
AN EXPERIMENTAL APPROACH TO HYPNOTIC AGE REGRESSION: CONTROLLED STUDY OVER 10 HEALTHY PARTICIPANTS

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ABSTRACT

During hypnotic trance, it is easy to drive subjects to hallucinations with concrete form and features, and to give orders to be carried out both during and after trance. A possible hallucinatory order is age regression to a previous period of life. The aim of this study was to investigate through a Rorschach test and a test of intelligence the range of mental abilities both in basal conditions and in hypnosis with age regression. The purpose was to ascertain whether age regression is a real phenomenon, and to what extent it is able to modify the perception of reality. The study was conducted on 10 highly hypnotizable volunteers. Each participant was tested three times, in three different sessions (in basal conditions, in hypnotic regression of age, and in neutral hypnosis), in the frame of a Latin-square protocol. Heart rate, systolic, diastolic, and mean blood pressure, cardiac index, and total peripheral resistance were constantly monitored. The test of intelligence used was that of the progressive matrices of Raven. As evidence of age regression, each patient underwent a test of Rorschach in order to reveal features of infantilism associated with regression. The test of Rorschach carried out during age regression showed in all subjects a sharp increase in those variables that are typical of an infantile approach and a drop in those that are typical of an adult approach. This result confirmed the experimental hypothesis that patients were regressed to infantile age. The Raven matrices revealed a decrease in efficiency during hypnotic age regression in comparison to standard conditions (anagraphic age). The results demonstrated that age regression is real and measurable, and that in age regression conditions—but not in neutral hypnosis—subjects show a modified behaviour revealing a lower level of maturity.

Key words: hypnosis, Raven, Rorschach, intelligence, regression

INTRODUCTION

The phenomenology of hypnosis is multifaceted and can mimic many conditions (Faymonville et al., 2006). As a matter of fact, an expert hypnotist can easily suggest to highly hypnotizable subjects to experience a rich panorama of phenomena during hypnotic trance. In this special condition of modified consciousness represented by hypnosis, our research group has been able in the recent past to induce important plastic mono-ideisms leading to a rich phenomenology represented by trigeminal and non-trigeminal analgesia (Casiglia et al., 2007; Facco et

al., 2009, 2011), neglect (Casiglia et al., 2010; Priftis et al., 2011), hallucinations (Casiglia et al., 1997, 2006), and increase of performance.

One of the most curious and appealing hypnotic phenomena is age regression (Gebhard, 1961). In this very particular condition, highly hypnotizable subjects can be suggested to feel younger than they are and can show behaviour similar, for example, to that of a baby. Nevertheless, it is difficult to clarify whether this is simply attributable to a subjective feeling (like a memory) or represents a real condition (revivification). Furthermore, it is also difficult to make age regression repeatable and measurable (i.e. experimental in nature).

When, in the frame of our many years of attempts to drive hypnosis in the field of Galilean sciences, we decided to tackle this problem, we realized that a special experimental model had to be created (see Figure 1). We therefore used a projective test of Rorschach (Staples & Wilensky, 1968; Bornstein, 2012) to clarify whether the participants, after receiving the hypnotic command of age regression, really had an infantile approach to life (a childish personality), and a test of intelligence (Raven, 2000) to evaluate the intellectual level of the participants during age regression, if any. As the Raven—like any mental test—is also a stressor (Rüddell et al., 1988) and the response to mental tests differs in adults and children (Kim et al., 2007), we also recorded the cardiovascular response to the test in order to clarify whether, during age regression, the response to the test was that of an adult or a child.

