



Universidade Nova de Lisboa

Instituto Superior de Psicologia Aplicada

**Adherence to health-related behaviors:
Effectiveness of implementation intentions and
posthypnotic suggestion in college students**

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Dissertação apresentada à Universidade Nova de Lisboa / Instituto Superior de Psicologia

Aplicada para obtenção do grau de Doutor em Psicologia Aplicada

Especialidade Psicologia da Saúde



2008



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**Adesão a comportamentos de saúde: Efectividade da
implementação de intenções e da sugestão pós hipnótica em
estudantes universitários**

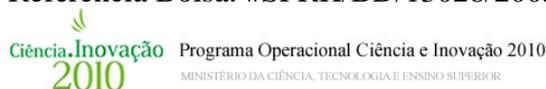
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Os trabalhos de doutoramento foram co-financiados pelo Programa POCI 2010 - CIÊNCIA E INOVAÇÃO - Programa Operacional Ciência e Inovação – 2010 e pelo FSE.

Referência Bolsa: #SFRH/BD/13028/2003



2008

To my precious son Filipe

Acknowledgments

Many people have inspired, guided and helped me during the last four years that I spent preparing the work that is the basis of this dissertation, and I would like to thank them all for a great graduate experience that definitely contributed to my maturity not only as a professional in the psychological field, but also as a person.

I must first express my gratitude to Professor Isabel Leal. The courage in accepting to supervise a dissertation in an area without any research tradition in Portugal, the open mind expressed by co-advising in cooperation with other specialists, the availability to answer to all my questions, to solve any institutional problems, and to create the conditions for the work to be pursued, was fundamental. You gave me your trust without hesitation from the first minute, thus is fair to say that without you, this work would never have seen the light of day.

I am also very thankful to Professor Giuliana Mazzoni and Professor Irving Kirsch, for more reasons that will fit in this text. Thank you both for literally open your doors, and for providing your expertise, foresight, personal time, guidance and ideas for improving this study from the time of its original conception. Without your help this dissertation would still be just a dream. Your direction, wisdom, and words of encouragement and unlimited expertise helped me navigate through the dissertation process and pushed me to completion. Working with you both of you has been a pleasure and an honour.

I may not be here today if Fundação para a Ciência e Tecnologia (FCT), would not financially support the science-making in Portugal trough the attribution of individual grants. I was fortunated enough to receive a four-year scholarship (BD/SFRH/13028/2003), which allowed me to spend a year abroad learning, as well and devote entirely to research for full four years, a truly privilege, providing me an extremely rich and fruitful experience.

I also would like to thank to Professor Frederico Pereira, who opened me the doors of the Instituto Superior de Psicologia Aplicada (ISPA) initiating a path that culminates here, and allowed the essential material and human means for this work to be possible. I would like to highlight is flexibility and open mind demonstrated by permitting a research on hypnosis to take place at ISPA.

My acknowledgement to Professor Jeffrey Levy as well, that welcomed me in the undergraduate Department of Psychology of Seton Hall University (SHU) where the first adherence study took place. Professor Levy guaranteed me full access to all the college facilities making possible the research and making me feel as part of the Department.

To ISPA's Centro de Investigação e Intervenção, for supporting the Portuguese adherence study trough a funding that enable me to give a monetary incentive to participants, thus creating similar conditions to the SHU study (Grant # PI-05-001).

To Ana Rita Almeida-Melikian, PhD, for her friendship and support. Ana was a companion and a source of support and help, by providing me reading materials that otherwise would be difficult to get, and by giving me her feedback on the writings. Despite the geographical distance, she has been always present.

To Professor Antonio Capafons for allowing me to use his unpublished attitude scale, for his friendship and his permanent interest in developing shared work on hypnosis between our two countries.

To Professor Peter Hawkins for his support and trust in the success of this work.

To Professor João Maroco and Regina Bispo for their friendship and their assistance in the statistical analysis whenever needed.

To the Seton Hall's undergraduate student Kara Kaminsky who assisted in data collection of the first adherence study. Her inputs, opinions and great work capacity were a valuable help during the Seton Hall study.

To the ISPA's graduate student Filipa Pimenta who assisted in data collection of the remaining studies. Her dedication and commitment to this project was essential in all ISPA's studies.

To ISPA colleagues Cristina Quelhas, PhD, Marta Guerreiro, MS, Olívia Ribeiro, MS, Csongor Juhos, MS, Miguel Tecedeiro, MS, Susana Algarvio, MS, José Abreu Afonso, MS, Rui Bártolo, MS, Maria João Gouveia, MS, Pedro Almeida, MS, Ana Ramirez, MS and from the Instituto Superior Técnico, Beatriz Condessa, PhD and Isabel Ramos, MS. All of them allowed direct access to their students making possible this study, which I am very grateful.

To all the students, Portuguese and North American that accepted to participate in the hypnosis studies and trusted me to lead them in experimenting something new although perceived as frightening for some, exciting for others.

To my husband Idalécio for having always believed in me.

To my baby boy Filipe, who teaches me everyday the wonder of (re)discovering the world.

Abstract

On the basis of Gollwitzer's (1993, 1999) implementation intentions' concept, and Kirsch & Lynn's (1997) response set theory, this dissertation tested the effectiveness of a combined intervention of implementation intentions with hypnosis with posthypnotic suggestions in enhancing adherence to a simple (mood report) and a difficult (physical activity) health-related task.

Participants were enrolled in a university in New Jersey (N=124, Study 1, USA) and in two universities in Lisbon (N=323, Study 2, Portugal). In both studies participants were selected from a broader sample based on their suggestibility scores using the Waterloo-Stanford Group C (WSGC) scale of hypnotic susceptibility and then randomly assigned to the experimental groups. Study 1 used a 2x2x3 factorial design (instruction x hypnosis x level of suggestibility) and Study 2 used a 2 x 2x 2 x 4 factorial design (task x instructions x hypnosis x level of suggestibility). In Study 1 participants were asked to run in place for 5 minutes each day for a three-week period, to take their pulse rate before and after the activity, and to send a daily email report to the experimenter, thus providing both a self-report and a behavioral measure of adherence. Participants in the goal intention condition were simply asked to run in place and send the e-mail once a day. Those in the implementation intention condition were further asked to specify the exact place and time they would perform the physical activity and send the e-mail. In addition, half of the participants were given a post-hypnotic suggestion indicating that the thought of running in place would come to mind without effort at the appropriate moment. The other half did not receive a posthypnotic suggestion. Study 2 followed the same procedure, but additionally half of the participants were instructed to send a mood report by SMS (easy task) and half were assigned to the physical activity task described above (difficult task).

Study 1 result's showed a significant interaction between participant's suggestibility level and posthypnotic suggestion ($p < .01$) indicating that posthypnotic suggestion enhanced adherence among highly suggestible participants, but lowered it among low suggestible individuals. No differences between the goal intention and the implementation intentions groups were found. In Study 2, participants adhered significantly more ($p < .001$) to the easy task than to the difficult task. Results did not revealed significant differences between the implementation intentions, hypnosis and the two conditions combined, indicating that implementation intentions was not enhanced by hypnosis with posthypnotic suggestion, neither was effective as single intervention in enhancing adherence to any of the tasks. Hypnosis with posthypnotic suggestion alone significantly reduced adherence to both tasks in comparison with participants that did not receive hypnosis.

Since there were no instruments in Portuguese language to asses hypnotic suggestibility, the Waterloo-Stanford Group C (WSGC) scale of hypnotic susceptibility was translated and adapted to Portuguese and was used in the screening of a sample of college students from Lisbon ($N=625$). Results showed that the Portuguese sample has distribution shapes and difficulty patterns of hypnotic suggestibility scores similar to the reference samples, with the exception of the proportion of Portuguese students scoring in the high range of hypnotic suggestibility, that was found lower than the in reference samples.

In order to shed some light on the reasons for this finding participant's attitudes toward hypnosis were inquired using a Portuguese translation and adaptation of the Escala de Valencia de Actitudes y Creencias Hacia la Hipnosis, Versión Cliente, and compared with participants with no prior hypnosis experience ($N=444$). Significant differences were found between the two groups with participants without hypnosis experience scoring higher in factors indicating misconceptions and negative attitudes about hypnosis.

Resumo

Com base no conceito de implementação de intenções (Gollwitzer, 1993, 1999) e na teoria do contexto de resposta de Kirsch & Lynn (1997), o presente trabalho testou a eficácia de uma intervenção combinada de implementação de intenções com hipnose e sugestão pós-hipnótica na promoção da adesão a uma tarefa simples (avaliação do humor) e uma tarefa difícil (actividade física).

Os participantes são estudantes universitários de uma universidade na Nova Jérquia, (N=124, Estudo 1, EUA) e em Lisboa (N=323, Estudo 2, Portugal). Em ambos os estudos os participantes foram seleccionados a partir de uma amostra mais vasta baseado num escrutínio da sua sugestibilidade hipnótica avaliada por meio da Escala de Grupo de Sugestibilidade Hipnótica de Waterloo-Stanford (WSGC): Forma C. O Estudo 1 usou um desenho factorial do tipo 2x2x3 (tipo de intenção formada x hipnose x nível de sugestionabilidade) e o Estudo 2 usou um desenho factorial do tipo 2 x 2x 2 x 4 (tipo de tarefa x tipo de intenção formada x hipnose x nível de sugestionabilidade). No Estudo 1 foi pedido aos participantes que corressem todos os dias e durante três semanas durante 5 minutos, que medissem a sua pulsação antes e depois da actividade física e que mandassem um e-mail ao experimentador, fornecendo assim uma medida comportamental e uma medida de auto-relato. Aos participantes no grupo de intenções de meta foi apenas pedido que corressem todos os dias. Aos participantes no grupo de implementação de intenções foi pedido que especificasses com exactidão quando e onde iriam correr e enviar o e-mail. Para além disso, cerca de metade dos participantes foram hipnotizados e receberam uma sugestão pós-hipnótica em que lhes foi sugerido que o pensamento de correr todos os dias lhes viria à mente sem esforço no momento apropriado. A outra metade dos participantes não recebeu qualquer sugestão hipnótica. No Estudo 2 foi seguido o mesmo procedimento, mas a cerca de metade dos participantes foi atribuída uma tarefa fácil (enviar um

SMS com a avaliação diária do seu estado de humor naquele momento) e à outra metade da amostra foi atribuída a tarefa de exercício físico atrás descrita (tarefa difícil).

