



Changes in the sense of agency during hypnosis: The Hungarian version of the Sense of Agency Rating Scale (SOARS-HU) and its relationship with phenomenological aspects of consciousness



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ABSTRACT

Changes in the sense of agency are defining feature of hypnosis. The Sense of Agency Rating Scale (SOARS) is a 10-item questionnaire, administered after a hypnosis session to assess alteration in the sense of agency. In the present study, a Hungarian version of the measure (SOARS-HU) is presented. The SOARS-HU and the Phenomenology of Consciousness Inventory (PCI) were administered to 197 subjects following hypnotizability screening with the Harvard Group Scale of Hypnotic Susceptibility Scale, Form A (HGSHS:A). Confirmatory factor analysis and correlations with hypnotizability demonstrate the reliability and validity of the SOARS-HU. Changes in the *Involuntariness* and *Effortlessness* sub-scales of the SOARS-HU were associated with alterations in subjective conscious experience, as measured by the PCI. These changes in subjective experience remained significant after controlling for HGSHS:A scores. These results indicate that changes in the sense of agency during hypnosis are associated with alterations of consciousness that are independent of hypnotizability.

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1. Introduction

Sense of agency refers to an individual's subjective feeling or judgment that she or he has caused some event in the world to occur (Gallagher, 2000). It is a phenomenal quality associated with action or thought that allows us to distinguish sensory consequences that we have caused from those that are externally-generated. In this way, sense of agency is a fundamental aspect of conscious experience. Most of the time, sense of agency operates quite unremarkably: an individual will have an intention to carry out some action (e.g., to switch on a light), will make the relevant movement (e.g., flicking the light switch) and will have a sense of agency for the sequence of events (i.e., will feel as if they have caused the light to come on). There are situations, however, where the normal functioning of sense of agency can be disrupted or altered. One striking example is the experience of susceptible participants in hypnosis.

For high hypnotizable individuals, simple verbal instructions from a hypnotist can lead to remarkable changes in conscious experience, and in particular, to marked alterations to sense of agency. This change in subjective feelings of control has been consistently reported in the hypnosis literature (Bowers, 1982; Bowers, Laurence, & Hart, 1988; Weitzenhoffer,

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1974; Woody & McConkey, 2003). Although hypnosis is typically associated with non-voluntary responding (Bowers, 1981), there are also a number of findings that show hypnosis can, in fact, *increase* voluntariness. For instance, in active-alert hypnosis, the subject rides a stationary bicycle, and the hypnotist gives suggestions for alertness, freshness and power (Banyai & Hilgard, 1976). In the treatment of trichotillomania, suggestions for “self-agency” and free choice over one’s actions can reduce obsessive hair pulling through enhancing sense of agency (Iglesias, 2003). For these reasons, we use the terms “alteration” or “change” rather than “reduction” of sense of agency throughout the current article.

Despite the universal recognition of agency alteration as a key feature of hypnosis, this construct has been inconsistently operationalized. Polito, Barnier, and Woody (2013) sought to clarify the conceptual confusion around subjective control in hypnosis by developing a psychometric measure the Sense of Agency Rating Scale (SOARS) to quantify alterations to participants’ sense of agency. This measure was derived from factor analysis of a large number of scale items based on a broad review of the various ways agency has been described in the psychological, philosophical and neuroscientific literatures.

The SOARS comprises two factors, representing distinct aspects of the phenomenology of action: *Involuntariness* and *Effortlessness*. *Involuntariness* represents changes in attributions of personal influence over self-produced actions. *Effortlessness* represents changes in the ease with which self-produced actions are performed and the passive experience of events as they unfold. This two-factor model is compatible with recent theoretical accounts of agency such as those proposed by Gallagher (2012) and Synofzik, Vosgerau, and Neven (2008). The SOARS has been shown to be a valid and reliable tool for quantifying agency alterations associated with specific elements of the hypnotic context (Polito, Barnier, Woody, & Connors, 2014) and for comparing the experiences of participants in hypnosis with clinical alterations of agency (Polito, Langdon, & Barnier, 2015).