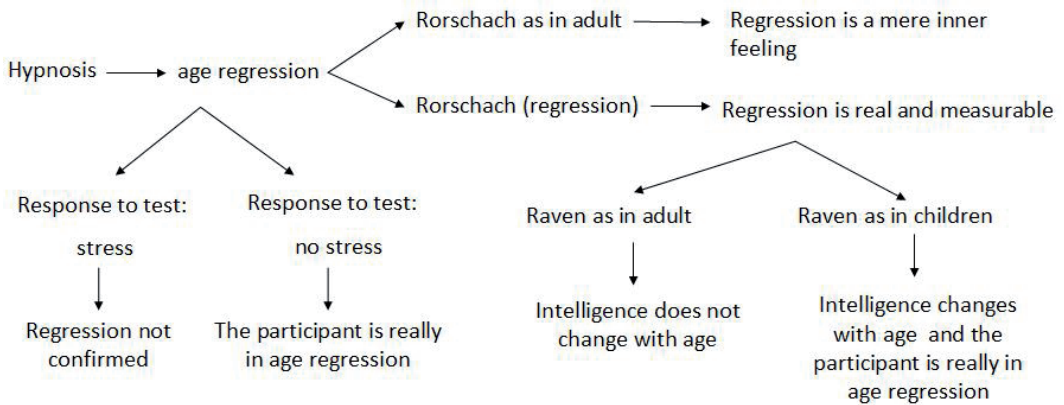


Figure 1. Experimental model

METHODS

GENERAL PLAN OF THE STUDY

Ten young, healthy volunteers, previously defined highly hypnotizable on the basis of the Harvard Group Scale of Hypnotic Susceptibility (Shor & Orne, 1962; Younger et al., 2005) and labelled as fit for hypnosis on the basis of the Minnesota Multiphasic Personality Inventory-2, were studied.

The study adhered to the principles of the Declaration of Helsinki and all subjects gave informed consent to the procedure. The local Ethics Committee approved the protocol.

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Each participant was studied over three consecutive days. On day 1, each participant was individually informed, gave consent to the study, was trained in hypnosis, was induced to hypnotic trance, and received the hypnotic commands specified below. On days 2 and 3, participants individually underwent in a random sequence the test of Rorschach or the matrices of Raven test.

HYPNOSIS

Preliminary setting. Hypnotic induction was obtained through a classic technique including verbal suggestions of relaxation and well-being according to a routine already used in the past by the same research group in Padua (Casiglia et al., 1997, 2010; Facco et al., 2009, 2011; Priftis et al., 2011). This preliminary procedure was aimed at favouring a valid mono-ideism on the occasion of experimental setting.

To reduce induction time, in this preliminary phase all participants received a post-hypnotic command oriented at reaching immediately the mono-ideism. In practical terms, a conditioning was administered to come back immediately to profound hypnotic trance every time the hypnotist pronounced a conventional word. This conditioning has the structure of an unconscious neurological command and hearing it is at one with obeying without any intervention of consciousness.

In this phase, the Harvard Group Scale of Hypnotic Susceptibility Form A was also administered in order to ascertain the degree of hypnotizability of subjects. Those scoring > 9 were labelled as highly hypnotizable and recruited for the study.

Experimental setting. The day after the preliminary setting, the participants were individually driven via post-hypnotic conditioning to profound hypnosis and performed the test of Rorschach.

Post-hypnotic command of age regression was given, suggesting that the participant would have, after de-hypnotization, a feeling corresponding to his/her age of 6 years (Staples & Wilensky, 1968). The tests described below were administered. Finally, the participants were induced once again, and received retrograde amnesia for all the experiences they'd had during the experiment, including the experimental tests. Finally, age regression was removed and participants were de-hypnotized.

MENTAL REACTIVES

Rorschach test. The test of Rorschach was aimed at demonstrating that the participants had really reached—through hypnotic suggestions of age regression—the age of 6 years.

The test was composed of 10 white cards, on which selected, bilaterally symmetric ink spots were printed, and consisted in interpreting the spots. Rorschach's original belief was that the sensations raised by the spots induce the arousal of old feelings (Weiner, 2003). The chaos of the spots induces disphoria; by giving a personal interpretation, the subject puts the chaos into order with a creative act. As the test is projective, the way the subject chooses to organize or structure the spots reflects the basic aspects of his/her psychological dynamics.

The Rorschach task was proposed immediately before each Ravens task (see below), that is three times (in basal conditions at the anagraphic age, in post-hypnotic age regression, and in neutral hypnosis) according to a random Latin-square protocol (see Figure 2). The participants were in a well-illuminated room and in controlled conditions of temperature. The cards were

proposed in their classic sequence. The results of each session were recorded to be analysed off-line in order to verify that the regressive age had actually been reached during the post-hypnotic setting. Only localizations of answers were considered, leaving out other variables. In particular, 'global' and 'detail' answers were taken into account. The former were those denoting an organized view and a good capacity to relate all details to form a homogeneous and reasonable whole; the latter were those denoting a limited capacity of relating the parts. The convention was to consider 'mainly global approach' as an index of adulthood, and 'mainly detail approach' as an index of infantilism, as children have, in comparison to adults, a limited organizational ability.