Os resultados do estudo 1 mostraram uma interação significativa entre o nível de sugestionabilidade dos participantes e a sugestão pós-hipnótica ($p < .01$) indicando que a administração da sugestão pós-hipnótica aumentou a adesão nos participantes muito sugestionáveis, mas baixou a adesão nos participantes pouco sugestionáveis. Não se encontraram diferenças entre os grupos que formaram intenções de meta e os que formaram implementação de intenções. No Estudo 2 os resultados indicaram que os participantes aderiram significativamente mais à tarefa fácil do que à tarefa difícil ($p < .001$). Os resultados não revelaram diferenças significativas entre as condições implementações de intenções, hipnose e as duas estratégias combinadas, indicando que a implementação de intenções não foi eficaz no aumento da adesão às duas tarefas propostas e não beneficiou da combinação com as sugestões pós-hipnóticas. A utilização da hipnose com sugestão pós-hipnótica significativamente reduziu a adesão a ambas as tarefas.

Dado que não existiam instrumentos em Português destinados a avaliar a sugestionabilidade hipnótica, traduziu-se e adaptou-se para Português Escala de Grupo de sugestibilidade hipnótica de Waterloo-Stanford (WSGC): Forma C. A amostra Portuguesa ($N=625$) apresentou resultados semelhantes aos encontrados nas amostras de referência em termos do formato da distribuição dos padrões da pontuação e do índice de dificuldade dos itens. Contudo, a proporção de estudantes portugueses encontrada que pontuaram na zona superior de sugestionabilidade foi significativamente inferior à proporção de participantes na mesma zona encontrada nas amostras de referência.

No sentido de lançar alguma luz sobre as razões para este resultado, inquiriu-se alguns dos participantes acerca das suas atitudes face à hipnose utilizando uma versão portuguesa da Escala de Valência de Atitudes e Crenças face à Hipnose e comparou-se com a opinião de

estudantes que nunca experimentaram a hipnose nem tinham qualquer conhecimento sobre ela. (N=444). Encontrou-se diferenças significativas entre os dois grupos, com os participantes sem experiência prévia de hipnose a demonstrarem mais atitudes e crenças negativas do que os estudantes com experiência de hipnose.

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General Introduction

GENERAL INTRODUCTION

1. Background

The problem of non-adherence to therapeutic regimens concerns all practitioners in the health care arena (Dunbar-Jacob, Burke & Puczynsky, 1995). The vast literature on the adherence problem indicates an average of 50% of non-adherence to medical advice in chronic conditions (e.g. hypertension, diabetes, organ transplants) in developed countries (World Health Organization, 2003; Royal Pharmaceutical Society of Great Britain, 1997). Irrespective of disease, prognosis or setting, poor adherence has been estimated to range between 30% and 50% among all patients (Vermeire, Hearnshaw & Van Royen, 2001). Adherence to non-pharmacological treatments (e.g., dieting and physical exercise) is less studied, however research indicates lower rates of adherence (less than 50%) compared to adherence to pharmacological treatments, with a tendency to decrease over time (Dunbar-Jacob et al., 1995; Straub, 2007).

In recent years several national and international institutional documents, as the Portuguese National Health Plan for 2004 to 2010 (Plano Nacional de Saúde 2004-2010, Ministério da Saúde, 2004), the 1997' Royal Pharmaceutical Society of Great Britain (RPSGB) and the 2003' World Health Organization (WHO) reports on adherence have addressed the problem of non-adherence to medical or health advice. The negative impact of low adherence in patients' health and its economical burden in the entire health system is well known (Straub, 2007; Vermeire et al., 2001; WHO, 2003) however appropriate measures to enhance adherence are still needed (RPSGB, 1997; WHO, 2003). Research to understand and promote adherence to medical regimens and methods to help individuals to develop healthy life styles to promote good health and prevent illness are among the core of research of the Health Psychologist as stated by Division 38 (Division of Health Psychology) of the American Psychological Association (2008a). These aims are also shared by the Portuguese Society of Health

Psychology (SPSS) (Sociedade Portuguesa de Psicologia da Saúde, 2008), a scientific society dedicated to the promotion of Health Psychology in Portugal. The SPSS assumes the classic Matarazzo's definition of Health Psychology as "an aggregation of educational, scientific and professional contributions of psychological science for the promotion and maintenance of health, the identification of ethologic and diagnostic correlates of related health, illness and dysfunctions, and the prevention and treatment of illness" (Matarazzo, 1980, 1982 as cited in Sociedade Portuguesa de Psicologia da Saúde, 2008). Health Psychology is anchored on a biopsychosocial model of health and illness, "which views health and illness as a "product or combination of characteristic factors including biological characteristics (e.g., genetic predisposition), behavioral factors (e.g., life style, stress, health beliefs) and social conditions (e.g., cultural influences, family relationships and social support)" (American Psychological Association, 2008b - Division 38), which reflects the World Health Organization conceptualization of health and well-being for the everyday life (Leal, 2006). Health Psychology has been having a dramatic development since the foundation of APA's Division 38 in 1978 as a result of a new interdisciplinary way of conceptualizing health that overcame the dualistic model (Ribeiro & Leal, 1996, Ribeiro, 1998). Currently, multiple professional journals are devoted exclusively to the field of Health Psychology (e.g., *Health Psychology*, *Annals of Behavioral Medicine*, *British Journal of Health Psychology*) and many other psychological and medical journals publish studies from this area (e.g., *Journal of Consulting and Clinical Psychology*, *Anesthesia & Analgesia*, *Preventive Medicine*). Thus, an impressive body of research has been conducted over the past 30 years that has shown that cognitive-behavioral approaches have been successfully applied to a variety of diseases and conditions (e.g., cancer, cardiovascular disease, diabetes, HIV, obesity, substance abuse, pregnancy) (Montgomery, 2004). The social psychological models, particularly the sociocognitive models, have been at the forefront of research into predicting and explaining health behaviors, as well

into theory-driven programs aiming health behavior change (Rutter & Quine, 2002). The core of social cognitive framework is the emphasis on cognitive processes (e.g., expectations, attitudes, beliefs, social representations) and encompasses factors ranging from the cultural and social environment through individual or person factors as well as the behavioral processes that initiate and sustain healthy and risky behaviors (Leventhal, Weinman, Leventhal & Phillips, 2008). A number of social cognition models have been developed over time in an attempt to map out the mediators of sociodemographic variables and identify proximal determinants of health behavior (Armitage & Conner, 2000). Among others, the most salient are the Health Belief Model (Rosenstock, 1974), the Protection Motivation Theory (Rogers, 1983), the Social Cognitive Theory (Bandura, 1986), the Theory of Reasoned Action (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975), the Theory of Planned Behavior (Ajzen, 1988, 1991) and the Transtheoretical Model of Change (Prochaska & DiClemente, 1983, 1984, 1992). Discussion on these models goes beyond the scope of the present dissertation thus it will not be presented here.

Health Psychology research needs to satisfy two goals: the development of theoretical models describing the processes underlying risky and healthy behaviors, and the creation of effective theory-based procedures for helping individuals to initiate and sustain behaviors that will improve their personal health (Leventhal, Weinman, Leventhal & Phillips, 2008). In addition, Leventhal et al. advises that these interventions must be not only effective but also efficient (clinically usable) so that physicians, nurses, and health institutions have the time and resources for implementation. The present work is carved on the latter approach. Our goal is to test the effectiveness of two procedures designed to promote behavior change, implementations intentions and posthypnotic suggestion, both strategies anchored on social cognitive theories (despite concurrent theories of hypnosis). These procedures, if effective, are highly efficient because they are easy to learn and to use and need no particular conditions of the therapeutic

setting for their use. We also tested a combined intervention of implementation intentions and posthypnotic suggestion aiming to learn whether or not the combined intervention will lead to higher levels of adherence than either in the implementation intentions group or in the hypnosis group.

The implementation intentions model (Gollwitzer, 1993, 1999) is an extension of Ajzen's (1985, 1991) *Theory of Planned Behavior* and has been object of extensive research in health as well as other fields, as it will be reviewed on section 1.1.1.

Hypnosis, despite more than 75 years of research (Kirsch, Mazzoni & Montgomery, 2007) (for a summary on theories of hypnosis and evidence-based effectiveness of hypnosis in a variety of health conditions see review in section 1.1.2), is still apart from the main stream psychology. This notwithstanding, there are journals devoted to publish hypnosis research, the *International Journal of Clinical and Experimental Hypnosis*, the *American Journal of Clinical Hypnosis*, *Contemporary Hypnosis* and the *Australian Journal of Clinical and Experimental Hypnosis*, and other prestigious psychological and medical journals also publish research on hypnosis (e.g., the *Journal of Personality and Social Psychology*, *Journal of Abnormal Psychology*, *Psychological Bulletin*, *Journal of Consulting and Clinical Psychology*, *Anesthesia and Analgesia*, *Pain*, *The Lancet*, *The New England Journal of Medicine*, *Nature*, *Science*, *Scientific American*).

To our best knowledge the present work represents a first attempt to conduct research on hypnosis within the university context at a graduate level in the Portuguese Academy. Besides utilizing hypnosis in the two adherence studies, described in Part I of this dissertation, we also translated and adapted to Portuguese an hypnotic suggestibility scale and an attitudes toward hypnosis scale, instruments that were necessary to asses our participants in different phases of our research, and that were lacking due to the scarcity of hypnosis research in Portugal. This methodological work on these two instruments is described on Part II of this dissertation. The

next three sections address the problem of non-adherence, followed by an overview on implementation intentions. It will end with a summary of the most important aspects of hypnosis theories and research. At the end of this general introduction, the research questions as well as the dissertation structure will be presented.

