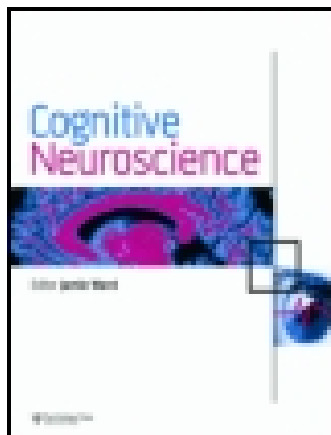


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### Hypnotic suggestion: A test for the voluntary action problem

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## Commentary

### Hypnotic suggestion: A test for the voluntary action problem

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**Abstract:** To study voluntary action a dissociation must be established between the somatic event (e.g. motor action) and what the agent voluntarily does (e.g. handing a tool to a friend). We propose that cognitive neuroscience studies of hypnotic suggestion can accomplish this dissociation between action and will (more specifically, between action and intention, or action and volition). Thus, hypnotic

suggestion may afford an empirical testing ground to study voluntary action, distinguishing voluntariness from action.

Nachev and Hacker have compellingly argued that in order to study voluntary action, it is necessary to dissociate the somatic event (e.g., motor action) from what the agent voluntarily does. On account of its dissociative nature, hypnosis is well suited to fulfill such a requirement (Oakley & Halligan, 2013). For instance, Haggard, Cartledge, Dafydd, and Oakley (2004) used hypnotic suggestion to create an experience of involuntariness, which involves a dissociation between action and intention. They compared voluntary finger movements to involuntary finger movements that were induced through hypnosis. They found that the experience of anomalous control (i.e., actions performed unintentionally, often subjectively regarded as “externally controlled” or “non-volitional”) could be induced solely through hypnotic suggestion, in the absence of psychopathology. Similarly, hypnotic suggestion has been used to induce involuntary movements together with related agency alterations (Blakemore, Oakley, & Frith, 2003).

These studies show that hypnotic suggestion can be used to create an experimental dissociation between action and *will*. For example, by suggesting specific and automatic motor actions in response to pre-selected stimuli, it might be possible to study the neural underpinnings of involuntary action (Blakemore et al., 2003). Thereupon, a comparison between the neural correlates of voluntary and involuntary actions could provide valuable insights into the neurocognitive basis of volition.

For their part, Cojan et al. (2009) and Cojan, Archimi, Cheseaux, Waber, and Vuilleumier (2013) used suggestion to induce limb paralysis. Their research showed that hypnotic suggestion may also modify motor control by modulating internal representations and reconfiguring executive control over actions. This is another promising experimental approach to explore voluntary action. For instance, by asking a subject to move a limb during hypnotically induced limb paralysis, experimenters may

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distinguish between the intention to act and the action itself. Comparing the neural correlates of such a condition to those of a control condition (without limb paralysis) may shed light on the neural specificity of intention relative to intention and its subsequent action.

Research using hypnotic suggestion might avoid (or even solve) some of the issues addressed by the authors, such as the problems of temporal affordance and subjective reports over voluntary/involuntary action. Hypnotic suggestion allows manipulation of the level of voluntariness of a specific motor action with an accurate timing and duration, thus offering a viable solution to the temporal affordance issue. However, this idea involves another potential issue: When inducing voluntariness to a specific action, does hypnotic suggestion enhance only the subjective experience (e.g., sense of agency) attached to such action? Further research on hypnotic suggestion is required to answer this question.

In addition, there is plenty of evidence regarding hypnotic suggestion and involuntary action (i.e., modulating agency by inducing the feeling that a limb is moving by itself) and involuntary paralysis (i.e., comparing between limb paralysees with and without a concomitant attempt to act). These data add reliability to subjective reports. Furthermore, explanatory models of voluntary action in the context of hypnotic suggestion do not require the assumption of preceding mental events, like urges and intentions, which involve conceptual and methodological issues, as stated by the authors.

Hypnotic suggestion allows us to experimentally dissociate action and will (more specifically, action and intention, or action and volition). Hence, it constitutes a promising technique for the empirical study of voluntary action, despite the limitations aptly observed by the authors. In sum, the main advantage of hypnotic suggestion is that it does away with the so-called antecedents of action: Dissociations may be induced directly, thus enabling a distinction between voluntariness and action.

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