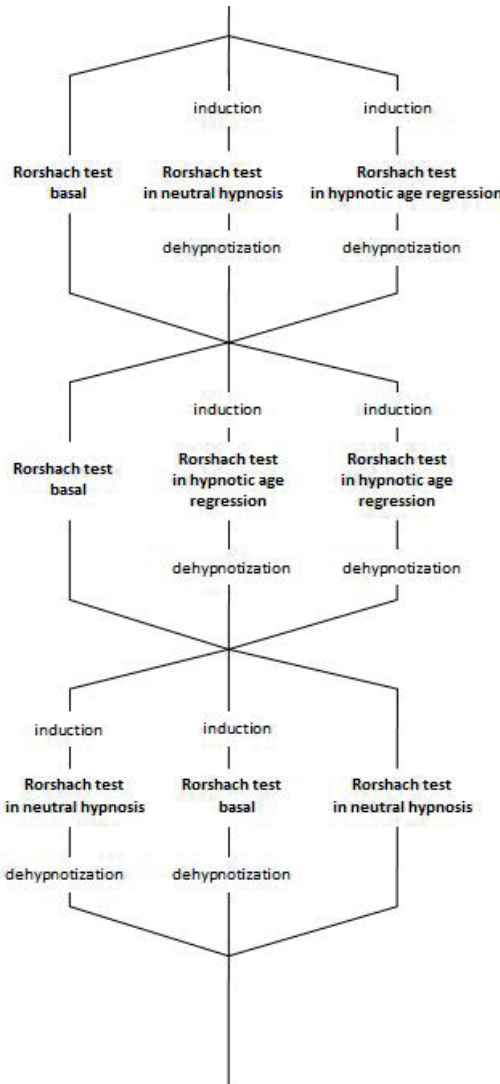


Figure 2. Test of Rorschach in a Latin-square protocol

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For the task, the participant was comfortably sitting in front of a table. He/she was asked to open his/her eyes while remaining in profound hypnosis, and to interpret the Rorschach images.

The test was performed three times: in hypnotic regression at the age of 6.5, in neutral hypnosis without any age regression, and after de-hypnotization, being the order chosen according to a random sequence.

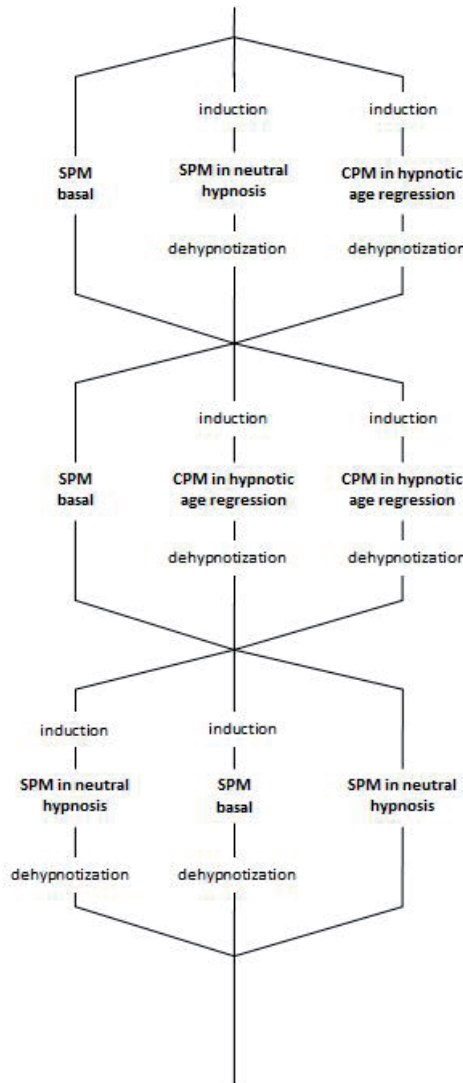


Figure 3. Test of Raven in a Latin-square protocol

Matrices of Raven. The progressive matrices of Raven are conceived to examine the maximum amplitude of mental abilities independent of age and cultural level (Raven, 2000).