1.1. Adherence to Health-Related Regimens

The following section discusses the phenomenon of adherence to prescribed medical or otherwise health-related regimens, by addressing the definition of the concept, measures of adherence, extent of low adherence, costs associated, its causes, and potential factors affecting adherence.

Definition. The process of seeking, receiving and following treatment and advice has been known both in research and medical practice either as compliance, adherence or concordance. The opposite behavior, not following medical or other health-care directions is usually referred to as non-compliance or non-adherence. In a superficial approach it seems logical that a patient should “follow doctor’s orders”, thus the majority of the articles take the term compliance for granted and not feel the need to define it (Vermeire et al., 2001). However the term “compliance” has been extensively criticized and other terms to designate the phenomenon have emerged, namely “concordance” and “adherence”. More than a simple difference in semantics, these terms encompass theoretical differences. Thus it is of key importance to differentiate these terms as well as the rationale behind them, in order to better understand the phenomenon of why people do not “follow doctor’s orders”.

One of the first studies on the phenomenon (Haynes, Taylor & Sackett, 1979) defined compliance as “the extent to which a person’s behavior in terms of taking medication, following diets or executing life-style changes coincides with medical or health advice” (Sackett, 1979). Inherent to this early definition of compliance is the assumption that medical advice is good for the patient or that rational patient behavior means following medical advice precisely. Compliance to medical treatments became a topic of research in the 1970’s when studies showed that at least 50% of patients diagnosed with hypertension were not taking sufficient amounts of their medication, and that non-compliance was common in long term treatments for diabetes, asthma, hypertension and AIDS (Morisky, 2007). In general not

following doctor's orders precisely is viewed as a failure in compliance. There is no generally and recognized definition of non-compliance (RPSGB, 1997), and non-compliance can have a variety of forms. Regarding to medicine taking alone, compliance is labeled as primary when for some reason the patient fails to have the medicine dispensed and secondary when the medicine is not taken as instructed. While the first category can be categorized as intentional non-compliance (e.g., the patient fails to present the prescription to the pharmacist because he/she rejects either doctor's diagnosis or treatment), the second is categorized as unintentional (e.g., the patient simply forgets to take the medication). Other forms of non-compliance can be, taking an incorrect dose of the medication, taking the medication at wrong times, forgetting one or more doses of medication, stopping the treatment too soon, breaking appointments, delay in seeking care and non participation in health programs (Vermeire et al., 2001). Compliance can also be described in terms of the clinical outcome, in which the result of a specific action is taken (e.g., the blood pressure measured) rather than the process used (e.g., taking medication). A more extensive definition of non-compliance would then be "the point below which the desired preventive or therapeutic result is unlikely to be achieved" (Gordis, 1976). It has been argued that the term compliance is linked to a traditional view where medical services were based on patients trusting their paternalist (Marinker, 1997), or even authoritarian (Ferner, 2003) doctors. The word compliance suggests yielding, complaisance and submission. Therefore non-compliance implies disobedience (Vermeire, et al., 2001), subversion, error (RPSGB, 1997) and blame (Yach, 2003). It is because of this unbalanced view of the medical encounter where the "doctor knows best", that the term compliance has come under attack over the years. The term was objected on the grounds that the notion of compliance is explicitly coercive and compromises patient's autonomy, dignity and even patient's legal rights (Heath, 2003). In the compliance model what the patient brings – his health beliefs based on experience, culture, personality, family tradition and so on – is seen by the doctor as the

impediment to the proposed solution – based in scientific evidence and technical skill. In the compliance model the doctor's task lies in overcoming this impediment (Marinker, 1997).

“Concordance” was the term suggested by a working committee of the Royal Pharmaceutical Society of Great Britain (RPSGB) in 1997, a group that comprises general practitioners, pharmacists, academic researchers, consumer representatives and members of pharmaceutical industry. This report was the result of an inquiry about the difficulties patients had in taking medicines as they were prescribed and has as a goal to make recommendations about how to improve medicine taking. The concept of “concordance” was then proposed meaning a change in rationale, intentions, processes and consequences (RPSGB, 1997). Concordance is based on the notion that the work of the prescriber and the patient in the consultation is a negotiation between equals and therefore the aim is a therapeutic alliance between them (RPSGB, 1997). The concept of concordance suggests frank exchange of information, negotiation and a spirit of cooperation (Mullen, 1997) towards a therapeutic alliance where both doctor and patient together can proceed in the basis of reality and not of misunderstanding, distrust or concealment. The cornerstones in the concordance model are the patient as a decision maker and the importance of professional empathy (Vermeire et al., 2001). Unlike the concept of non-compliance, concordance does not lead to a negative. The patient cannot be non-concordant because non-concordance refers to the outcome of the patient-doctor encounter. The consultation can be non-concordant, but not the patient (RPSGB, 1997). However, the concordance model is not free of criticism neither misconceptions. Milburne & Cochrane (1997) refer at least three situations in which the concordance model does not apply. These are clinical trials, interaction of non-compliance with psychopathology and potential lethal diseases. Beckwith (2003) argues that the claim of equality within the doctor-patient relationship is nonsensical, since patients consult doctors because of their expertise. According to Dickinson, Wilkie & Harris (1999), concordance is used as a synonym for compliance, and

some professionals talk wrongly about improving patient's concordance. Few years after the Royal Pharmaceutical Society's report, medical practitioners have come to the conclusion that the concordance model has failed. Among the reasons for this failure are, (1) the lack of understanding of the concept of concordance (Jones, 2003), that had lead some professionals to use the terms compliance, adherence and concordance in a interchangeable way as if they were synonymous (Beckwith, 2003); (2) different perceptions of patients and doctors of the risks and benefits of medicines (Jones, 2003); (3) difficulties in overcoming the gap between doctors approach and patient's history, cultural background and beliefs system (Smith, 2003) and, (4) medication overprescription, still present in spite of the concept change from compliance to concordance, which resulted in not having practical consequences in terms of enhancing treatment adherence (Heath, 2003).

The term "adherence" has almost completely replaced the term compliance in the literature in the recent years. Adherence suggests a reduction of the power attributed to the doctor in the doctor-patient relationship (Vermeire et al., 2001) as well as greater respect of the role that the patient can play in his own treatment. It suggests that the doctor is engaged in a reasonable negotiation with the patient, rather than just issuing instructions (RPSGB, 1997) in a role, more in tune with the need for transparence of information, openness and respect for people that characterize the values of the 1990's (Marinker, 1997). The main difference between adherence and compliance is that the concept of adherence requires patient's agreement to the recommendations, thus being a better way of capturing the dynamic and complexity of the phenomenon (WHO, 2003).

For all of the above reasons we choose to use the term adherence in this dissertation. However in most of the studies reviewed here, it was not clear whether or not the "patient's previous agreement to recommendations" was taken into consideration. Therefore, the terms

used by authors for describing compliance or adherence behaviors will be reported as in the original studies reviewed here.

In Portugal as far as we know, no such debate about adherence has taken place. The Portuguese National Health Plan 2004-2010 (Ministério da Saúde, 2004), do not mention the words compliance, adherence or concordance. Nevertheless the problem of patient's informed choice about treatments is addressed by recognizing that information provided by the health authorities are usually invalid or biased and aim to make patients submit to them instead of helping the patient to choose the best possible care (Ministério da Saúde, 2004). However no specific measures for overcoming this problem are drawn, other than suggesting a higher degree of citizen's involvement by creating groups of pressure. On the other hand, the Portuguese National Pharmacies Association (Associação Nacional de Farmácias - ANF) has recently focused its attention to the problem of non-adherence. In June and July 2007, the ANF, together with the Portuguese Association of the Pharmaceutical Industry (APIFARMA) and the professional associations of both Medical Doctors and Pharmaceutics, launched a nationwide campaign entitled "Adesão à Terapêutica" ("Adherence to Therapeutics") aiming to reduce the number of patients that does not "fully comply with medication treatments" (Matias, 2007). The target was the general population between 25 and 55 years old, and the messages were displayed in pharmacies bags, flyers and advertisings on streets, press and ATM machines (see figure on Appendix A).

Both in this campaign and the Health National Plan, responsibility for adherence to treatment lies exclusively on the patient, which is a characteristic of the compliance model.

But compliance model also seems to be shared by Portuguese patients. A recent study (Cabral & Silva, 2007) revealed that 57% of Portuguese people rely more on doctors' opinions than in themselves to stay healthy, and 93% claim that they always follow medical instructions

fully, which lead the authors to conclude that Portuguese people have lower levels of autonomy regarding health issues before the “medical power”.

Measures of adherence. A number of methods for assessing adherence are usually presented in the literature. Self report measures, biological measures, electronic monitoring, pill counts and pharmacy refills are the most commonly reported.

Self report measures are probably the most commonly used method. They include interviews, structured questionnaires and daily diaries. Self report measures are inexpensive and permit the collection of detailed information on a variety of treatments, from medical regimens to dieting and exercise plans. However, self report measures are very problematic in terms of their accuracy (WHO, 2003). They tend to overestimate compliance (Haynes, McKibbin & Kanani, 1996; Powsner & Spitzer, 2003) and underestimate non-compliance (Vermeire et al., 2001). In fact, several studies have found that research participants fake compliance when using paper diaries in as much as 79% adult patients (Stone, Schifman, Schwanz, Broderick & Hufford, 2003) and 40% children (Wilson & Endries, 1986).