Another measure that has been used to quantify subjective experiences is the Phenomenology of Consciousness Inventory (PCI; Pekala, 1991). The PCI questionnaire measure consists of 53 items and taps into various phenomenological changes that may occur in any situation that might be associated with an altered state of consciousness (e.g., hypnosis, meditation, day-dreaming, drug consumption etc.). The PCI has been used to assess subjective experiences in a range of contexts, for instance out-of-body experiences (Maitz & Pekala, 1991), meditation (Venkatesh, Raju, Shivani, Tompkins, & Meti, 1997), firewalking (Pekala & Ersek, 1993), and drumming (Maurer, Kumar, Woodside, & Pekala, 1997; Szabó, 2003). In our Hypnosis Laboratory at Department of Affective Psychology, Eötvös Loránd University, the PCI is routinely used to assess phenomenological changes co-occurring with experimentally induced ASCs, especially with hypnosis (Józsa, 2012; Költő, 2015; Varga, 2013; Varga, Banyai, Gósi-Greguss, & Tauszik, 2013; Varga, Józsa, Banyai, Gosi-Greguss, & Kumar, 2001). Of particular relevance to this research, one of the PCI dimensions – *Volitional Control* – directly assesses alterations in the sense of agency occurring in altered states of consciousness (see Section 2 for description of all PCI dimensions).

Many mental illnesses are also associated with altered feelings of control over behavior (e.g. obsessive-compulsive disorders, eating disorders or addictions) or with lack of initiative (e.g. depression). Modification to sense of agency via hypnotic suggestions may be an important component of clinical hypnosis to treat these conditions. A better understanding of how hypnosis modulates sense of agency may help us to design better hypnotherapeutic interventions, addressing problems associated with intentions, initiative and will. The SOARS has been used in clinical contexts (Polito et al., 2015) as well as in hypnosis research, and it may also serve as a tool to investigate agency-modulating effects of specific hypnotic interventions. In particular, the effectiveness of any given clinical hypnosis intervention seems to be partially independent of the patient’s hypnotic susceptibility (Williamson, 2012). The SOARS may be a helpful tool for understanding and separating the roles of volition and hypnotizability in the therapeutic context.

1.1. Research aims and hypotheses

The current study had three aims. Our first aim was to translate the Sense of Agency Rating Scale to Hungarian (SOARS-HU), and to test the validity and reliability of this measure. We hypothesized that the Hungarian version of the measure would have a factor structure similar to the original version, and yield similar scores as the original SOARS. Additionally, we expected that the SOARS-HU would correlate with HGSHS:A total and factor scores.

Our second aim was to explore convergent validity between our specific measure of sense of agency (the SOARS-HU) and a measure of the phenomenological qualities of an altered state of consciousness (the PCI). We hypothesized that both SOARS factors (*Involuntariness* and *Effortlessness*) would be associated with the PCI dimensions of *Volitional Control*, *Altered Experience*, *Altered State of Awareness*, and *Self Awareness*. This study is the first to investigate the specific relationship between sense of agency alteration (as measured by the SOARS) and the phenomenological aspects of altered consciousness (as measured by the PCI) in hypnosis.

Our third aim was to investigate whether the association between altered agency and the phenomenological qualities of an altered state of consciousness varied according to participants’ level of hypnotizability. Although individuals are typically broadly classified as either low, medium or high hypnotizable, it is well accepted that there is considerable variation in individuals’ experiences during hypnosis (McConkey & Barnier, 2004; Sheehan & McConkey, 1982). In particular, recent findings have shown that individuals may experience reduced agency at different levels of hypnotic susceptibility (Terhune, Polito, Barnier, & Woody, 2016) or in response to factors unrelated to hypnotizability (Polito et al., 2014). In light of these findings, we hypothesized that associations between the SOARS factors and PCI dimensions would remain consistent when controlling for hypnotizability.

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