

# Author's Accepted Manuscript

The origin of the biomechanical bias in apparent body movement perception

Gilles Vannuscorps, Alfonso Caramazza



PII: S0028-3932(16)30181-6  
DOI: <http://dx.doi.org/10.1016/j.neuropsychologia.2016.05.029>  
Reference: NSY6010

To appear in: *Neuropsychologia*

Received date: 24 March 2016  
Revised date: 18 May 2016  
Accepted date: 25 May 2016

Cite this article as: Gilles Vannuscorps and Alfonso Caramazza, The origin of the biomechanical bias in apparent body movement perception, *Neuropsychologia*, <http://dx.doi.org/10.1016/j.neuropsychologia.2016.05.029>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and a review of the resulting galley proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

The origin of the biomechanical bias in apparent body movement perception

Gilles Vannuscorps<sup>1,2,3\*</sup>, Alfonso Caramazza<sup>1,2</sup>

<sup>1</sup>Department of Psychology, Harvard University, Cambridge, MA, 02138, USA

<sup>2</sup>Center for Mind/Brain Sciences, Università degli Studi di Trento, Mattarello, 38122, Italy

<sup>3</sup>Institute of Psychological Sciences, Université catholique de Louvain, 1348, Belgium

\***Correspondence:** Gilles Vannuscorps, Department of Psychology, Harvard University, Williams James Hall, 9<sup>th</sup> floor, 33 Kirkland St., Cambridge, MA, 02138, USA. Tel.: +1(617) 496 6374. E-mail: gvannuscorps@wjh.harvard.edu.

## Abstract

The perception of apparent body movement sometimes follows biologically plausible paths rather than paths along the shortest distance as in the case for inanimate objects. For numerous authors, this demonstrates that the somatosensory and motor representations of the observer's own body support and constrain the perception of others' body movements. In this paper, we report evidence that calls for a re-examination of this account. We presented an apparent upper limb movement perception task to typically developed participants and five individuals born without upper limbs who were, therefore, totally deprived of somatosensory or motor representations of those limbs. Like the typically developed participants, they showed the typical bias toward long and biomechanically plausible path. This finding suggests that the computations underlying the biomechanical bias in apparent body movement perception is intrinsic to the visual system.

**Keywords:** Biomechanical bias, body perception, biological motion, action perception, common coding, motor simulation, embodied cognition

## Introduction

There is abundant evidence that implicit knowledge of the human body biomechanical constraints influences not only the planning, control, and execution of one's own body movements, but also the perception of others' bodies and body movements (Grosjean, Shiffrar, & Knoblich, 2007; Parsons, 1987; Shiffrar & Freyd, 1990, 1993). One of the most striking examples of this influence is the biomechanical bias on the perceived path of apparent body movement (Heptulla-Chatterjee, Freyd & Shiffrar, 1996; Funk, Shiffrar & Brugger, 2005; Shiffrar & Freyd, 1990, 1993; Stevens, Fonlupt, Shiffrar & Decety, 2000). In the seminal study of this effect, Shiffrar and Freyd (1990) showed their

Download English Version:

<https://daneshyari.com/en/article/7318790>

Download Persian Version:

<https://daneshyari.com/article/7318790>

[Daneshyari.com](https://daneshyari.com)