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# Altered states of consciousness are related to higher sexual responsiveness



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#### ABSTRACT

Altered states of consciousness lead to profound changes in the sense of self, time and space. We assessed how these changes were related to sexual responsiveness during sex. 116 subjects reported (a) intensity of awareness concerning body, space and time, and (b) satisfaction, desire, arousal, and orgasm occurrence. We differentiated vaginal intercourse orgasm from noncoital orgasm. Female vaginal intercourse orgasm was further differentiated as with or without concurrent clitoral masturbation. Overall, sexual responsiveness was related to greater body awareness and lesser time and space awareness. Satisfaction, desire, and arousal were especially associated with less time awareness in women. Female orgasms during vaginal intercourse were related to greater body awareness and lesser time awareness, but noncoital orgasms were unrelated. Our findings provide empirical support for the hypotheses that altered states of consciousness with attentional absorption are strongly related to sexual responsiveness in women, and to a lesser extent in men.

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#### 1. Introduction

Altered states of consciousness induced through meditation, in sensory deprivation, in rhythm-induced trance or under the influence of drugs lead to profound changes in the sense of the self, time and space (Block, 1979; Vaitl et al., 2005; Wittmann, 2015). Altered states of consciousness can also occur in varying degrees during sexual activity (Mosher, 1980; Nielsen et al., 2013; Passie, Hartmann, Schneider, & Emrich, 2003; Swartz, 1994). States of 'absorption' are altered mental states characterized by an intense attentional focus on sensory and/or imaginary experiences which leads to changes in the perception of self, space, and time (Tellegen & Atkinson, 1974). Given that sexual arousal is enhanced by focusing attention on sensory and imaginary sexual stimuli (Brody & Weiss, 2010; Smith & Over, 1987), absorption likely plays an important role in sexual responsiveness. This view is strengthened by studies revealing that the capacity for vivid imagination was related to proneness to sexual excitability in both sexes (Harris, Yulis, & Lacoste, 1980), and that hypnotic suggestibility was greater in women who attain orgasm during coitus more easily (Bridges, Critelli, & Loos, 1985). Both vividness of imagination and hypnotic suggestibility are characteristics of persons predisposed to absorption (Tellegen & Atkinson, 1974). Moreover, creative self-forgetfulness, a personality trait reflecting the tendency for experiencing absorbed states was related to higher sexual desire in women (Costa, Oliveira, Pestana, Costa, & Individual Differences, 2016). During sex, absorbed states occur in

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varying degrees and are characterized by an intense focus on physical sexual sensations, and to some extent, as long it is not distractive, in erotic imagination. Such an absorption in bodily sensations comes together with a reduced awareness of surrounding space and alterations in the sense of time, which can take the form of loss of awareness of time (timelessness) (Swartz, 1994). Similar effects of a loss of time and space can be found in meditative states in experienced meditators (Berkovich-Ohana, Dor-Ziderman, Glicksohn, & Goldstein, 2013; Droit-Volet, Fanget, & Dambrun, 2015) suggesting that changes in the senses of space and time are general characteristics of altered states of consciousness, i.e. of states of absorption and flow (Glicksohn, 2001; Wittmann, 2015).

Swartz (1994) proposed that absorbed states are essential for high sexual arousal and orgasm in many, if not all, women. He further proposed that absorbed states may facilitate male sexual arousal and orgasm by enhancing the subjective hedonic quality, but these altered states are not essential for sexual responsiveness in most men (Swartz, 1994). The present retrospective study aims at assessing how the senses of self, time and space during the last sexual encounter were related to sexual responsiveness. Specifically, it is hypothesized that greater satisfaction, desire, arousal, and orgasm occurrence during the last sexual encounter are related to greater awareness of the body and to lesser awareness of space and time. It is further hypothesized that these associations are stronger for women than for men.

Consistency of female orgasm during coitus was previously related to a greater capacity to enter altered states of consciousness, such as hypnotic suggestibility, enjoying the feeling of being "carried away" by alcohol, and lack of control of movements and thoughts near the end of the coitus (Bridges et al., 1985). In addition, greater likelihood of orgasm from vaginal intercourse without clitoral masturbation (vaginal orgasm) has been more consistently related to higher sexual desire and satisfaction than other orgasm triggers (Brody, 2007; Brody & Weiss, 2011; Nutter & Condron, 1983; Tao & Brody, 2011); hence, in our study we assessed whether occurrence of vaginal orgasm is more strongly related to greater awareness of the body and lesser awareness of space and time.

#### 2. Material and methods

#### 2.1. Participants and procedure

After giving informed consent, 68 women and 48 men participated in the study. All participants were Portuguese recruited in the Lisbon area. Subjects were on average 24.89 years of age (SD = 6.98). For more detailed characteristics of the participants, see Table 1. Exclusion criteria were defined as taking prescribed psychotropic medication, i.e. for treating psychiatric conditions, or having been under the influence of recreational psychoactive substances during the last sexual activity (including alcohol, but with exception of nicotine). In order to have a homogeneous sample, individuals reporting homosexual and bisexual inclinations were excluded in this analysis. However, these participants form a subgroup of a laboratory study (not described here) and also provided information on the variables of interest of the present study. The study had the approval of the local Ethics Committee and complied with the principles of the declaration of Helsinki. All participants received a ten-euro voucher or course credits.

#### 2.2. Measures

Two visual analog scales (VAS) with scores from 1 to 7 were used to measure intensity of awareness of body and space during the last sexual activity. The questions in Portuguese were "How intensively did you perceive yourself?" and "How

**Table 1** Descriptive statistics.

	Women ( <i>N</i> = 68)	Men (N = 48)
Age (years) Mean (SD)	24.84 (7.11)	24.96 (8.12)
Education		
High school %	4.4	8.3
Current university attendance %	45.6	45.9
University degree %	36.8	35.4
Masters degree or more %	13.3	10.5
Occupation		
University student %	63.2	66.7
Employed %	35.3	29.1
Unemployed %	1.5	4.2
Relationship characteristics		
With regular sexual partner %	73.5	77.1
Relationship duration (months) Mean (SD)	42.24 (32.61)	38.58 (40.75)
Cohabitating (total sample %)	27.9	21.1
Smoking tobacco before last sex %	8.8	4.2

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