



## Are expectancies about hypnosis predictive of responsiveness and phenomenology?

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### Abstract

Hypnotic responsiveness has been suggested to result from expectancies about being hypnotized. We analyzed the relationship between expectancies, responsiveness and phenomenology in 110 participants assigned to: (1) imagination (hypnosis labeled as imagination), (2) hypnosis or (3) mixed groups (hypnosis labeled as imagination; but with preliminary instructions referring to hypnosis). Overall, results revealed a very low impact of expectancies on both hypnotic responsiveness and phenomenology; hypnosis group did not differ significantly from the others. The methodology commonly used to assess expectancies might represent a flaw in favor of a causal relationship between expectancies and hypnotic experience. Further, the quantification of consciousness (i.e. subjective experience) associated to hypnosis and the measurement of hypnotic responsiveness from a more phenomenological perspective is upheld.

**Keywords:** hypnosis, expectancies, phenomenology, hypnotic responsiveness.

## Introduction

In agreement with the expectancy theory, hypnotic experiences occur when expectancies about being hypnotizable activate a response set for behavior (e.g., Braffman & Kirsch, 1999; Kirsch, 1985; Lynn, Kirsch, & Hallquist, 2008). Accordingly, held expectations about one's level of response are argued as highly correlated with actual responsiveness (Kirsch, 1991). Socio-cognitive research proposes that expectancies have a causal role in the hypnotic response being the sole proximal determinant of hypnotizability (Braffman & Kirsch, 1999; Kirsch, 1985, 2001; Lynn et al., 2007). Nevertheless, recent research (e.g., Benham, Bowers, Nash, & Muechen, 1998; Benham, Woody, Wilson, & Nash, 2006; Lifshitz, Howells, & Raz, 2012; Tomé-Pires, Ludeña, & Pires, 2015) suggests a less determinant effect of expectancies on the hypnotic response. Therefore, the assumption that expectancies are the "sole determinants" or the "essence" of hypnosis and that "once expectancies are eliminated, there is nothing left" (Kirsch, 1991) may be too extreme and still debatable. As it has been suggested, response to hypnosis is highly complex and not easily and primarily predicted by a single factor (see review by Jensen et al., 2015).

A number of methodological considerations have been emphasized

regarding the measurement of expectancies (e.g. Kihlstrom, 2005; Laurence, Beaulieu-Prévost, & Chéné, 2008), and consequently its value as a predictor of hypnotic response. It may be the case that the methodology commonly used represents a flaw in favor of a causal relationship between expectancies and hypnotic experience (e.g., Tomé-Pires et al., 2015). Since expectancy concerns a belief especially based on individual past experiences then it is not surprising that expectancies about being hypnotizable can be good predictors of future hypnotic behavior when the evaluation is done after being exposed to hypnosis. It does not focus on a causal relation between expectation and hypnotic responsiveness, but on the relation between expectancies and experience (Laurence et al., 2008). Thus, the methodology generally employed by socio-cognitive research, in which expectancies should not be measured before induction as it fails to find strong relationships between expectations and responsiveness (e.g. Kirsch, 1991), might overemphasize the role of expectancies on the hypnotic response. For instance, the methodology used by Kirsch and colleagues (Kirsch, Wickless, & Moffitt, 1999; Wickless & Kirsch, 1989) might be more appropriate to study only the relationship of expectancy and hypnosis when people are "encouraged" to have expectancies about hypnosis. Hypnotic responsiveness has been recently suggested



to also occur when people do not know anything about hypnosis (Ludeña, 2014), which is contrarily to the expectancy theory that proposes that there is no hypnosis without expectancies.

Furthermore, it has been argued that the use of the label "hypnosis" triggers lay beliefs, expectations and motivations concerning hypnosis that subsequently modify behaviour and experience (e.g., Barber & Calverly, 1964; 1965; Gandhi & Oakley, 2005; Hylands-White & Derbyshire, 2007). Gandhi and Oakley (2005) conducted a study that shows how expectancies about hypnosis can be inferred to interfere or to be determinant on the hypnotic experience, as typically assumed by the socio-cognitive methodology. They found enhanced suggestibility on behavioral and experiential measures, and perceptions of involuntariness when the induction was labeled as 'hypnosis'. The authors emphasized that the significant effect of hypnotic inductions on hypnotic suggestibility was dependent on the label "hypnosis". Nevertheless, expectancies were only indirectly measured as the authors believed that expectancies were formed by simply labeling the procedures. Further, expectancies were not actually measured as in previous studies (e.g., Kirsch et al., 1999; Wickless & Kirsch, 1989) since, for example, there was no manipulation check to confirm that expectancies were distinct between groups (Benham et al., 2006).

On the other hand, phenomenology, *per se*, has received scant attention (Barret, 2007; Pekala & Kumar, 2000) and perhaps not in the most suitable manner (Barret, 2007; Woodard, 2003) in the hypnosis field. Phenomenology regards the subjective effects or experience associated with being hypnotized (Pekala, 2002). Because phenomenology is considered as an epiphenomenon caused by expectancies (Lynn, Kirsch, & Hallquist, 2008; Wagstaff, 2010), Wagstaff (2010) suggests, for example, that if Gandhi and Oakley (2005) had included in their study measures of phenomenology they would go in the same direction as hypnotic responsiveness. In fact, Wagstaff refers that a number of studies support the view that the label of 'hypnosis' is the main factor accounting for the enhanced responsiveness to suggestions (e.g., Barber, 1969; Kirsch, Montgomery, & Sapirstein, 1995). In a recent research (Tomé-Pires et al., 2015) the effect of expectancies on phenomenology was tested by comparing imagination (hypnosis labeled as imagination) and hypnosis groups: no evidence was found for the assumptions based on the expectancy theory on a phenomenological level (measured with the Phenomenological Consciousness Inventory – PCI - Pekala et al., 2010). Indeed, when comparing the levels of expectancies findings did not confirm a causal role for expectancies

in the hypnoidal state (i.e. a "general measure of trance"; Pekala & Kumar, 2000).