Biochemical measures are apparently more accurate since they rely on the detection of a chemical substance (metabolite or marker) in a body fluid (blood, urine). It could be the method of choice for assessing compliance to medical regimens. However this type of measurements presents several problems. Biochemical measurements are affected by dose and timing (Haynes, McKibbin & Kanani, 1996), do not account for the variability of pharmacokinetic factors of medications and individuals, such as diet, absorption and rate of excretion (WHO, 2003), drug levels are not available for all medications, measurements are often difficult to perform, are costly, and can be invasive and thus ethically unacceptable (Vermeire, et al., 2001). Recently, advances in microprocessor technology permitted the use of more accurate methods of measuring compliance, such as electronic medication dispensers (e.g. MEMS - *medication event monitoring system*) which records the time and date when a medication

container is opened, thus better describing how patients take their medications. However, these devices are too expensive which precludes its widespread use (WHO, 2003) and can also be defeated by patients in which is known as the “white-coat adherence” (patients time their medication with the consultation in order to make non-compliance “invisible”) (Vermeire, et al., 2001). Pill counts and pharmacies refills are other way to measure adherence. Pill counts consist of counting the number of pills remaining from a prescription over a defined period of time to determine the number of pills taken. Like self-reports, pill counts also tend to overestimate adherence (Dunbar-Jacob, Burke, & Puczynski, 1995; Vermeire et al., 2001). Studies in patient samples, comparing pill counts with MEMS reported an overestimation of adherence of approximately 20% (Cheng, Woo, Chan, Tomlinson & You, 2005; George, Peveler, Heiliger & Thompson, 2000; Liu et al, 2001).

Pharmacies refills perform like pill counts. The time the medication is refilled is compared with the time it should have been refilled if the patient had taken all of the medication. This method assumes that patients purchase all of their medication in the same pharmacy and that pharmacy records are complete and accessible, which is not true for most of the countries (WHO, 2003).

None of these methods are sufficiently accurate for a true standard to be identified. In fact there is no “gold standard” for measuring adherence behavior (Dunbar-Jacob, Burke, & Puczynsky, 1995; WHO, 2003; Vermeire et al., 2001) and in here lies the major obstacle to adherence research.

Adherence rates. Due to the complexity of the phenomenon of non-adherence and the difficulty in measuring reliably adherence, it is difficult to obtain reliable estimates of the extent of adherence. It is generally accepted that estimated adherence to long term therapies among patients suffering chronic diseases averages only 50% in developed countries (WHO, 2003; RPSGB, 1997). Irrespective of disease, prognosis or setting, poor adherence is estimated as

ranging between 30 to 50% in all patients (Vermeire et al., 2001). The magnitude and impact of poor adherence in developing countries is assumed to be even higher given the paucity of health resources and inequities in access to health care (e.g. in China, the Gambia and the Seychelles, adherence is only 43%, 27% and 26%, respectively, WHO, 2003). Although there are data about non-adherence for the majority of medical conditions, we will address here only a few of the conditions referred in the literature as examples of the extent of low adherence.

Non adherence for hypertension treatment is well documented and this condition has served as a model for compliance research (Vermeire et al., 2001). Despite the availability of effective treatments, and the ample evidence on the effectiveness of anti-hypertensive therapy in the reduction of strokes and for the control of blood pressure in reducing the risks of subsequent coronary heart disease (Royal Pharmaceutical Society, 1997), poor adherence has been identified as the main cause of failure to control hypertension (WHO, 2003). It is estimated that 50% of the patients drop out of care, and one-third of patients that remain in care do not achieve blood pressure control due to poor adherence (Dunbar-Jacob & Dwyer, 1991). In many countries less than 25% of patients treated for hypertension achieve optimum blood pressure (WHO, 2003). Another chronic condition that requires extensive adherence to treatment is diabetes. Self-monitoring of blood glucose, dietary restrictions, regular foot care and ophthalmic examinations are all part of the control of diabetes, and it is known that this control markedly reduces incidence and progression of complications of this condition. Nevertheless in Europe, only 28% of patients treated for diabetes achieve good glycaemic control and in the United States less than 2% of adults with diabetes perform the full level of care (WHO, 2003). Elderly people are particularly susceptible to failures in adherence. Some studies indicate that 25 to 50% of elderly patients do not or cannot take their medications as prescribed (Shimp, Ascione, Glazer & Atwood, 1985). Eleven percent of hospitalizations of elderly people are attributed to non-adherence (Nanada, Fanale & Kroholm, 1990). Reasons for

this greater risk of non-adherence among the elderly are the multiple co-morbidities and complex medical regimens (WHO, 2003), the larger number of reported adverse reactions to medication, difficulties in reading and understanding medication labeling, and psychomotor incompetence in manipulating containers (RPSGB, 1997). Adherence to treatment by children and adolescents ranges from 43% to 100%, with an average of 58% in developed countries (WHO, 2003) in spite of the dramatic consequences that non-adherence may have in chronic diseases, such as unnecessary hospitalization and decreased quality of life (Dunbar-Jacob, Burke, & Puczynski, 1995). In the pediatric population, treatment programs are administered or supervised by parents or guardians. Rates of adherence vary from 10% to 50%. (La Greca & Schuman, 1995). However, several studies have suggested that adolescents are less adherent than children, reflecting rebellion against regimen's control over their lives as well as a struggle with self-esteem, body image, social role definition and peer-related issues (WHO, 2003). The most dramatic example of failure to follow a prescribed medication regime concerns in patients that had organ transplants. A literature review on heart, liver and kidney transplants in adult and pediatric transplant patients (Laederach-Hofmann & Bunzel, 2000), revealed that non-adherence rates to immuno-suppressive medication vary from 20 to 50%, despite the evidence that patient adherence to immunosuppressive medications is crucial to survival.

On health-related behavioral changes, such as exercise programs, adherence rates may be even lower than those for other medical regimens for chronic illness. It has been estimated in less than 50% in exercise programs of about 6 months duration (Dunbar-Jacob, Burke, & Puczynski, 1995). In the treatment of obesity, between 10 and 13 percent of participants stop attending program meetings after 2 to 3 months, and 42 to 48 percent stop after 3 to 4 months. Furthermore, only 50% of patients comply fully with physician directed dietary prescriptions and up to 80% of patients drop out of programs that prescribe other lifestyle changes, such as fitness programs (Straub, 2007).

The impact of low adherence is also felt in the research arena. In studies for the evaluation of therapeutic efficacy of medication, if adherence is less than optimal, both efficacy and undesirable side effects of treatment can be underestimated (Dunbar-Jacob et al., 1995).

Costs of low adherence. Non-adherence has an obvious impact on the individual in terms of his health condition and his personal expenses, but its costs go beyond the individual level. Non-adherence causes 10 to 20 percent of patients to require an otherwise unnecessary refill of prescribed medications, 5 to 10 percent to require further visits to their doctor, and another 5 to 10 percent to need additional days off from work, diminishing productivity (Straub, 2007). These economic consequences on the entire health care system represent an important economic burden. Non-adherence has been estimated to cost \$100 billion in each year in the USA (Vermeire et al., 2001). The WHO (2003) report estimates the costs for the three costly conditions, hypertension, diabetes and asthma. In the United States the cost of health care related to hypertension and its complications was 12.6% of total expenditure on health care in 1998. The combined health and economic burden of diabetes represents an average of 5% of the total health care expenditure in each country. The total cost of asthma as a single condition currently comprises up to 1 to 2% of health care expenditures in most of the countries (WHO, 2003). Cost is not the only untoward consequence of poor adherence. Non-adherence can also result in increases of morbidity with the emergence of treatment-resistant organisms (Bennet, 2002; Dunbar-Jacob et al., 1995).

Clearly, if health systems could be more effective in promoting adherence, the human, social and economic benefits would be substantial (WHO, 2003).

Causes of low adherence. Studies have failed to determine a relationship between the patient's medicine taking and the major demographic variables (age, sex, and social class) as well as the usual clinical variables (symptoms, diseases, classes of drugs) (Haynes, 1979; RPSGB, 1997). A review of three decades of research on the problem of non-adherence

(Vermeire et al., 2001) reported the following associated factors: psychiatric disorders (the more the symptoms reported, the lower the adherence), treatment factors (duration, number of medications prescribed, cost and frequency of dosing, especially among elderly patients), doctor-patient relationship (poor communication, process of prescribing, difficulty in understanding statements meaning), patients unresolved concerns (diagnosis, absence of symptoms, time between taking the drug and its effect, fear of adverse effects) and patients beliefs about medication and medicine in general (based on their knowledge and personal experience as well as that of significant others). The most comprehensive approach is the one that considers all levels where non-adherence can occur (WHO, 2003): (1) social and economic factors (e.g. poverty, illiteracy, low level of education, unemployment, lack of effective support networks, high cost of medication); (2) health care team and system-related factors (e.g., poorly developed health services, non-existent reimbursement by health care plans, poor medication distribution, overworked health care providers, short consultations, lack of knowledge on effective adherence strategies); (3) condition-related factors (e.g., severity of symptoms, level of disability, availability of treatments, drug or alcohol abuse); (4) therapy-related factors (e.g., complexity of the medical regimen, duration of treatment, side-effects, availability of medical support); and (5) patient-related factors (resources, knowledge, attitudes, beliefs, perceptions and expectations of the patient).

Some authors have even suggested that the most salient and prevalent influences on adherence are the beliefs that people hold about their medication and medicine in general (RPSGB, 1997). Thus, Psychology, and particularly Health Psychology have a role to play by offering comprehensive theories and developing programs addressed to promote change at both individual, and social and environmental level (Bennet & Murphy, 1999). In fact, according to Divison 38 of the American Psychological Association, psychology has a unique contribution to make to the field of health and illness, particularly to the problem of non-adherence. Health

psychologists may be called on to consult with the patient or with other providers of health care on issues of poor adherence. This consultation may range from behavioral assessment to the design of systematic programs to promote adherence (Dunbar-Jacob et al., 1995). Health Psychologists are also the professionals of choice to develop research on poor adherence as well as to promote the development of effective, psychologically informed interventions that enhance health-enhancing behaviors (American Psychological Association, 2008a and b).