The task consists in choosing among six or eight pictures to complete a model. The standard progressive matrices (SPM) evaluate the ability to understand figures not having a defined meaning. They are composed of 60 items in 5 series of 12 problems, ordered by increasing degree of difficulty. The order of presentation of the tasks allows the participant to practise with a work system and to enter into a comprehension of the method. The coloured progressive matrices (CPM) have been conceived to be administered to children. The three series constituting the CPM are made to measure the main cognitive processes that are common resources for participants aged less than 11 years; they allow the participant to develop a theme of deductive reasoning. The global scale, which includes 36 problems, measures the development of the cognitive functions already present before the coming of maturity.

For the task, the participant was comfortably sitting in front of a table in a well-lit room at controlled temperature. The test was administered three times: in basal conditions, in hypnotic regression at the age of 6.5, and in neutral hypnosis without any age regression, according to a Latin-square random sequence. In basal conditions and in hypnosis, the participant was asked to keep his/her eyes open and to give the answer most appropriate to the problem according to the protocol shown in Figure 3. When, during age regression, the performance to CPM was adequate, the SPM were also administered.

HAEMODYNAMIC MONITORING

During the Raven task, the following haemodynamic parameters were monitored in order to explore the cardiovascular effects of the task as a stressor.

Arterial blood pressure was measured (in mmHg) by a Finometer PRO model-1 (Finapres Medical Systems, Amsterdam, Netherland), a stand-alone method providing beat-to-beat blood pressure recording (Schutte et al., 2004). Mean blood pressure was calculated (in mmHg) from the area under the curve of continuous blood pressure recording. The amount of blood ejected from the left ventricle at each systole (stroke volume, in ml) and in 1 minute (cardiac output, in $l \times \text{min}^{-1}$) were measured with an impedance cardiograph featuring enhanced bio-impedance signal morphology analysis (PhysioFlow TM-Lab-1, Manatec Biomedical, Ebersvillier, France) (Richard et al., 2001). Cardiac index (in $l \times \text{min}^{-1} \times \text{m}^{-2}$) was calculated by indexing cardiac output to body surface area calculated with the Du Bois formula (Du Bois & Du Bois, 1916). Total peripheral resistance was calculated (in $\text{mmHg} \times \text{min} \times \text{l}^{-1} \times \text{m}^2$) from mean arterial blood pressure/cardiac index ratio.

All these devices are validated and have previously been employed with success in the same laboratory in many experimental conditions, including hypnosis (Casiglia et al., 1992, 1994a, 1994b, 1996, 1997, 1998, 1999, 2000, 2006, 2010; Facco et al., 2009).

STATISTICAL ANALYSIS

A priori power analysis indicated that 10 participants were sufficient to show effects, if any, avoiding β error. Continuous variables were expressed as mean and standard deviation and compared with analysis of covariance and the Bonferroni post-hoc test. Statistics were adjusted for the covariates age, body weight, and baseline values. Experiment-wise error rate was taken into account when considering significance levels. The trend within each curve, as well as the differences between the curves, was evaluated with the analysis of covariance for repeated measures. The null hypothesis was rejected for $p < 0.05$.

RESULTS

TEST OF RORSCHACH

The analysis of the behaviour of participants allowed us to verify that profound hypnotic trance was reached and maintained for the procedure. In particular, age regression was confirmed both through direct observation of childlike behaviour (with disorientation, weeping, childlike facial expressions, etc.) and through the test, showing 129% increase of 'detail' localizations and 24.3% reduction of 'global' localizations in comparison to basal conditions (see Figure 4).