The main aim of the present study is to analyze the impact of expectancies about being hypnotized on the phenomenology and responsiveness associated with hypnosis. Specifically, we intend to test whether expectancies have an influence on hypnotic response following a similar methodology used by Gandhi and Oakley's study (2005), and also to measure the effects of expectancies in phenomenology through the PCI.

Following expectancy theory, it would be expected that expectancies have a greater effect on hypnotic responsiveness and phenomenology in the hypnotic group rather than in the other groups. Nevertheless, our study's key prediction and specific hypotheses are the following ones: (1) expectancies about being hypnotized will not be greater in the hypnosis group compared to a group receiving imagination and another group receiving both imagination and hypnosis procedures (i.e. mixed group); (2) expectancies will not have a larger influence on hypnotic response in the hypnosis group compared to the other groups (i.e. imagination and mixed); (3) expectancies will not have a greater influence on phenomenology in the hypnosis group compared with the other experimental groups.

## Method

### Study design

This study used a 3-arm randomized controlled experimental design to test the study hypothesis. 110 participants were randomly assigned to one of three experimental conditions: (1) imagination (hypnosis labeled as imagination) (2) hypnosis and (3) mixed (i.e. hypnosis presented as imagination; however it was employed a hypnotic protocol).

### Participants

The study participants (N= 110) were Undergraduate Psychology students (over 18 years old) from the University of Coimbra (Portugal) incentivized for participation by offering an extra course. Students willing to participate voluntarily were randomly assigned (assignment to one of the three groups was accomplished with a computer-generated table of random numbers) to one of the three following groups: (1) imagination (hypnosis labeled as imagination), (2) hypnosis, and (3) mixed. Therefore, the experimental groups were:

(1) Imagination group: 4 subgroups (10 +10 +12+12) of a total of 44 participants.

(2) Hypnosis group: 3 subgroups (12 +12+12) of a total of 36 participants.

(3) Mixed group (i.e. hypnosis presented as imagination; although it was employed a

hypnotic protocol): 3 subgroups (10+10+10) of a total of 30 participants.

All participants were informed about the type of intervention they were about to receive and written informed consent was obtained. Inclusion criteria included: (1) having over or 18 years old, and (2) never being subjected to hypnosis (this data was achieved through the Valencia Scale of Beliefs and Attitudes about Hypnosis, VBAHS-C, which included a question related to previous experience on hypnosis).

### ***Study procedures***

The present study had two phases. In **Phase 1** (Figure 1), 140 participants completed a number of questionnaires measuring anxiety, depression, attitudes about hypnosis, and expectancies about being hypnotized. At this moment of the study, participants were informed that the aim of the present investigation was to analyze the psychometric proprieties of the completed questionnaires. We ended up with a total of 110 individuals by excluding those participants with experience on hypnosis and those who dropped out the experiment. In **Phase 2** (between two and four weeks after **Phase 1**) participants were randomly assigned to one of the three experimental groups: (1) imagination (n= 44); (2) hypnosis (n= 36); and (3) mixed (n= 30). After group randomization, all participants were exposed

to the Waterloo-Stanford Group Scale of Hypnotic Susceptibility Form C (WSGC; Bowers, 1993; 1998; Kirsch, Milling, & Burgess, 1998), however with procedural differences between the groups:

(1) In the imagination group, participants were firstly informed that the experiment had as its main aim the study of individual differences in imagination. All the 10 items (suggestions) and preliminary instructions from the WSGC and words related to hypnosis were substituted by words related to imagination or concentration (e.g. imagine, imagination, concentration, concentrate), as for example: *“I am about to help you relaxing and I will give you some instructions that will help you to gradually enter in an imagination state”* or *“Imagination state is perfectly a normal and natural state and depends on the attention and concentration states that we use together”*.

(2) In the mixed group, participants, alike the imagination group, were firstly informed that the experiment had as its main aim the study of individual differences in imagination. All the 10 items from the WSGC and words related to hypnosis were substituted by words related to imagination or concentration (e.g. imagine, imagination, concentration, concentrate), as in the imagination condition. Since firstly they were informed it was an imagination

condition they were expected to be under an imagination condition. Nevertheless, when exposed to the preliminary instructions participants realized that actually they were under a hypnotic condition: “*Preliminary Instructions: Within a few minutes I will apply a standardized procedure to measure your hypnotic ability*” (Waterloo-Stanford Group Scale of Hypnotic Susceptibility Form C - WSGC; Bowers, 1993, 1998; Kirsch, Milling, & Burgess, 1998). Even though the participants were exposed to the same instructions as participants in the hypnosis group, the rest of the procedure did not employ words related to hypnosis. Briefly, the procedure was the following: (1) participants were informed that they were going to be exposed to imagination, (2) instructions include words related to hypnosis, and (3) when giving suggestions all the words related to hypnosis were substituted by other words (e.g. imagine).

