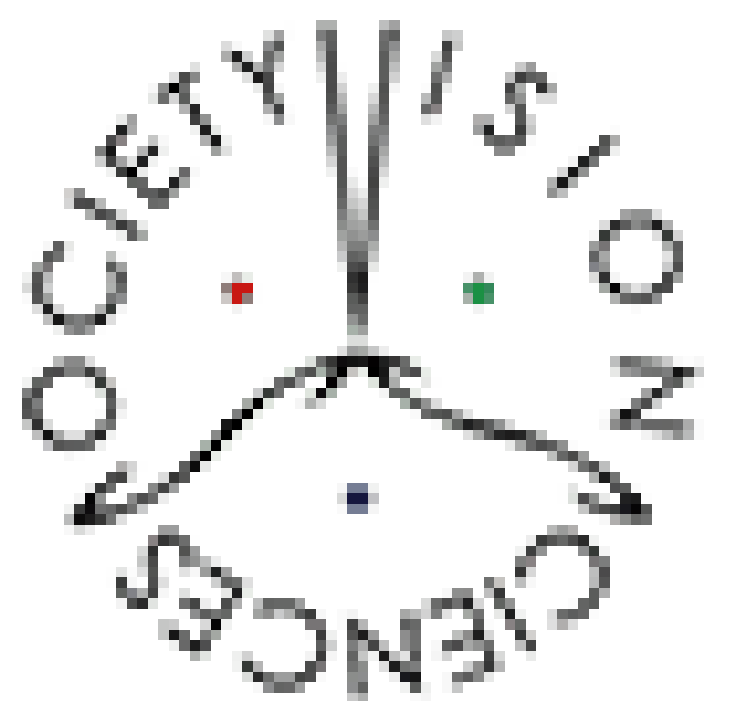




Selective Attention Operates on the Group Level for Interactive Biological Motion

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Introduction

How do we distribute attention to interactive biological motion (BM)?



Distribution-by-Individual Hypothesis

“Interactive BM won't be taken as one unit in attention distribution, and individual BM is independently selected.”

(e.g., Fiebelkorn, Saalmann, & Kastner, 2013; Scholl, 2001; Vickery & Chun, 2010)

VS. Distribution-by-Group Hypothesis

“The interactions between BM can integrate them as one attention unit.”

(e.g., Papeo, Goupil, & Soto-Faraco, 2019; Quadflieg & Penton-Voak, 2017; Tipper, Hartley, Over, & Rueschemeyer, 2019)

Methods

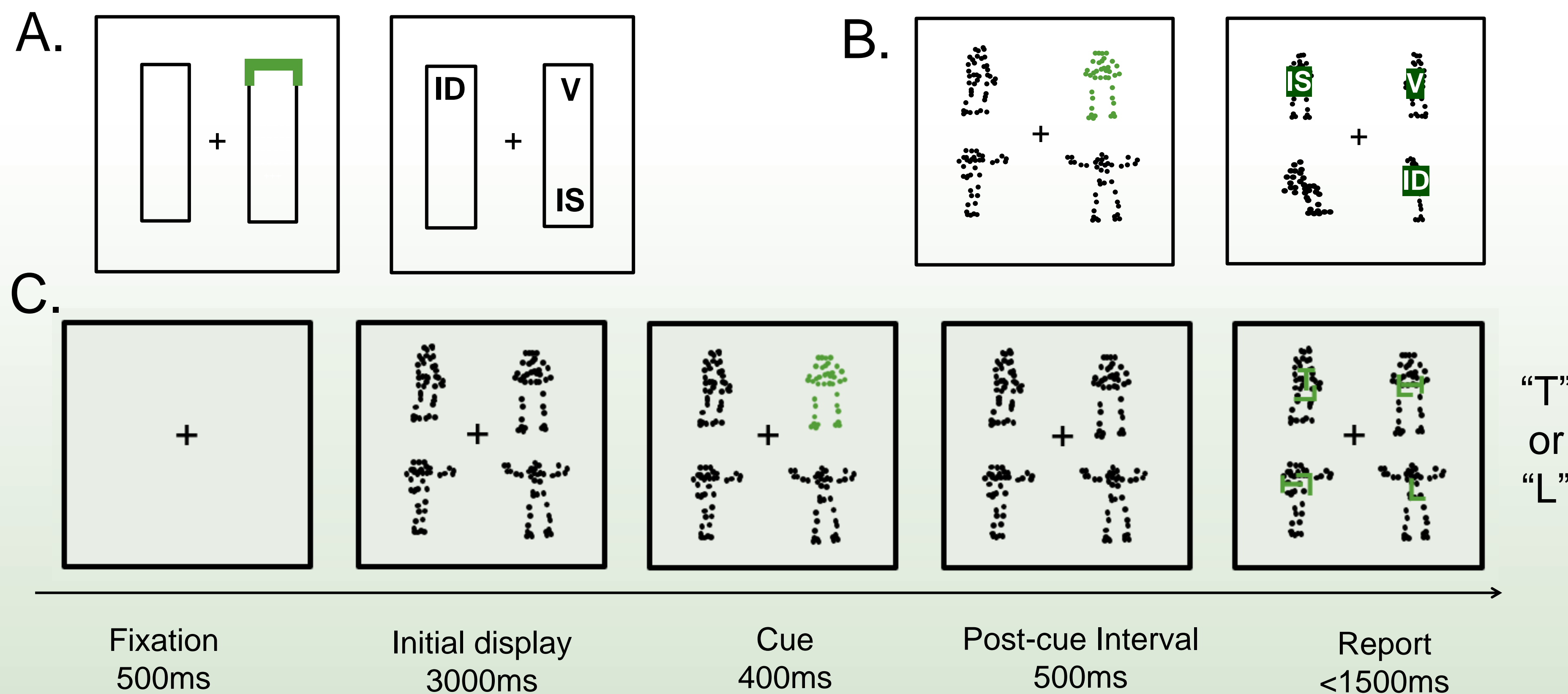


Figure 1. (A) Classic two-rectangle cuing paradigm with V for valid trials, IS for invalid same-object/event trials, and ID for invalid different-object/event trials. (B) Modified paradigm in our study. (C) Experiment process and time course.