Potential factors in adherence enhancement. Adherence does not have a single definition, nor a gold standard measure, or an indisputable explaining causal theory, despite the extensive knowledge about it gained in recent years. Therefore, there is no single approach on how to promote adherence. The patient-related factors (WHO, 2003), particularly cognitive variables (e.g., expectations, attitudes, motivation, vicarious learning, decision making), are considered crucial elements in understanding and explaining health behaviors, and have been object of a number of theoretical proposals in the Health Psychology field (Bennet & Murphy, 1999). Among the possible variety of interventions to promote adherence available to Health Psychologists, two deserved our attention and are the aim of the present dissertation, implementation intentions and hypnosis. The two following sections will address these interventions.

1.1.1. Implementation Intentions

Theoretical Background. A number of models have been proposed in order to identify the variables that underlie health-related decisions as well as predict health-related behavior (Armitage & Conner, 2000). Among these models, the Theory of Reasoned Action (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975) and the Theory of Planned Behavior (Ajzen, 1988, 1991) have been widely used in the Health Psychology field to provide a psychosocial explanation and prediction of health behaviors, as they both stress the importance of the causal relationships between beliefs, attitudes, intentions and behavior. The Theory of Reasoned Action (TRA) posits that a person's behavior is determined by her intention to perform that behavior, and intention is related to particular kinds of attitudes and beliefs, namely *attitudes toward the behavior* (individual's positive or negative evaluation) and *subjective norms* (perceived expectations on how others will regard behavioral performance) (Fishbein & Ajzen, 1975). In other words, individuals will have strong intentions to perform a given action (e.g., taking medication) if they evaluate it positively and if they believe that important others think they should perform it (Sutton, 1997). Behavioral change can be achieved by changing intentions, which in turn are obtained as a result of changes either in attitude or in subjective norms (e.g., through active participation and persuasive communication) (Fishbein & Ajzen, 1975). TRA assumes that most socially relevant behaviors are under volitional control; however, as Ajzen (1985) recognized later, many behaviors require skills, opportunities, and resources that may be beyond the individual's control. Therefore, in order to enable the prediction and explanation of behaviors that are not entirely under the control of the individual, Ajzen (1985) expanded TRA by including a new variable, the *perceived behavioral control*, i.e., the perceived ease or difficulty of performing the behavior. A person's perceived behavioral control reflects all of the anticipated relevant non-volitional determinants (such as the availability of opportunities and resources) of the behavior to be predicted (Gollwitzer,

1993). Perceived behavioral control is broadly equivalent to Bandura's concept of self-efficacy (Ajzen 1991, as cited by Sheeran & Silverman, 2003). In other words, the more resources and opportunities to affect a behavioral change (e.g., adhere to an exercise program) we believe we have, the greater is our belief that we can change the behavior (Straub, 2007). In sum the TPB posits that the more positive attitudes, subjective norms and perceived behavioral control, the stronger the intentions to perform the behavior, and the stronger people's intentions, the greater the likelihood of performing the behavior. In spite of intention can be seen as having a causal effect on behavior, a behavioral self-prediction may, or may not, influence behavior directly (Sutton, 1997). Meta-analysis on TPB studies have shown that although attitudes, subjective norms and perceived behavioral control generally account for 40-60% of the variance in intentions (Sheeran & Silverman, 2003), intentions account for less than one third of the variance in behavior. For example, 19% of the variance was reported by Sheeran & Orbell, (1998) meta-analysis, 28% was reported by Sheeran (2002) and 34% was reported by Godin & Kok (1996) (as cited in Armitage & Conner, 2000). These levels of variance are largely due to the fact that people, despite having formed strong intentions on the basis of high desirability and feasibility beliefs, fail to act on them (Gollwitzer & Bargh, 2005). This gap between intention and behavior led Gollwitzer (1993, 1999) to expand TPB by proposing a self-regulatory strategy to help people enhance the likelihood of attaining their goal intentions (Gollwitzer & Brandstätter, 1997). According to Gollwitzer, performing a behavior has two phases, a deliberative or *motivational* phase and an implemental or *volitional* phase (Sheeran & Silverman, 2003). The motivational phase refers to the period in which the person forms an intention on the basis of his/her attitudes, subjective norms and perceived behavioral control, which are the main features of the TPB. The volitional phase addresses the planning activity to make the decision become a reality, i.e., involves the translation of the intention into behavior, and is the main feature of implementation intentions, the key concept proposed by Gollwitzer

(1993, 1999). Gollwitzer suggests a differentiation between *goal intentions*, intentions that specify a particular end state (“I intend to reach *Z*”) whereby *Z* relate to a certain outcome or behavior to which the individual feels committed, and *implementation intentions*, intentions which specify when and where a particular behavior will be performed (“If situation *X* is encountered, then I will perform the goal directed response *Y*”). Goal intentions specify the intention to meet a goal, and are dependent on classic motivational variables, such as expected values and self-efficacy beliefs (Gollwitzer & Brandstätter, 1997). On the other hand, implementation intention refers to the intention to perform a plan and is dependent on the anticipation of implementational difficulties. Strong goal intentions do not necessarily lead to effective goal pursuit. An implementation intention is the favored technique for helping individuals to act on their intentions. According to Gollwitzer, goal intentions of the same motivational strength furnished with implementation intentions have a better chance to be completed (Gollwitzer & Brandstätter, 1997). Thus, implementation intentions are at the service of goal intentions. They specify the where, when and how of goal-directed responses. Implementation intentions are “if-then” plans that specify an anticipated critical situation and link it to an instrumental, goal-directed response. For example a possible implementation intention in the service of the goal intention to eat healthy food could link a suitable situational context (e.g., one’s order is taken at the restaurant) to an appropriate behavior (e.g., asking for a low-fat meal). A strong mental link would then be established between the critical cue of the waiter taking the order and the goal-directed response of asking for a low-fat meal (Gollwitzer, Fujita & Oettingen, 2004).

Cognitive processes underlying implementation intentions. Early research on implementation intentions is close to research on prospective memory (Gollwitzer & Brandstätter, 1997) (recent research is focused on testing implementation intentions on a variety of behaviors as reviewed later in this chapter). Prospective memory tasks require (1) that one

remembers what task has to be done, and (2) that one remembers to perform the task at the appropriate time or in response to the appropriate event (Einstein & McDaniel, 1990, as cited by Gollwitzer & Brandstätter, 1997). The predictors for prospective memory tasks are motivation (i.e., incentives), time factors (i.e., time interval between task instruction and execution) and the use of reminders (Cohen, 1989, as cited by Gollwitzer & Brandstätter, 1997). Reminders can be external (e.g., notes, knot in the handkerchief), and internal (e.g., mental rehearsal). Gollwitzer and Brandstätter assert that forming implementation intentions can be conceptualized as an internal memory strategy. However, contrary to prospective memory theory in which external and internal reminders help people to recall the intention to act, implementation intentions directly (automatically) control the intended behavior.

Implementation intentions facilitate goal striving by two processes: increasing the activation of the anticipated situational cue and automating the goal directed response to that cue (Parks-Stamm, Gollwitzer & Oettingen, 2007).

Activation of the anticipated situational cue. Gollwitzer (1993) hypothesizes that the conditions specified by the individual for the execution of an intended project (task or goal) are easily accessed in memory, thus individuals who experience a conflict between acting here or there, now or later can end this conflict by retrieving their choices from memory. In addition, Gollwitzer suggests that the opportunities and means specified in implementation intentions may work as activated schemata, in the same manner that some words (e.g., personal attributes, highly familiar words) are chronically active schemata. In other words, implementation intention's specifications related to intended opportunities and means are hypothesized to succeed in attracting attention to themselves. Perceptual readiness expresses itself, among other things, in the fact that relevant stimuli are more easily and swiftly recognized (Gollwitzer, 1993).

Automating goal-directed response. According to Gollwitzer (Gollwitzer, 1993; Gollwitzer & Brandstätter, 1997), an implementation intention creates a strong mental link between intended situations and behaviors. It is hypothesized that in the presence of the critical situation the intended behavior will be elicited swiftly and effortlessly and without necessitating a conscious intent. Based on reported experiments on how people store, attend to, detect and respond to the situations and means specified in their implementations intentions (for a review see Gollwitzer, 1993), Gollwitzer asserts that by forming implementation intentions, people pass the control of their behavior from the self to the environment. In other words, situations and means are turned into elicitors of action that are hard to forget, ignore and miss. Forming implementation intentions is thus a conscious mental act that has behavioral effects that are based on automatic processes (Gollwitzer, 1993). Support for this claim comes from neuropsychology research. Patients with frontal lobe lesions (site of conscious control of thought and action) show major impairments in decision making and planning solutions (Shallice, 1982, as cited by Gollwitzer, 1993), but after forming implementation intentions they are able to speed up their responses to critical stimuli the same way as was observed with college students (Lengfelder & Gollwitzer, 2001), suggesting that implementation intentions create automatic action control and can be considered as a shortcut to establish automatic responses that otherwise would require extensive training (Lengfelder & Gollwitzer, 2001). Recently several different lines of research (e.g., social psychology, cognitive neuroscience, the study of hypnosis) have been converging into this same direction, that an individual's behavior can be directly caused by the current environment without the necessity of an act of conscious choice or will. All is needed is to activate the relevant concept in some manner (e.g., social behavior priming experiments; hypnosis) (for a review of research and discussion on this topic see Bargh, 2005). According to Gollwitzer and Bargh (2005) implementation intentions is a form of unconscious goal pursuit. It is a temporary and strategic form by which one sets up

intended actions in advance, so that they later unfold in an automatic fashion. Automatic control of goal pursuit permits to overcome its usual problems (e.g., competing interests, lacking of opportunities, temptations, distractions, self-doubts), by establishing routines linked to relevant contexts (Gollwitzer & Bargh, 2005).