(3) In the hypnosis group, participants in the hypnosis condition were informed that the experiment intended to study individual differences in the experience of hypnosis. The all 10 items and preliminary instructions from the Waterloo-Stanford Group Scale of Hypnotic Susceptibility Form C and words related to hypnosis were maintained as the original version of such hypnotic procedure. For example, participants would hear statements such as: “*I am about to help you*

*relaxing and I will give you some instructions that will help you to gradually enter a hypnotic state*” or “*Hypnosis is perfectly normal and natural, and depends on the attention state and suggestions that we use together*”.

Finally, when the procedure ended all participants were asked to rate their responses in an answer sheet. For the imagination and mixed groups hypnosis terminology was substituted, contrarily to the hypnosis group who received the original version.

During this phase of the study, two minutes after being subjected to the Waterloo-Stanford Group Scale of Hypnotic Susceptibility Form C (WSGC; Bowers, 1993; 1998; Kirsch et al., 1998), participants answered the Phenomenology of Consciousness Inventory (PCI, Pekala, 2010a, b) in relation to the time spent in the WSGC, in agreement with Pekala et al.’s (2009) procedure. Additionally, at the end of *Phase 2*, expectancies about being hypnotized were measured again. This procedure was undertaken to allow participants’ naive experience about the nature of the study with no information affecting such experience. In fact, all the same questionnaires administered in *Phase 1* (i.e. anxiety, depression, attitudes about hypnosis) were also administered in *Phase 2* so that participants would not suspect that

this investigation was on hypnosis. At the end of the study participants were debriefed and thanked for their participation. The procedure was performed by the two first authors who are clinicians with experience and training of clinical hypnosis. Both clinicians use hypnosis for more than 10 years.

**Figure 1. Script**

**Script**

**Phase I** – *“We would like to thank you for taking part of this study, which aims to test psychometric parameters of a number of scales. Thus, we would like to ask you to complete such tests. In a couple of weeks (between 2 and 4) we will again ask you to complete these tests”.*

**Phase II** - After 2-4 weeks participants from all groups arrived to the experimental room and received several instructions: *“As we inform you at the beginning of the present study (2-4 weeks ago) you will now be asked to complete the same questionnaires you completed before following a procedure of test-retest. As we told you at the beginning of the study we aim to analyze the psychometric proprieties of the completed questionnaires”.*

After completing the questionnaires participants were told: *“Now that you finished completing these questionnaires we would like to invite you to participate in a following phase of this study in which we intent to study individual differences in imagination (if participants were in the imagination or mixed groups) or in hypnosis (if participants were in the hypnosis group). In the next minutes, we will present you an audiotape (i.e. Waterloo scale) and you are asked to follow the given instructions. When you finish answering this questionnaire, please complete the same scales applied in both phases of the study.*

***Instruments/measures***

In this present study a number of instruments was used to measure anxiety, depression, attitudes on hypnosis, expectancies about being hypnotized, hypnotic response, and phenomenology related to hypnosis.

**The Centre for the Epidemiological studies-Depression questionnaire (CES-D):** the CES-D (Radloff, 1977; Fagulha & Gonçalves, 2000) consists of 20 questions chosen to reflect various aspects of depression including depressed mood, feelings of guilt and worthlessness, helplessness and hopelessness, psychomotor retardation, loss of appetite and sleep disturbance.

**Zung Self-Rating Anxiety Scale (Zung):** the Zung (Zung, 1979; Ponciano, Serra, & Relvas, 1982) consists of 20 items measure developed to assess the frequency of anxiety symptoms based on diagnostic conceptualizations. The respondent indicates how often he or she has experienced each symptom on a 4-point Likert scale consisting of 1= *“none or a little of the time”* to 4= *“most or all of the time”*.

**Valencia Scale of Beliefs and Attitudes about Hypnosis (VBAHS-C):** The VBAHS-C (Capafons et al., 2004; Carvalho et al., 2007) consists of 34 items assessing beliefs and attitudes toward hypnosis. The items are rated on a 5-point scale from 1 (do not agree) to 5 (totally agree).

### **Hypnotic Assessment Procedure**

**(HAP):** The HAP (Pekala (2010a, b) measures expectancies about being hypnotized with a Likert scale used in the Pekala's HAP, but without referring to the future experimental conditions (hypnosis or imagination). Hence, a Likert scale ranging from 1 to 10 was used, for example: "*I would like to know how deeply hypnotized you expect to be when we try to hypnotize you.*" "1" = "*not hypnotized at all,*" and "10" = "*the most hypnotized that you can imagine.*" It is important to briefly remark that in the first moment (before experiment) this scale was answered after the VBAHS-C. Following this procedure, it was harder for participants to disclose the nature of the future experimental conditions.

**Waterloo-Stanford Group Scale of Hypnotic Susceptibility Form C (WSGC):** the Waterloo-Stanford Group Scale of Hypnotic Susceptibility Form C (WSGC, Bowers, 1993, 1998) is a group adaptation of the Stanford Hypnotic Susceptibility Scale, Form C (Weitzenhoffer & Hilgard, 1962) measuring responsiveness to suggestions. The WSGC was presented in an audio format (and audiotape with the voice of the second author). When administering the procedure, the first two authors were present in the three conditions to assure an adequate administration of the scale.