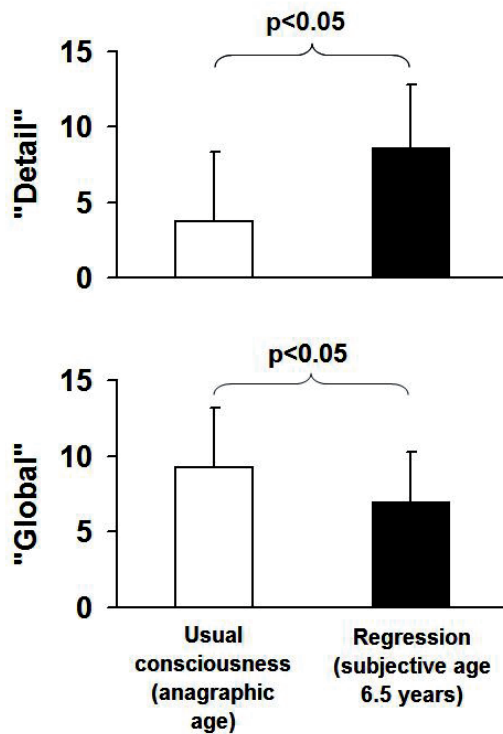


Figure 4. Score of the test of Rorschach in basal conditions and in hypnotic age regression in 10 participants. 'Global' and 'detail' answers are shown. Mean and standard deviations

MATRICES OF RAVEN AS A MENTAL REACTIVE

In basal conditions of usual consciousness at real age, the Raven score was on average 50.3 ± 4.3 (95% CI 47.1–53.6). This value did not change in neutral hypnosis at real age, while it increased by 12.5% in regressive hypnosis at the age of 6.5 years (see Figure 5). The time requested to complete the test was 15.3 ± 3.9 min (95% CI 12.4–18.3) in basal conditions and was not different in neutral hypnosis, while it increased by 85.5% in hypnotic age regression.

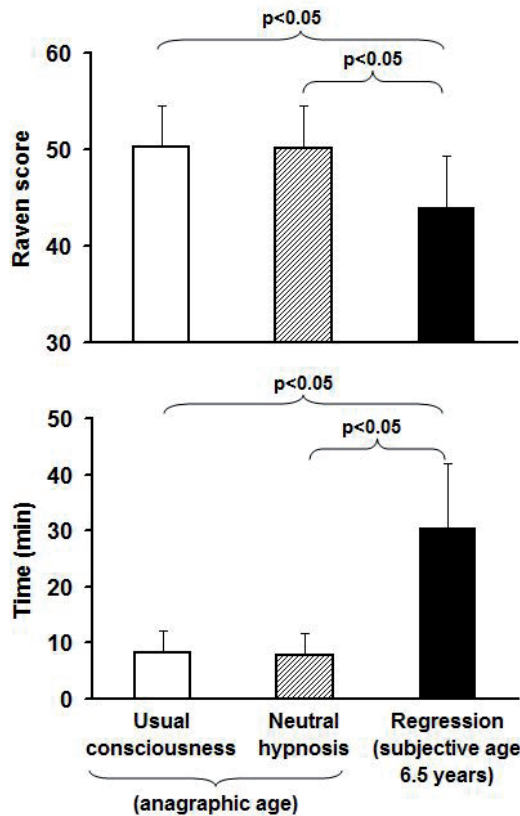


Figure 5. Score of the test of Raven in basal conditions, in neutral hypnosis at anagraphic age, and in hypnotic age regression in 10 subject. Mean and standard deviations

MATRICES OF RAVEN AS A STRESSOR

In basal conditions, the administration of the Raven matrices was accompanied by a significant increase of peripheral resistance (+6.4%) with reduction of cardiac output and of stroke volume due to reduction of post-load (see Figure 6). Comparable behaviours were observed when the test was administered in neutral hypnosis at real age. Conversely, when the test was administered in regression hypnosis at the age of 6.5 years no variation of the above-mentioned cardiovascular parameters was observed. Systolic, diastolic, and mean blood pressure and heart rate showed only modest and non-significant variations in the three experimental settings (see Table 1).

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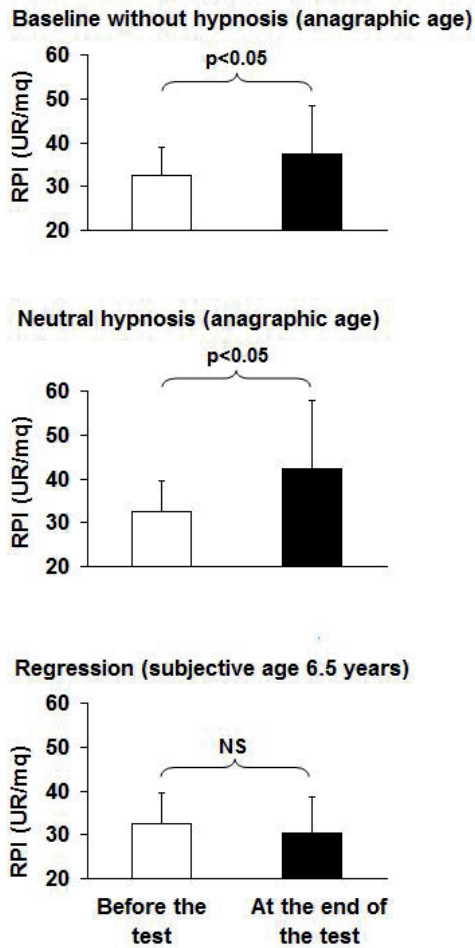


