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The rubber hand illusion questionnaire: An exploratory graph analysis of ownership, referral of touch, and control statements

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Introduction: The rubber hand illusion is a well-known experiment that allows manipulation of one's own body experience. The original questionnaire gauges both the illusion experience and unforeseen experiences acting as control statements. In particular, two statements pertain to the referral of touch originating from the rubber hand (RoT), and one concerns the feeling of ownership of the rubber hand (SoO). Despite its prominence, the rubber hand illusion questionnaire has not undergone thorough examination of its psychometric properties. The literature reveals a tendency to use RoT and SoO statements interchangeably.

Methods: We induced the Rubber Hand illusion to 214 healthy participants and we analysed the answer to the original embodiment questionnaire. In this study, we employed Exploratory Graph Analysis to explore the item structure and compared the correlation between SoO and RoT items in various conditions.

Results: While SoO and RoT are closely linked, our findings suggest potential separation. SoO and RoT statements consistently correlate, yet hints emerge that RoT might represent a distinct facet of the illusion. Correlations diminish beyond the perihand space, indicating a nuanced relationship. Additionally, moderate relationships between control statements and those measuring the illusion suggest that even control statements are modulated by the illusion experience.

Discussion: This study underscores the need for further exploration into the psychometric properties of body illusion questionnaires, prompting reflections on the interpretation in light of these results.

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