Although the WSGC consists of twelve test suggestions, one test suggestion

(posthypnotic suggestion) was removed in this study because participants of the imagination and mixed groups could more easily suspect that the experiment would involve hypnosis. Therefore, the adapted version consisted of a total of eleven suggestions. Another version of the scale was created for the imagination and mixed groups with the same items, but with hypnosis terminology being substituted by words related to imagination or concentration. The scoring of hypnotic response items was adapted from the WSGC, based on Gandhi and Oakley's methodology, assessing (with some modifications) behavioral measures (Bowers, 1998) and subjective measures (Kirsch et al., 1998). Self-reported behavioral scores on the WSGC were obtained by having participants completing a questionnaire in which they indicated whether they had made the behavioral response called for by the suggestion (0 = no; 1 = yes). Subjective scores on the WSGC were obtained by having participants rate the degree to which they felt the subjective effects called for by each suggestion (e.g., arm levitation) on a 5-point Likert scale (1 = not at all; 5 = to a great degree).

On addition, concerning the Gandhi and Oakley (2005) methodology we did some changes that we believe to be more rigorous. So, in our study, the behavioral response was evaluated by observers (one observer for two participants) using a Likert Scale (1 = not at

all; 5=to a great degree). Accordingly, we used two measures of responsiveness:

(1) Each two participants had an observer that examined features that could be associated to the delivered suggestions (e.g. movements, expressions). In fact, this was the same measure used in the subjective evaluation of the Portuguese version by Carvalho et al.,(2007). Before the experiment, observers (Psychology students) were trained according to the instructions of the measure (Portuguese version). Notably, there are a number of suggestions hardly to be observable (e.g. the taste experience). Despite the attempt to make this evaluation as objective as possible, the authors of the present article were aware of several limitations. This evaluation was named objective (evaluation done by an observer).

(2) The other measure, which we called subjective (evaluation done by the person herself/himself), was obtained from the evaluation each person did of their responses to the eleven items of the Waterloo Scale using a 5-point Likert scale. It was the same procedure used by Gandhi and Oakley (2005), and others (Carvalho et al., 2008; Kirsch et al., 1998).

In summary, scores on the WSGC were obtained by having participants rating the degree to which they felt the effects called for by each suggestion on a 5-point Likert scale (1 = not at all; 5=to a great degree), and by observers that rated the degree to which

they observed the effects called by each suggestion (also on a 5-point Likert scale).

### **Phenomenology of Consciousness**

**Inventory (PCI):** about two minutes after being subjected to the WSGC, participants completed the Phenomenology of Consciousness Inventory (PCI, Pekala, 2010a, b) in relation to the time spent in the WSGC, in agreement with Pekala et al.'s (2009) procedure. Then, through the PCI participants were assessed on a number of phenomenological variables. The PCI is constituted by 53 items on a Likert scale (0 to 6; for example: = 0 "*I was forever distracted and unable to concentrate on anything*" (0 1 2 3 4 5 6) "*I was able to concentrate quite well and was not distracted*") presenting two extreme affirmations in which the participant must choose the one that best related to his or her case. Moreover, the PCI generates 12 phenomenological dimensions: (1) positive affect, (2) negative affect, (3) altered experience, (4) rationality, (5) visual imagery, (6) volitional control, (7) attention, (8) self-awareness, (9) arousal, (10) altered state of awareness, (11) internal dialogue , and (12) memory . There are 13 additional sub dimensions that were not considered in the present work.

### **Data analyses**

Different statistical tests were conducted, such as the Pearson correlation, and analysis of variance (ANOVA) in order to compare

all the variables in study. Additionally, effect sizes were calculated allowing us to ascertain relevant changes that had occurred throughout the investigation. Therefore, we also considered as differences of interest only those that were represented by medium and large effect sizes (Omega Squared-  $\omega^2$ ) and their magnitude was based on Kirk (1996): small (0.01), medium (0.06) and large effect sizes (0.14). As *Post-hoc* test we used the *Bonferroni* test because is more conservative and allows higher control over the *Type I* error (Kirk, 2009).

## Results

### *Expectancies about being hypnotized*

A one-way analysis of variance (ANOVA) between groups was conducted to compare the three experimental groups in their expectancies about being hypnotized before the experiment. Results revealed that no significant statistical differences were found between groups,  $F(1, 110) = 0.47$ ,  $p > 0.05$ . We have also conducted a one-way ANOVA for each group separately to compare the three groups about expectancies before and after experiment. Only the hypnosis group change expectancies. As we can see in Table 1, after the experiment expectancies were significantly lower ( $p < 0.02$ ) in the hypnosis group, with a large effect size ( $\omega^2 = 0.13$ ).

**Table 1.** Expectancies before and after the experiment

Expectancies	Media	SD	F
<b>Hypnosis group (n= 36)</b>			
Before	5,88	2,16	5,32
After	4,77	2,15	
<b>Imagination group (n= 44)</b>			
Before	5,56	2,26	0,32
After	5,25	2,36	
<b>Mixed group (n= 30)</b>			
Before	5,93	1,94	1,5
After	5,13	3,05	

In sum, no significant differences emerged between the three experimental groups in their expectancies about being hypnotized before the assigned conditions. Additionally, only the hypnosis group presented significant changes in the variable expectancies when comparing them two moments of assessment; i.e. expectancies decreased in the second moment of assessment (after the experiment).

### **Hypnotic Responsiveness to the Waterloo Scale: objective and subjective measures in the three experimental groups**

In order to analyze whether the experimental conditions had an influence on hypnotic responsiveness (objective and subjective measures) we conducted a two-way ANOVA with objective and subjective measures as a one factor and the three experimental conditions as the other factor. A significant statistical difference was found for *objective regression*,  $F(3, 110) = 5.65$ ,  $p < 0.005$ , with a moderate effect size  $\omega^2 = 0.08$ . *Post-hoc* comparisons indicated that the

mean score for imagination group ( $M= 2.81$ ,  $SD= 1.70$ ) was significantly different ( $p<0.003$ ) from hypnosis group ( $M= 1.61$ ,  $SD= 1.27$ ).