Design: Experiment 1 (upright) : paired vs. unpaired ; V / ID / IS
Experiment 2 (inverted) : paired vs. unpaired ; V / ID / IS

Results

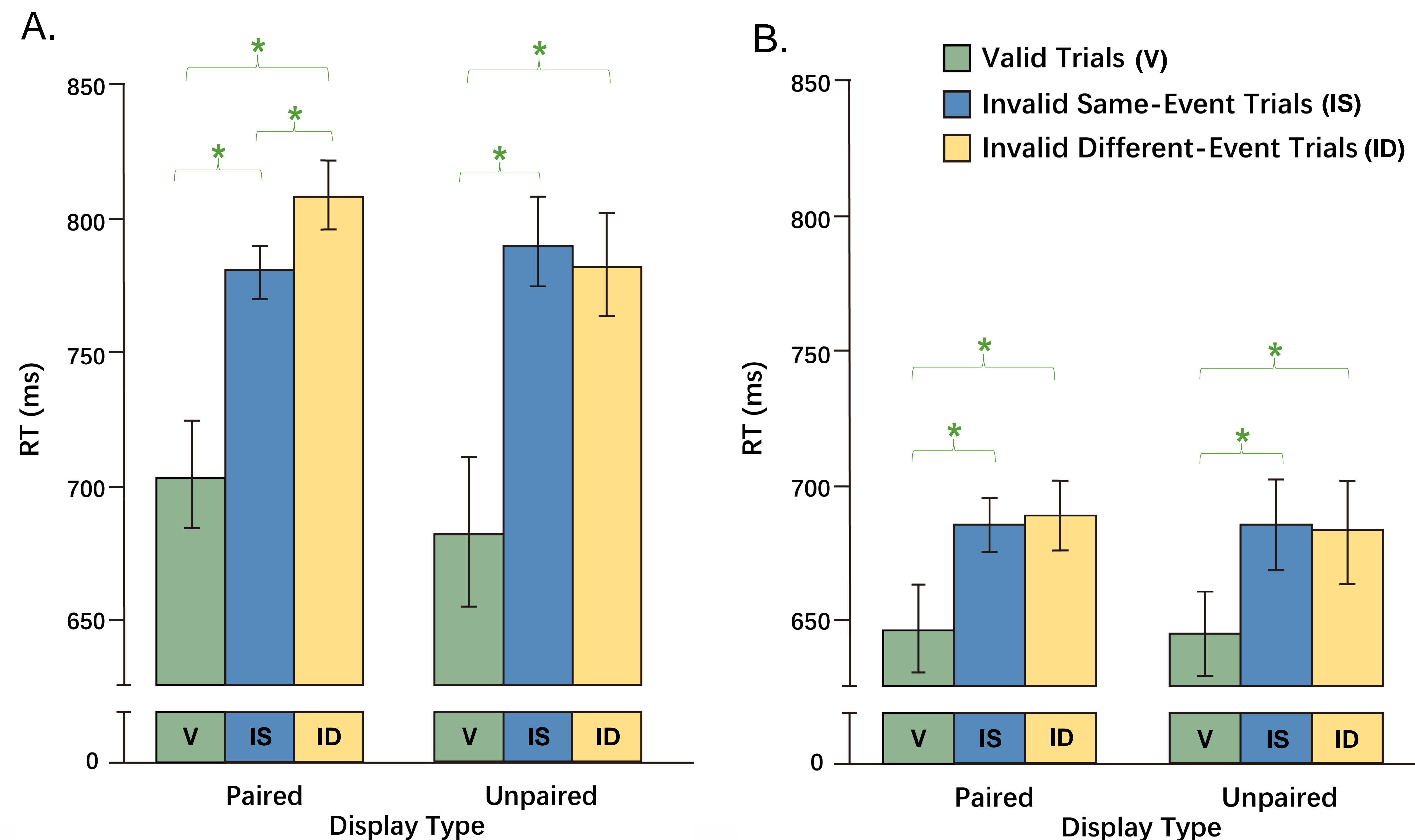


Figure 2. Response time (RT) in three different conditions in Experiment 1 (A. upright) and Experiment 2 (B. inverted). The asterisks mean p values less than 0.05.

Experiment 1 (upright) :

In paired condition, $RT(V) < RT(IS) < RT(ID)$, $ps < .001$.

In unpaired condition, $RT(V)$ was the shortest, $ps < .001$; there was no difference between IS and ID trials, $ps > .05$.

Experiment 2 (inverted) :

In paired and unpaired conditions, $RT(V)$ was the shortest, $ps < .001$.

No RT difference was found between IS and ID trials, $ps > .05$.

Linear Mixed-Effect Analysis (LMMs) suggested there was no difference among five different action types in Exp.1 & Exp.2, $ps > .05$.

Summary

- Interactive biological motion can serve as the elementary unit of attention in accordance with the **distribution-by-group hypothesis** (Exp.1 paired condition), but attention is not selectively distributed to agents in interactions depicted by unpaired (Exp.1 unpaired condition) or inverted biological motion (Exp.2).
- There may exist event-based attention where we take social interacting events as the elementary units of selective attention.

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