Effectiveness of implementation intentions. Implementation intentions and its effectiveness in changing behavior have attracted a substantial amount of research that has focused on adherence to a variety of requests. Implementation intentions have been successfully used to help people attain goals in different settings, namely (1) clinical (e.g., enhance prospective memory in older adults (Chasteen, Park & Schwarz, 2001), attend a scheduled initial psychotherapy consultation (Sheeran, Aubrey & Kellet, 2007), increase attendance to a workplace health and safety training course (Sheeran & Silverman, 2003)); (2) academic (e.g., writing a research report during Christmas's break (Gollwitzer & Brandstätter, 1997), report an academic experiment (Owens, Bowman & Dill, 2008), attend class (Webb, Christian & Armitage, 2007)); and (3) environmental (e.g., shopping organically produced food (Bamberg, 2002a), using a new bus route (Bamberg, 2002b)).

Another set of studies have examined the effects of implementation intentions in pursuing goals that are somewhat unpleasant to perform, such as health-enhancing and health-protecting behaviors, or that are easy to forget, such as regular intake of pills.

Meta-analysis on independent tests for the effects of forming implementation intentions on subsequent behavioral performance obtained effect sizes ranging from small to almost large (e.g. $d=.70$ (Sheeran, 2002⁽¹⁾), $d= .54$ (Koestner, Lekes, Powers & Chicoine, 2002⁽²⁾), $d=.30$ for interventions based on TRA/TPB (Webb & Sheeran, 2006), and $d=.20$ for studies using planning, experiential tasks, and rehearsal of relevant skills (Webb & Sheeran, 2006⁽³⁾)), according to Cohen's (1992) power primer (Cohen's convention for effect sizes is .20, .50 and .80 for a small, medium and large effects respectively).

Next we present a review of the literature that examined the effect of implementation intentions interventions on health-related tasks⁽⁴⁾. The literature search identified 30 published articles, of these, 22 (73%) reported implementation intentions as an effective strategy in enhancing a variety of health related behaviors (for a summary see Table 1).

Implementation intentions was found to be consistently effective in “one-off” behaviors, i.e., behaviors in which participants are required to perform a task at least once, such as increasing the stair use immediately following implementation intentions intervention about stair use (Kwak, Kremers, Baak & Brug, 2007), attending a consultation for cervical screening (Sheeran & Orbell, 2000), perform at least one self breast examination within a one month period (Orbell, Hodgkins & Sheeran, 1997) and a six month period (Prestwich, Conner, Lawton, Bailey, Litman & Molyneaux, 2005), perform at least one testicular examination within three weeks after forming implementation intentions (Steadman & Quine, 2004), and eat a healthy diet for one day within a five days period (Verplanken & Faes, 1999). Although “one-off” behaviors can have important health consequences, most important health-related behaviors require performance over a sustained period of time (e.g., exercise, healthy eating, nicotine abstention, and adherence to prescribed medication). The review of the studies on the effectiveness of implementation intentions in ongoing behaviors showed mixed results.

(1) Sheeran's (2002) meta-analysis is based on 15 independent studies, 11 of which on health-related performance ($n= 1457$) (Milne et al.2002; Murgraff et al. 1996; Orbell et al., 1997; Orbell & Sheeran, 2000; Sheeran, 1999 (unpublished raw data); Sheeran & Orbell, 2000; Sheeran & Orbell, 1999, studies 1 and 2; Silverman & Sheeran, 1999 (unpublished raw data); Stephens & Conner, 1999 (personal communication; unpublished paper) and Verplanken & Faes, 1999)

(2) Koestner, Lekes, Powers & Chicoine (2002) meta-analysis is based on 13 studies, in which five are health-related (Orbell et al., 1997; Orbell & Sheeran, 2000; Sheeran & Orbell, 1999, study 1 and 2, and Verplanken & Faes, 1999)

(3) Webb & Sheeran's (2006) meta-analysis is based on 4 studies ($n=787$) however the authors do not provide specific identification of the studies

(4) Computerized searches on scientific databases (PsycINFO, Psyclit and MEDLINE) for articles published between 1990 and March 2008 were performed, and articles were judged of interest if they reported original data concerning an implementation intentions intervention to improve adherence to a health-related request with one or more measures of outcome behavior.

Table 1
 Summary of studies on implementation interventions on health-related tasks

<i>Type of Measure</i>	<i>Study</i>	<i>Behavior</i>	<i>Effectiveness</i>
<i>Self report Ongoing</i>	Armitage (2004)	Reducing fat intake for one month	yes
	Armitage (2007a)	Reducing nicotine dependence and encouraging quit smoking assessed two months after base-line	yes
	Armitage (2007b)	Increase fruit consumption	yes
	Bermúdez, Contreras, Margüenda & García (2004)	Taking a vitamin pill everyday for four weeks	yes
	Brickell, Chatzirantis & Pretty (2006)	Moderate to vigorous exercise for at least 30 m 5 days per week for the next 5 weeks	no
	Budden & Sagarin (2007)	Exercising for seven days	no
	Hill, Abraham & Wright (2007)	Increase the number of 30-min exercise sessions undertaken over 3 weeks	no
	Jackson, Lawton, Knapp, Raynor, Conner, Lowe & Closs (2005)	Increase fruit and vegetables consumption in a three months period*	no
	Jackson, Lawton, Raynor, Knapp, Conner, Lowe & Closs (2006)	Adherence to antibiotics for fourteen days*	no
	Kellar & Abraham (2005)	Increase recommended daily intake of fruit and vegetables over one week	yes
	Lavin & Groarke (2005)	Increase dental flossing for three weeks	no
	Luszczynska (2006)	Initiate and maintaining moderate physical activity after myocardial infarction at 8 months after MI*	yes
	Luszczynska, Scholz & Sutton (2007)	Reduce of saturated fat intake after myocardial infarction at 8 months after MI*	yes
	Milne, Orbell & Sheeran (2002)	Engage in at least one 20 m session of exercise over a two week period	yes
	Murgraff, White & Phillips (1996)	Reduce frequency of binge drinking at a two week follow-up	yes

	Nooijer, Vet, Brug and Vries, (2006)	Eat an extra serving of fruit per day for a week	yes
	Orbell & Sheeran (2000)	Initiate of functional activity following joint-replacement surgery*	yes
	Osch, Reubsaet, Lechner & Vries (in press)	Parental use of sun screen during summer holydays accessed 5 months after baseline	yes
	Prestwich, Lawton & Conner (2003)	Exercise two more times per week for two weeks	no
	Sniehotta, Scholz & Schwarzer (2006)	Exercise in cardiac patients at two months after discharge of cardiac rehabilitation*	no
	Ziegelmann, Luszczynska, Lippke & Schwarzer (2007)	Initiate and maintain moderate physical activity after orthopedic rehabilitation*	yes
<i>Pill count Ongoing</i>			
	Sheeran & Orbell (1999) study 1	Take a vitamin pill everyday for three weeks	yes
	Sheeran & Orbell (1999) study 2	Take a vitamin pill everyday for five weeks	yes
<i>Self report One-off</i>			
	Orbell, Hodgkins & Sheeran (1997)	Perform one breast self examination (BSE) at least once within 1 month	yes
	Prestwich, Conner, Lawton, Bailey, Litman & Molyneaux (2005)	Perform one breast self examination (BSE) at least once within 1 month and 6 months	yes
	Steadman & Quine (2004)	Perform testicular self examination (TSE) at least once within 3 weeks	yes
	Verplanken & Faes (1999)	Eat healthy for one day within five days	yes
<i>Behavioral One-off</i>			
	Kwak, Kremers, Baak & Brug (2007)	Use of stairs immediately after forming implementation intention	yes
	Sheeran & Orbell (2000)	Attending one consultation for cervical screening within 3 months	yes
<i>Anthropo- metrical</i>			
	Luszczynska, Sobczyk & Abraham (2007)	Enhance weight reduction in a time gap of two months	yes

Note:* Studies conducted in patient samples. All remaining studies were conducted in non clinical samples.

Implementation intentions interventions were effective in reducing fat intake for one month in healthy adults (Armitage, 2004) and at 8 months assessment in patients after myocardial infarction (Luszczynska, Scholz & Sutton, 2007), in reducing nicotine dependence in a workplace intervention at two months after base-line assessment and formation of implementation intentions (Armitage, 2007a), in reducing binge drinking among college students at a two week follow up (Murgraff, White & Phillips, 1996), in earlier initiation of functional activity following joint-replacement surgery (Orbell & Sheeran, 2000), in increasing parental sunscreen use during summer holidays, assessed five months after implementation intentions intervention (Osch, Reubsaet, Lechner & Vries, in press), but not in increasing daily dental flossing for a three weeks period in a sample of college students (Lavin & Groarke, 2005). Adherence to pill taking was successful enhanced by implementation intentions intervention in three studies (Bermúdez, Contreras, Margüenda & García, 2004; and Sheeran & Orbell, 1999, study 1 and study 2) but it was found to fail in one (Jackson, Lawton, Raynor, Knapp, Conner, Lowe & Closs, 2006). Whilst the successful three studies utilized vitamin pills (Bermúdez et al., 2004; Sheeran & Orbell, 1999 study 1 and 2), the Jackson et al. (2006) study tested adherence to prescribed antibiotics in a patient sample. Daily fruit and vegetable intake was successfully increased for one week (Kellar & Abraham, 2005) and two weeks (Armitage, 2007b) in healthy college students and adults (Nooijer, Vet, Brug & Vries, 2006) but not in patients at a three months assessment after implementation intentions intervention (Jackson, Lawton, Knapp, Raynor, Conner, Lowe & Closs, 2005). Increasing physical activity by means of implementation intentions interventions was successful in three studies (Luszczynska, 2006; Milne, Orbell & Sheeran, 2002; Ziegelmann, Luszczynska, Lippke & Schwarzer, 2007) and failed to reach significant changes in exercise frequency in five other studies (Brickell, Chatzirantis & Pretty, 2006; Budden & Sagarin, 2007; Hill, Abraham & Wright, 2007; Prestwich, Lawton & Conner, 2003; Sniehotta, Scholz & Schwarzer, 2006). It may be

interesting to note that among the studies that aimed to enhance physical activity, two out of three of the successful interventions (Luszczynska, 2006 and Ziegelmann et al., 2007) and one out of four unsuccessful interventions (Sniehotta et al., 2006) were conducted in patient samples. More importantly, the degree of difficulty of the exercise task seemed to be higher in the studies in which implementation intentions did not significantly improve physical activity (Brickell et al., 2006; Budden & Sagarin, 2007; Hill et al., 2007; Prestwich et al., 2003 and Sniehotta et al., 2006). Both Luszczynska's studies asked patients to initiate and maintain moderate physical activity, whilst all the remaining studies asked participants to engage in moderate (e.g., one 20m session of exercise within a two week period (Milne et al., 2002), to strenuous exercise (e.g., moderate to vigorous exercise for at least 30 minutes, 5 days per week for the upcoming five weeks (Brickell et al., 2006)).