### **Expectancies and objective and subjective responsiveness to Waterloo Scale**

In order to elucidate if the level of expectancies could have influenced objective and subjective responsiveness to Waterloo Scale, three levels of expectancy were constituted: high (scores 8,9,10), moderate (scores 4,5,6,7), and low (1,2,3). Thus, we compared low, moderate and high expectancy levels in each group by using a two-way analysis of variance between groups. There was a statistically significant interaction effect between groups and expectancies in *objective gustative experience*,  $F(2, 100)= 2.76$ ,  $p= 0.03$ , in *subjective dream*,  $F(2, 100)= 3.96$ ,  $p< 0.005$ , in for *objective dream*,  $F(2, 100)= 2.84$ ,  $p< 0.025$ . Additional analyses were conducted to explore the nature of the interaction effect. Thus, we compared low, moderate and high expectancies in each group by using one-way analysis of variance between groups. In the hypnosis group there was a statistical significant difference between groups of level of expectancy in *objective hands approach*  $F(2, 33)= 3.24$ ,  $p< 0.05$ , with a large effect size  $\omega^2=$  of 0.16. *Post-hoc* comparisons indicated that the mean score for moderate group ( $M= 3.69$ ,  $SD= 1.04$ ) was

significantly different ( $p< 0.02$ ) from the high group ( $M= 2.4$ ,  $SD= 1.14$ ). In the imagination group there was also a significant statistical difference in *objective hands approach* between groups  $F(2, 41)= 3.82$ ,  $p< 0.03$ , with a large effect size of  $\omega^2= 0.16$ . *Post-hoc* comparisons indicated that the mean score for low group ( $M= 3.71$ ,  $SD= 1.38$ ) was significantly different ( $p< 0.04$ ) from the high group ( $M= 2.22$ ,  $SD= 0.66$ ). In the *mixed* group we found significant statistical differences between groups in the *objective mosquito experience*,  $F(2, 27)= 4.237$ ,  $p< 0.025$ , with a large  $\omega^2$  of 0.18. *Post Hoc* comparisons show that the mean score for moderate group ( $M= 1.5$ ,  $SD= 1.25$ ) was significantly different ( $p< 0.05$ ) from high group ( $M= 3$ ,  $SD= 1.54$ ); also we found significant statistical differences between groups in *subjective dream*,  $F(2, 27)= 5.4$ ,  $p< 0.01$ , with a large effect size of  $\omega^2= 0.22$ . *Post Hoc* comparisons show that the mean score for low group ( $M= 1$ ,  $SD= 0.1$ ) was significantly different ( $p< 0.025$ ) from moderate group ( $M= 3$ ,  $SD= 1.45$ ). Similarly, significant statistical differences were found between groups in *objective dream*,  $F(2, 27)= 7.01$ ,  $p< 0.004$ , with a large effect size of 0.29. *Post-Hoc* comparisons show that the mean scores for groups of low ( $M= 1.0$ ,  $SD= 0.12$ ) and moderate ( $M= 3.9$ ,  $SD= 1.61$ ) expectancies were significantly different ( $p< 0.004$ ). Finally, there was significant statistical differences between groups in

*subjective regression*,  $F(2, 27) = 9.244$ ,  $p < 0.001$ , with a large effect size of  $\omega^2 = 0.35$ , and *post-hoc* comparisons showing that the mean scores of low ( $M = 1.5$ ,  $SD = 0.57$ ) and moderate ( $M = 3.4$ ,  $SD = 1.04$ ) groups were significantly different ( $p < 0.004$ ).

### **Phenomenology in the three experimental groups**

In order to analyze if the experimental conditions had any influence on phenomenology we used a two-way analysis of variance between groups, with phenomenology as one factor and three experimental conditions as the other factor. There were no significant statistical differences between the three experimental groups and the twenty phenomenological variables under evaluation.

### **Expectancies and phenomenology in the three experimental groups**

As we did before, we compared low, moderate and high expectancy's levels in each group. A two-way ANOVA with level of expectancy as a one factor and the experimental conditions as the other factor was conducted. There was a statistically significant interaction effect between group and expectancies,  $F(2, 100) = 3.82$ ,  $p < 0.025$ , for absorption. Additional analyses were conducted to explore the nature of the

interaction effect found, using a one-way ANOVA. Neither the hypnosis group nor the imagination groups presented statistical significant differences in any of the phenomenological variables. In the mixed group there was a significant statistical difference between groups in volitional control,  $F(2, 27) = 3.63$ ,  $p < 0.04$ , and in absorption,  $F(2, 27) = 7.73$ ,  $p < 0.002$ . *Post-hoc* comparisons for volitional control show that the mean score for the moderate group ( $M = 2.4$ ,  $SD = 0.84$ ) was significantly different ( $p < 0.03$ ) from the low group ( $M = 1.16$ ,  $SD = 0.96$ ), with a large effect size of  $\omega^2 = 0.26$ . For absorption *Post-hoc* comparisons show that the mean score for the moderate group ( $M = 3.2$ ,  $SD = 0.41$ ) was significantly different ( $p < 0.003$ ) from the high group ( $M = 2.5$ ,  $SD = 0.44$ ), with a large effect size of  $\omega^2 = 0.36$ .

