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A model comparison on perception of arm movements in point-light display

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Abstract: Since Johanson (1973), it is well known that people perceive human behavior, not only familiar ones such as walking and dancing but also unfamiliar behaviors in point-light display. While categorization among well-known behaviors has been well studied, it is not clear yet how people extract the cues that are useful for perceiving unfamiliar behaviors. We hypothesized that the hierarchical information in human structure was playing an important part for perception of unfamiliar behaviors, and examined this hypothesis by comparing performances of three kinds of models in categorization tasks of unfamiliar arm movements. While the first model was based only on local motion of the point lights, the second model used hierarchical ordering information to analyze the local motion. The third model used strict positioning following the hierarchical structure in addition to the ordering information. The comparison suggested that hierarchical ordering was important information to producing close performance to human performance.