BEHAVIOUR IN EARLY INFANCY

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CONTENTS

ABSTRACT

This study was concerned with young infants' capacity to coordinate their perception of the spatial characteristics of objects with their reaching and prehensile behaviours. The reaching behaviour of infants ranging in age from two to seven months was videotaped to determine whether they tended to adjust their reaching appropriately to variations in the physical distance, solidity and radial direction of stimuli. Both objective classifications of the infants' arm extensions toward objects and subjective assessments of their intention to contact the latter were used as measures of reaching behaviour.

In Experiment 1, five-month-old infants gradually reduced the frequency of their reaching movements when the physical distance separating them from objects was increased, even if the retinal image size of the stimuli was held constant across changes in distance. A similar capacity for distance-appropriate adjustments to reaching attempts was found among fifteen-week-old infants in Experiment 2. Likewise, infants as young as fourteen weeks of age tested in Experiment 3 were able to adapt the direction of their reaching movements to marked changes in radial direction of a target stimulus. From these first three experiments it was concluded that infants are able to make spatially-appropriate adjustments in their reaching behaviour even before they can reliably grasp an object placed within arm's length.

Experiment 2 also revealed, however, that infants under six months of age do not discriminate in their reaching attempts between solid objects and two-dimensional representations of such objects.

The reasons for this deficiency in young infants' capacity for spatially-accurate reaching were clarified to some extent by Experiments 4 and 5. In these two investigations the normal relationship between the visual and tactual input associated with object manipulation was artificially disrupted by presenting the subjects with a visibly within-reach, but intangible, image of an object. It was concluded that the initiation of reaching attempts by infants under seven months of age is controlled by the visual information in such a conflict situation and any tactile-kinesthetic feedback obtained from prehension attempts produces very little modification of young infants' reaching behaviour.