### **Correlations**

We also computed a number of correlations (Pearson) between expectancies (before the experiment) hypnotic responsiveness and phenomenology for each experimental group. In respect to hypnotic responsiveness, only in the mixed group we found a statistically significant and moderate correlation between expectancies before experiment and *lower the hand* ( $R = 0.42$ ,  $p < 0.02$ ). Regarding phenomenology we found several significant moderate correlations

(two of them negative) in the imagination group (Table 2). On the other hand, significant statistical correlations were not found in the hypnosis group. Finally, in the mixed group we found a significant moderate negative correlation between expectancies and attention ( $r = -0.45, p < 0.01$ ).

**Table 2.** Pearson correlations between expectancies (before the experiment) and phenomenology (PCI) in the imagination group.

	Negative affect	Visualization	Self awareness	Racionality
<b>r</b>	0.3	-0.32	-0.33	0.3
<b>p</b>	<0.04	< 0.03	< 0.02	< 0.04

## Discussion

Findings from this present investigation revealed a very low impact of expectancies on both hypnotic responsiveness and phenomenology. Our results do not support the expectancy theory, which argues that expectancies, besides responsiveness, also trigger the phenomenology associated with the experience of hypnosis (Wagstaff, 2010). As hypothesized, we found that expectancies (1) are not greater in the hypnosis group, (2) do not have a greater influence on the hypnotic response in the hypnosis group, and (3) do not have a greater influence on phenomenology in the hypnosis group when compared to the imagination and mixed groups.

When analyzing differences in

expectancies (measured before the experiment) between the experimental groups we found that they were not greater in the hypnosis group. By comparing the two moments of assessment of expectancies, only the hypnosis group presented significant changes in expectancies being lower after the experiment. Specifically, when testing the influence of expectancies on the hypnotic response in all the experimental conditions, we found a significant difference between groups only in one item (objective regression). However, contrarily to what the expectancy theory would predict, the hypnotic group scored lower than the imagination group. Indeed, in the hypnosis condition we found that participants with low expectancies scored higher comparing with participants with high expectancies in only one item: objective hands approach. In the imagination condition participants with low expectancies scored higher on their hypnotic response in relation to the same item comparing with participants with moderate expectancies. Finally, regarding the mixed condition, significant differences emerged when comparing with the other groups in four items (objective mosquito experience, subjective dream, objective dream, and subjective regression). Results showed that the relationship between levels of expectancies and response to items were not all in the same direction. For example, participants with high expectancies scored

higher than those with moderate expectancies in objective mosquito experience, whereas in subjective dream item participants with moderate expectancies scored higher than those with low expectancies. Therefore, present findings show that expectancies did not have a determinant role in determining responsiveness.

These findings are in agreement with previous research (e.g., Benham et al., 2006) that refer that it is too extreme to claim that expectancies are the sole important determinant of hypnosis (Kirsch, 1991; Lynn, Kirsch, & Hallquist, 2008). In fact, an individual's response to hypnosis is highly complex and not easily or strongly predicted by any one biological, psychological or social factors; no single factor appears primary (Jensen et al., 2015). On addition, we also believe our results are partially in agreement with the discrepancy theory (authors) that proposes that if expectancies have any influence in hypnotic responsiveness it is by its disconfirmation/violation and not its confirmation.

An intriguing question concerns why more differences did occur in the mixed group. In this respect, may the eventual creation of some confusion regarding the nature of the experiment (in imagination or in hypnosis) had an impact on responsiveness and phenomenology? It can be the case that we are dealing with a sort of surprise effect

resulting from a difficulty of participants to know what to expect from the experiment. They are not in condition to formulate congruent expectancies. This contradicts the socio-cognitive perspective as, for example, Kirsch and Lynn (1997), who proposed that participants in a hypnotic situation have generalized response expectancies and will follow the presented suggestions producing behaviors they experienced as involuntary. Thus, participants may attribute hypnotic responses to external causes (i.e. the hypnotist) experiencing these responses as involuntary. On the contrary, our present research seems to indicate that not knowing the nature of the procedure may facilitate the hypnotic experience. In a recent research we had reached a similar conclusion, also showing that people do not change beliefs and attitudes as easy as socio-cognitive authors seem to believe (Pires, Tomé-Pires, & Ludeña, 2013). Nevertheless, it may be the case that for some participants, the confirmation of expectancies activates a hypnotic experience, as predicted by Kirsch and others, but possibly for other participants the violation of expectancies is what activates this same experience. We believe, based on our findings and clinical observations, that the last case (i.e. violation of expectancies) is more common and applicable, considering also those who have no expectancies at all. However, at the same time, it seems to us that even people who

have their expectancies confirmed can be, despite that, surprised by the events raised by the hypnotic induction. Therefore, surprise may be a common factor to people who hold expectancies (their confirmation or their violation) and those who have no expectancies at all.

When analyzing the influence of expectancies in phenomenology, no significant differences emerged among participants receiving hypnosis, imagination or mixed conditions. Results on levels of expectancies showed no significant differences between hypnotic and imagination conditions. However, in the mixed group there were significant differences in two phenomenological variables (attention and volitional control), which is partially contrary to what one would expect following the expectancy theory. While in the phenomenological variable attention participants with low expectancies scored higher than participants with high expectancies, in the variable volitional control participants with low expectancies reported less control than those of moderate expectancies. Our findings can be interpreted on the basis of the discrepancy theory (authors) as participants with low expectancies revealed significantly more attention than participants with high or moderate expectancy in volitional control.