Figure 6. Cardiovascular response during the test of Raven in basal conditions, in neutral hypnosis at anagraphic age, and in hypnotic age regression. Mean and standard deviations. RPI: peripheral resistance indexed to body surface area

Table 1. Blood pressure (BP) and heart rate in the three experimental settings. No significance difference detected between phases

	Experimental phases		
	Basal conditions (anagraphic age)	Neutral hypnosis (anagraphic age)	Hypnotic age regression (subjective age 6.5 years)
Systolic BP (mmHg)	118.2 ± 8.3	120.0 ± 6.9	125.3 ± 5.8
Diastolic BP (mmHg)	76.9 ± 6.4	84.0 ± 14.9	86.3 ± 13.0
Mean BP (mmHg)	90.7 ± 6.7	96.0 ± 11.6	99.3 ± 10.2
Heart rate (bpm)	79.0 ± 9.8	78.3 ± 15.2	85.7 ± 17.9

DISCUSSION

The descriptions of hypnotic age regression available in the literature are sporadic and uncontrolled, and, to our knowledge, have never been described in association with a test of intelligence. The research described herein is therefore a pilot study. The few studies conducted with the test of Rorschach in conjunction with hypnosis are also sporadic and mainly involve psychiatric patients (Davis & Husband, 1931; Wolberg, 1948; Friedman, 1952; Fine & Zimet, 1959; Wilensky, 1959; Goldfried, 1962; Rhodes, 1963; Glatt & Karon, 1974). Staples and Wilensky (1968) from the City College of New York, obtained interesting results in highly hypnotizable non-psychiatric subjects who underwent the test of Rorschach both in standard conditions and during hypnotic regression at the age of 6. These authors outlined that the performance obtained during age regression was characterized by lower intellectual development.

When we decided to approach the topic of hypnotic age regression and its effects on intelligence, if any, we had the preliminary problem of demonstrating that age regression was a real and measurable phenomenon. The study by Staples and Wilensky (1968), although dated, gave us the basis to confirm age regression by means of the test of Rorschach. In our study, regression was demonstrated by a more concrete overall interpretation of the test, with greater attention to 'detail' variables and less attention to 'global' variables, an approach that was interpreted as childlike. We therefore felt authorized to administer the matrices of Raven during hypnotic regression at the age of 6.5 years, and to compare the results with those obtained at baseline in standard conditions, without any age regression, at the participant's real age.

The main results of the study are shown in Figure 5, showing a biologically relevant and statistically significant reduction of the Raven score during hypnotic age regression, associated with the doubling of the time required to complete the test. During age regression the volunteer showed mental abilities lower than at his/her real age. Over and above that, he/she also assumed the behaviour, voice, and facial expressions of a child.

It is also noteworthy that during age regression the Raven task was not accompanied by the vasoconstriction that is normally produced by mental stress. This response was actually

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present both at baseline and in neutral hypnosis. We interpret these findings by arguing that a playful approach, typical of childhood, has deprived the Raven test of its stressor effect, so reducing its impact on the sympathetic discharge. These objective variations of the cardiovascular response to the test—which are obviously completely unconscious and cannot be simulated—confirm the hypothesis that hypnotic age regression was a real phenomenon.

In previous studies, we demonstrated that many hypnotic phenomena, such as hallucinations (Casiglia et al., 1997, 2006), analgesia (Casiglia et al., 2007; Facco et al., 2009, 2011), and neglect (Casiglia et al., 2010; Priftis et al., 2011), are real and can be instrumentally measured with the methods that are typical of physiology. The present research confers the same dignity to hypnotic age regression, a phenomenon that until now had only been approached on a subjective basis.

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