A possible explanation of the inconsistent results in the studies that tested implementation intentions in sustained behaviors may lie in the measure of adherence. Assessing adherence is not easy as stated earlier in this chapter, and one of the reasons is because no single method of measuring it is applicable in all settings. All but two studies (Sheeran & Orbell, 2000, and Luszczynska, Sobczyk & Abraham, 2007) used non objective measures of adherence: Two studies (Sheeran & Orbell's, 1999, study 1 and 2) used pill count performed by the experimenter, and the remaining studies utilized self-report measures. As stated earlier, self-report measures and pill counts tends to over estimate adherence and underestimate non-adherence (Cheng et al., 2005; George et al., 2000; Haynes et al., 1996; Liu et al, 2001; Powsner & Spitzer, 2003; Vermeire et al., 2001) In addition, they can also be inaccurate because a change in the perception of acting the target behavior might occur as a result of the behavior-change intervention. For example in a set of studies in which TPB constructs were tested as predictors of walking assessed by multiple measures (self-reports and objective measure through the use of a pedometer), Scott, Eves, French & Hoppé (2007) found no

significant association between self-report measures of walking and pedometer measures, indicating that although TPB predicts intentions to walk well, it does not predict the actual amount of walking. The Nooijer et al. (2006) study on fruit consumption obtained a significant effect of the implementation intentions intervention on the *perception* of fruit consumption but no significant effect on the *actual* fruit intake as measured by a food frequency questionnaire validated by dietary records and biomarkers of fruit intake. In other studies where implementation intentions interventions were reported as effective in promoting a specific behavior (e.g., exercise, stair use, healthy eating), the criteria utilized was considering as adherence a behavior occurrence for at least one single time within a given period of time (e.g., in the Milne et al. study the measure of adherence was a single 20m session of exercise within a two week period; in the Kwak et al. study, adherence was measured by the solely registration by a hidden observer if participants used the stair immediately after leaving the interview room; in the Verplanken & Faes study, the measure of adherence was following a healthy diet for just one day within five days). These single behaviors can not be accounted as sustained behaviors neither it can be assumed that participants would continue to follow it for longer periods of time.

Based on the results provided by authors of the published papers, we estimated the effect sizes for the studies in which implementation intentions was reported effective (see Table 2). Effects sizes varied from small ($d=.14$ in the Ziegelman et al., 2007 study) to large ($d=1.26$ in the Milne et al., 2002), with the majority of the studies ($n=14$) with effect sizes below .50, which indicates that in most of the studies the positive effect of the implementation intention intervention is moderate

A possible way of increasing the effect of implementation intentions interventions might be by combining implementation intentions with other interventions that help strengthening the link between the “if” (the deliberative phase) and the “then” (the implementational phase) parts

Table 2

Estimated effect sizes for the studies in which implementation intentions intervention was reported effective

<i>Study</i>	<i>n</i>	<i>Effect size</i> ^(*)
Armitage (2004)	264	.23
Armitage (2007a)	84	.41
Armitage (2007b)		.47
Bermúdez, Contreras, Margüenda, & García (2004)	80	
Easy task		.31
Difficult task		1.04
Kellar & Abraham (2005)	146	.34
Kwak, Kremers, Baak & Brug (2007)	87	.37
Luszczynska (2006)	114	.37
Luszczynska, Scholz & Sutton (2007)	119	.71
Luszczynska, Sobczyk & Abraham (2007)	50	(a)
Milne, Orbell & Sheeran (2002)	248	1.26
Murgraff, White & Phillips (1996)	102	.67
Nooijer, Vet, Brug & Vries (2006)	293	(a)
Orbell & Sheeran (2000)	64	.68
Orbell, Hodgkins & Sheeran (1997)	155	1.08
Osch, Reubsæet, Lechner & Vries (in press)	436	.24
Prestwich, Conner, Lawton, Bailey, Litman & Molyneaux (2005)	83	
At 1 month		.51
At 6 months		.31
Sheeran & Orbell (1999)		
Study 1	78	.42
Study 2	37	.60
Sheeran & Orbell (2000)	114	.60
Steadman & Quine (2004)	76	.48
Verplanken & Faes (1999)	102	.47
Ziegelmann, Luszczynska, Lippke & Schwarzer (2007)	368	
At 6 months		.14
At 12 months		.16

Notes: *Effect size estimator Cohen's d ($d = M_1 - M_2 / \delta_{\text{pooled}}$) (Cohen, 1988, p.44) based on results reported by authors. Whenever results were reported in proportions we calculated the effect size estimator h ($h = \phi_A - \phi_B$) (Cohen, 1988, p.183).

(a) Insufficient data reported to estimate effect size

of an implementation intention, as hypothesized by Gollwitzer et al. (2004). For example, spending much time and concentration on encoding the “if-then” plan by repeating it using inner-speech, may lead to the emergence of stronger links, which would produce strong effects (Gollwitzer, Fujita & Oettingen, 2004; Gollwitzer, Bayer & McCulloch, 2005). Another possibility of creating a stronger link may be through the use of hypnosis with posthypnotic suggestions. Hypnosis is a procedure in which the central feature is the experience of non-volition as it will be discussed in section 1.1.2, therefore it may be interesting to investigate whether or not hypnosis with a posthypnotic suggestion that includes the implementation intention can enhance the likelihood of performing the previously encoded behavior.

Meo, Mazzoni, Kirsch, Santandrea & Marucci (2003) (see appendix B) tested the this hypothesis in a pill taking task and found that participants that formed implementation intentions took more pills than participants that formed goal intentions, and participants given posthypnotic suggestions took more pills than those not given suggestions. The interaction between implementation intentions and posthypnotic suggestions was also significant. These results indicate that both implementation intentions and posthypnotic suggestions are beneficial in increasing the target behavior, and that posthypnotic suggestion may be particularly helpful when combined with implementation intentions in producing a stronger effect in adherence to the target behavior, supporting Gollwitzer et al. (2004) hypothesis that a stronger mental link leads to stronger implementation intention effects.

However further investigation on this matter are still needed. A more sensitive test of the differences between methods is needed since in the Meo et al. study adherence rates were above 90% creating a ceiling effect. It is also necessary to study the effectiveness of these strategies in health enhancing behaviors, since as cited earlier in this chapter, adherence to non-pharmacological treatments (e.g., dieting and physical activity) is lower than adherence in comparison to pharmacological treatments, and the effects of unhealthy behaviors such as poor

dieting and lack of physical activity are well known. In addition, as reported above, the vast majority of the studies using implementation intentions to increase ongoing behaviors, used self-report measures, and a study testing the effect of the implementation intentions intervention on a sustained health behavior using behavioral measures is still needed.

The two studies on adherence presented in this dissertation aim to test a combined intervention on a sustained health behavior of the two strategies, implementation intentions and hypnosis with posthypnotic suggestions, both having in common a key feature, the ability to automatically activate particular responses whenever the appropriate contextual cue is met (Kirsch & Lynn, 1997). The next section will address hypnosis and its theoretical main features, as well as a further detailed discussion on the relationship between implementation intentions and hypnotic response.

1.1.2. Hypnosis

This section addresses the definition of hypnosis, provides an overview on the theories of hypnosis and of the way hypnotic suggestibility is assessed, it mentions the conditions in which hypnosis is considered a well-established intervention in health, it reviews the studies using hypnosis to enhance adherence to health-related requests, and ends with the presentation of Kirsch & Lynn's (1997) response set theory on hypnotic involuntariness that links hypnotic responding with implementation intentions.

Understanding hypnosis and hypnotic phenomena. Hypnosis is a procedure during which a health professional or researcher suggests that a client, patient, or subject of hypnotic experience changes in sensations, perceptions, thoughts, or behavior (Kirsch, 1994a). Occasionally, the hypnotist and the subject are the same person. This is termed "self-hypnosis", and many believe that all hypnosis is self hypnosis, since subjects must accept the suggestion in order to experience its effects (Kirsch, 1994b). Hypnotic suggestions can be of various kinds, as summarized by Heap and Kirsch (2006), (1) *ideomotor suggestion*, i.e., the suggestion of the automatic movement of a part of the body such as the finger or the arm (e.g., arm levitation). It includes an alteration of perceptual experience (e.g., feeling of lightness in the arm) usually producing a strong feeling of automaticity that is the key feature of the hypnosis experience and that has been termed "the classic suggestion effect" (Weitzenhoffer, 1980); (2) *cognitive suggestions* which are suggestion for changes in perceptions or cognitive function, such as suggested hallucinations, pain reduction and memory inhibition (amnesia); and (3) *challenge suggestions*, i.e., suggestions that challenge the individual to try to inhibit or engage in a particular suggested activity (e.g., your arm is stiff and rigid ... now try to bend it). The challenge suggestion actually consists of two messages (in the example, one to bend the arm and another to test how stiff and rigid it is. For the person to pass the suggestion he or she must recognize that the specific goal is for the arm to feel so stiff and rigid that it will seem

impossible to bend (Lynn, 1997)). A different type of suggestions are the *posthypnotic suggestions*, which are suggestions given to the individual during hypnosis but which is to be carried out by the person right after the hypnosis is terminated or even away from the hypnotic setting (Barnier & McConkey, 1998). Posthypnotic suggestions can also be ideomotor, cognitive or challenge. Suggestions can also be enhanced by appropriate imagery (e.g., helium filled balloon for arm levitation). A variety of phenomena can be suggested to occur under hypnosis, such as age regression and progression, amnesia, anesthesia, catalepsy, dissociation, visual and auditory hallucination (positive and negative) and time distortion, which are usually termed as “hypnotic phenomena” (Geary, 2001)

A more recent definition of hypnosis was prepared by the Executive Committee of the American Psychological Association, Division of Psychological Hypnosis (Division 30) (APA, 2005) as follows:

Hypnosis typically involves an introduction to the procedure during which the subject is told that suggestions for imaginative experiences will be presented. The hypnotic induction is an extended initial suggestion for using one's imagination, and may contain further elaborations of the introduction. A hypnotic procedure is used to encourage and evaluate responses to suggestions. When using hypnosis, one person (the subject) is guided by another (the hypnotist) to respond to suggestions for changes in subjective experience, alterations in perception, sensation, emotion, thought or behavior. Persons can also learn self-hypnosis, which is the act of administering hypnotic procedures on one's own. If the subject responds to hypnotic suggestions, it is generally inferred that hypnosis has been induced. Many believe that hypnotic responses and experiences are characteristic of a hypnotic state. While some think that it is not necessary to use the word "hypnosis" as part of the hypnotic induction, others view it as essential.