An important issue regards the use of the label “hypnosis”, which has been argued

to influence the lay beliefs, expectancies and motivation of participants concerning hypnosis, and its effects on behavior and experience (e.g., Gandhi & Oakley, 2005). However, in this study the label given to the induction procedure did not produce significant differences between groups neither in hypnotic responsiveness nor in phenomenology. Therefore, the name given to the procedure made no difference: the important was the procedure itself. These current results support the findings obtained by an earlier study (Tomé-Pires et al., 2015), which found no support for the label of “hypnosis” when looking at phenomenology associated to hypnosis. Importantly, expectancies were not really measured in Gandhi and Oakley’s study (2005) as the authors only supposed that different experimental conditions created different expectancies that led to changes in responsiveness. Therefore, as they did not measure expectancies they could not test the predictor value of expectancies. The assumption made (label “hypnosis” leads to expectancies) is based on a hypothetic linear relationship between expectancies and responsiveness. However, perhaps the eventual relationship is not between expectancies, *per se*, but with the violation of expectancies (as previously mentioned). Hence, we may think, as Ludeña (2014) found in a recent study, that some kind of surprise can be the factor behind

responsiveness, and that surprise can occur in participants with both positive and negative expectancies (someone can expect to respond very well to a hypnotic suggestion and still get surprised by their experience).

In this present research, expectancies were measured some time before participants were exposed to suggestions (between two and four weeks) as we believed it would be a more suitable way of testing the influence of expectancies. As previously suggested (e.g. Laurence et al., 2008; Tomé-Pires et al., 2015), measuring expectancies about being hypnotizable after participants are exposed to suggestions might be a kind of methodological flaw, in which the role of expectancies is inflated. Counterbalance assessment should also be considered when testing the value of expectancies in hypnotic responsiveness.

These findings may have important clinical implications regarding the role of expectancies when using hypnosis. For instance, it has been suggested that it is not necessary to change expectancies and beliefs (if negative) before conducting hypnosis as our findings revealed the following: (1) negative consequences (such as no adherence to treatment or fear of being hypnotized) of not correcting possible beliefs, attitudes or expectations were not observed; and (2) not having access to information on hypnosis facilitates the occurrence of surprise, which may have a positive influence in hypnotic

experience. Contrary to what is generally proposed (e.g., Lynn & Kirsch, 2006), expectancies do not seem to us to have any clinical relevance when preparing patients for a hypnotic intervention.

We believe that the present investigation has some methodological limitations and strengths. Study limitations concern the fact that participants were only students, and that the sample size was small. Our objective measure of responsiveness could also represent a methodological limitation, as we could not be sure if observers were fully able to obtain the possible changes; some of the changes were very hard to observe (i.e. taste). Furthermore, the usual methodology used to measure hypnotic response, may also have some restrictions as the measurement of the individual subjectivity as some individuals may report that they did certain movements and in reality they did not take place.

On the other side, our methodological considerations which relate to the fact that participants did not know the real nature of the procedure, and that not only responsiveness but also phenomenology measures were included can be pointed as strengths of the present study. We aimed to contribute to the study of phenomenological aspects related to hypnosis and responsiveness, and highlighted the assessment of hypnotic responsiveness from a more phenomenological perspective

considering the subjective effects. According to Pekala (2002), the PCI helps assessing hypnotizability depth and type, but also allows the knowledge of phenomenological processes especially activated during hypnosis. Subsequently, clinicians can benefit from this measure by including this same information in the hypnotic suggestions being congruent with the phenomenological experiences of the person. We believe that further studies could more extensively use phenomenological measures in order to understand better the subjective-type variables associated to hypnosis. Future studies could be encouraged to test the value of expectancies about being hypnotized on both hypnotic response and associated phenomenology by taking considering some of the discussed methodological concerns of the present study.

## References

- Barber T.X. & Calverley D.S. (1964). Empirical evidence for a theory of hypnotic behaviour: effects on suggestibility of five variables typically included in hypnotic induction procedures. *Journal of Consulting Psychology*, 29: 98–107.
- Barber T.X. & Calverley D.S. (1964). Toward a theory of hypnotic behaviour: effects on suggestibility of defining the situation as hypnosis and defining response to suggestions as easy. *Journal of Abnormal and Social Psychology*, 68: 585–92.
- Braffman, W., & Kirsch, I. (1999). Imaginative suggestibility and hypnotizability: An empirical analysis. *Journal of Personality and Social Psychology*, 77, 578-587.
- Benham, G., Woody, E., Wilson, K. & Nash, M. (2006). Expect the unexpected: Ability, attitude, and responsiveness to hypnosis. *Journal of Personality and Social Psychology*, 91 (2), 342-350.
- Bowers, K. S. (1993). The Waterloo-Stanford Group C (WSGC) Scale of Hypnotic Susceptibility: Normative and comparative data. *International Journal of Clinical and Experimental Hypnosis*, 41, 35–46.
- Bowers, K. S. (1998). Waterloo–Stanford Group Scale of Hypnotic Susceptibility, Form C: Manual and response booklet. *International Journal of Clinical and Experimental Hypnosis*, 46, 250–268.
- Carvalho, C., Capafons, A., Kirsch, I., Espejo, B., Mazzoni, M., & Leal, I. (2007). Factorial analysis and psychometric properties of the revised Valencia scale of attitudes and beliefs toward hypnosis-client version. *Contemporary Hypnosis*, 24, 76-85.
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Lawrence Earlbaum Associates.
- Gandhi, B. & Oakley, D. (2005). Does “hypnosis” by other name smell as sweet? The efficacy of “hypnotic” inductions depends on the label

- “hypnosis”. *Consciousness and Cognition*, 14, 304-315.
- Hylands-White N. & Derbyshire, W.G. (2007).  
Modifying pain perception: is it better to be hypnotized or feel that you are hypnotized? *Contemporary Hypnosis*, 24(4): 143-153.
- Jensen, M. P., Adachi, T., Tomé-Pires, C., Lee, J., Osman, Z. J., & Miró, J. (2015) Mechanisms of Hypnosis: Toward the Development of a Biopsychosocial Model, *International Journal of Clinical and Experimental Hypnosis*, 63(1): 34-75.
- Laurence, J., Beaulieu-Prévost, D. and Chéné, T. (2008). Measuring and understanding individual differences in hypnotizability. In Nash, M., & Barnier, A. (Eds.) *The Oxford Handbook of Hypnosis: Theory, Research, and Practice*. Oxford University Press (pp 141-178).
- Lifshitz, M., Howells, C., & Raz, A. (2012). Can expectation enhance response to suggestion? De-automatization illuminates a conundrum. *Consciousness and Cognition*, 21, 1001-1008.
- Lynn, S. & Kirsch, I. (2006). *Essentials of Clinical Hypnosis: An evidence-based approach*. Washington, DC: American Psychological Association.
- Lynn, S., Kirsch, I. & Hallquist, M. (2008). Social cognitive theories of hypnosis. In Nash, M., & Barnier, A. (Eds.) *The Oxford Handbook of Hypnosis: Theory and Research, and Practice*. (111-140). Oxford: Oxford University Press.
- Ludeña, M. (2013). Hypnosis: Surprise and Hipnoidal as Factors of Change in the Therapy of Emotional Disorders. Coimbra University, *PHD Dissertation*.
- Kihlstrom, J.F. (2003). The fox, the hedgehog, and hypnosis. *International Journal of Clinical and Experimental Hypnosis*, 51, 166-189.
- Kirk, R. E. (1996). Practical significance: A concept whose time has come. *Educational and Psychological Measurement*, pp. 746-759.
- Kirk, R. E. (2009) Experimental design. In R. Millsap & A. Maydeu-Olivares (Eds.), *Sage handbook of quantitative methods in psychology* (pp. 23-45). Thousand Oaks, CA: Sage.
- Kirsch, I. (1985). Response Expectancy as a Determinant of Experience and Behavior. *American Psychologist*, 40: 1189-1202.
- Kirsch, I. (1991). The social learning theory of hypnosis. In S. J. Lynn & J. W. Rhue (Eds.), *Theories of hypnosis: Current models and perspectives*, (pp. 439-465). New York: Guilford Press.
- Kirsch, I., Lynn, S. J. (1997). Hypnotic involuntariness and the automaticity of everyday life. *American Journal of Clinical Hypnosis*, 40, 329-348.
- Kirsch I, Milling LS, Burgess C. (1998) Experimental Scoring for the Waterloo-Stanford Group C. *International Journal of Clinical and Experimental Hypnosis*, 46 (3), 269-279.

- Kirsch I, Wickless C, Moffitt KH (1999). Expectancy And Suggestibility: Are The Effects Of Environmental Enhancement Due To Detection? *International Journal of Clinical and Experimental Hypnosis*, 47 (1), 40–45.
- Pekala, R. J. (2011). Reply to Wagstaff: Hypnosis and the relationship between trance, suggestion, expectancy, and depth: some semantic and conceptual issues. *The American journal of clinical hypnosis*, 53(3):207-27.
- Pekala, R. J., & Kumar, V. K. (2000). Operationalizing "trance:" I: Rationale and research using a psychophenomenological approach. *American Journal of Clinical Hypnosis*, 43, 107-135.
- Pekala, R. J., Kumar, V. K., & Maurer, R. (2009) *The Phenomenology of Consciousness Inventory: Hypnotic Assessment Procedure (PCI-HAP): Administrator's Manual*. Unpublished manual.
- Pekala, R. J., Kumar, V. K., Maurer, R., Elliott-Carter N., Moon, E, & Mullen, K. (2010a) Suggestibility, Expectancy, Trance State Effects, and Hypnotic Depth: I. Implications for Understanding Hypnotism. *American Journal of Clinical Hypnosis*, 52, 275-290.
- Pekala, R. J., Kumar, V. K., Maurer, R., Elliott-Carter N., Moon, E, & Mullen, K. (2010b). Suggestibility, Expectancy, Trance State Effects, and Hypnotic Depth: II. Assessment via the PCI-HAP. *American Journal of Clinical Hypnosis*, 52, 291-318.
- Pires, C.L., Tomé-Pires, C. & Ludeña, M. (2013). Something in the way she moves: Beyond beliefs and attitudes about hypnosis. *Iberian Journal of Clinical & Forensic Neuroscience*. Year, 0, I, Vol. 2, 167-193.
- Tomé-Pires, Ludeña, M. & Pires, C. (2015). Expectancies and hypnotic responsiveness: an experimental design flaw revealed. *International Journal of Clinical and Experimental Hypnosis*, 64.
- Wagstaff, G. F. (2010). Hypnosis and the relationship between trance, suggestion, expectancy and depth: Some semantic and conceptual issues. *American Journal of Clinical Hypnosis*, 53(1), 47-59.
- Weitzenhoffer, A.M. & Hilgard, E.R. (1962). *Stanford Hypnotic Susceptibility Scale, Form C*. Palo Alto, CA: Consulting Psychologists Press.
- Woodard, F. (2003). Phenomenological contributions to understanding hypnosis: *Review of the literature*, 93 (3), 829-847

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