Details of hypnotic procedures and suggestions will differ depending on the goals of the practitioner and the purposes of the clinical or research endeavor. Procedures traditionally involve suggestions to relax, though relaxation is not necessary for hypnosis and a wide variety of suggestions can be used including those to become more alert. Suggestions that permit the extent of hypnosis to be assessed by comparing responses to standardized scales can be used in both clinical and research settings. While the majority of individuals are responsive to at least some suggestions, scores on standardized scales range from high to negligible. Traditionally, scores are grouped into low, medium, and high categories. As is the case with other positively-scaled measures of psychological constructs such as attention and awareness, the salience of evidence for having achieved hypnosis increases with the individual's score.

American Psychological Association (2005)

This definition attempts to create an empirically based, theoretical neutral and relatively concise and “user friendly” definition, with the goal of demystifying hypnosis and encouraging

its use by clinicians, researchers and to inform the lay public (Green, Barabasz, Barrett and Montgomery, 2005). One important note to this definition is the fact that it does not include any reference to neurological or any other mechanistic explanation of hypnosis, which resulted from the Committee's consideration that explanations for the causes, effects and specificity of brain changes under hypnosis has not been fully elucidated to the satisfaction of all researchers within the field (Green et al., 2005), as well as the understanding that theoretical explanatory models of hypnosis are evolving continuously (Kirsch, 1994b). Another salient feature of the above mentioned definition is the reference to the standardized suggestibility scales, and the grouping of individuals' scores in low, medium and high levels of suggestibility, as evidence for experiencing hypnosis.

Theories of hypnosis. For many years the changes in experience and behaviour that occurs under hypnosis have been attributed to an altered state of consciousness, generally designated as *trance*. This perspective that became the dominant paradigm of the mid-nineteenth century, with the works of Jean Martin Charcot (1825-1893) and Pierre Janet (1859-1947), has its roots in the conceptions of Franz Anton Mesmer (1734-1815), the Marquis de Puységur (1751-1825), the Abbé de Faria (1756-1819), James Braid (1795-1860), John Elliotson (1791-1868) and James Esdaile (1808-1859) (for an historical perspective on hypnosis see Forrest, 1999), but it was also embraced by modern twentieth century psychologists such as Ernest R. Hilgard (1904-2001) and Milton H. Erickson (1901-1980). Most of the early theorists and practitioners of hypnosis believed that hypnotized subjects cede control to the hypnotist and their responses were directly activated by external suggestions. The premise that hypnosis could be better understood as an altered state of consciousness has led to attempts to characterize the physiological and psychological nature of the hypnotic state, a focus on understanding the differences between those who were and were not susceptible to hypnosis, and a characterization of the means by which the hypnotic state could be created (Chaves, 2000).

Recent studies using functional neuroimaging techniques that provide measures of brain activity (e.g. ERP, PET, fMRI) on the neurophysiology of hypnosis have revealed an involvement of the brain's anterior cingulate cortex in alterations in conscious experience during hypnosis (Egner, Jamieson & Gruzelier, 2005; Faymonville et al., 2000; Rainville, Hofbauer, Bushnell, Duncan & Price, 2002; Rainville, Hofbauer, Paus, Duncan, Bushnell & Price, 1999). However, evidence of physiological markers of response to suggestions for neutral hypnosis (the suggestion to enter trance without any further suggestions) has not yet been found (Lynn & Kirsch, 2006) which does not preclude the possibility of discovering such indicators (Lynn, Kirsch, Knox, Fassler & Lilienfeld, 2007) in the future. Researchers continue to look for evidence of a neurophysiological basis of hypnosis and other altered states of consciousness (for a revision of the neurophysiological approaches on the altered states of consciousness, see Gruzelier, 2005).

After the 1960's, strictly psychological theoretical alternatives to explain hypnosis and the hypnotic behavior emerged, the *dissociation theories* and the *sociocognitive theories* of hypnosis. Next, we briefly review the main theoretical positions highlighting the differences between theories on the key-feature of hypnosis, the experience of nonvolition.

The historical roots of dissociation theories can be traced classical dissociation theory, especially Pierre Janet's work (Hilgard, 1974), but are based on contemporary cognitive models of divisions of consciousness, and empirical research (Lynn & Kirsch, 2006). According to Hilgard (1974), cognition can be conceived as multiple cognitive systems arranged hierarchically under the control of a central cognitive structure or executive ego. In Hilgard's neodissociation theory, during hypnosis there is a temporary division within the executive ego. Thus, when ideomotor suggestions are given, part of the ego becomes unaware that the other part is initiating actions, thereby giving individuals the subjective impression of nonvolitional responses, i.e., thoughts, feelings and behaviors that are experienced as occurring automatically

(Kirsch, 1985). Similarly, when analgesia suggestions are given, pain is felt by one part of the ego, but not the dissociated part. Hilgard's *hidden observer* studies provided the reference experiments for the neodissociation theory, in which highly suggestible participants under hypnosis were asked to experience a suggestion and told that there was a hidden part of them that was more aware than the hypnotized part ⁽¹⁾ (Hilgard, 1974).

Woody and Bowers (1994) proposed an alternative hypothesis, a *dissociated-control* model of hypnosis, in which they rejected Hilgard's link between hypnosis and amnesia-based dissociation in favor of a hypothesis of an automatic and direct activation of the cognitive subsystems of control. According to Woody and Bowers hypothesis hypnosis alters not just the experience of behavior (the illusory experience of nonvolition or automaticity), but how it is controlled (a real change in the control of behavior occurs by shifting down in the cognitive hierarchy of control). Woody and Bowers related their hypothesis to contemporary cognitive and neuropsychological models of mental functioning, linking supervisory functions with frontal lobe brain functions (site of executive control) ⁽²⁾.

Sociocognitive researchers challenged the altered state paradigm by rejecting the idea that a trance, as a different state of consciousness, was necessary to explain the characteristic hypnosis phenomena. Instead, at the core of sociocognitive theories of hypnosis is the notion that hypnotic behavior can be explained by participant's expectancies, attitudes, beliefs, imagining as well as their interpretations of suggestions and aspects of the hypnotic context (Chaves, 2000; Lynn & Sherman, 2000; Lynn & Kirsch, 2006). This perspective has its roots in

⁽¹⁾ In a typical pain experiment, highly suggestible participant's were asked to immerse their hand in icy water, (which cause extreme pain), and were able to apparently feel no pain while report the pain trough automatic writing or by automatic talking. According to Hilgard this can be explained by a division of consciousness in two or more parts separated by an amnesic barrier that prevents access to suggestion-related executive functions.

⁽²⁾ For example, Woody and Bowers observed that the behavior of hypnotized people parallels the behavior exhibited by patients with prefrontal lesions, and that individuals with high hypnotic ability had more difficulty with tasks that were sensitive to the frontal-lobe function than did individuals with low hypnotic ability (Farvolden & Woody, 2004 as cited by Lynn & Kirsch, 2006).

Charcot's antagonist school, the School of Nancy, and its mentors, Auguste Liébeault (1823-1904) and Hippolyte Bernheim (1840-1919), which rejected dissociation as an explanatory mechanism, and considered hypnosis and associated phenomena as the result of suggestion (Bernheim, 1884/1964; Chaves, 2000). There are a number of distinct sociocognitive positions. The first theorist to defy the traditional concept of hypnosis as a state was Theodore R. Sarbin (1911-2005). Sarbin (1950) and Sarbin and Coe (1972) maintained that hypnosis is a form of a more general kind of social behavior, namely *role-taking*, and suggested a parallel between role-taking in drama and role-taking in hypnosis in which both the hypnotist and the subject enact reciprocal roles. Sarbin and Coe's research gave importance to such variables implicated in hypnotic responsiveness as knowledge of what is required in the hypnotic situation, self and role related perceptions, expectations, imaginative skills and situational demand characteristics (Lynn & Sherman, 2000).

Influenced by Sarbin's role theory, Theodore X. Barber (1927-2005) and his associates (Barber, 1969/1995; Barber & Calverley, 1964; Barber, Spanos & Chaves, 1974) demonstrated that attitudes, expectations and motivations are influential determinants of hypnotic responding (Lynn & Kirsch, 2006) and that comparable alterations can be observed in nonhypnotic subjects who are highly motivated (Chaves, 2000), an idea that has important implications for clinical practice. According to Barber, commonly used suggestions in clinical practice (e.g. relaxation, imagery) can be administered to many patients regardless their hypnotic ability. Thus, even low hypnotizable persons can benefit from hypnotic interventions. Research has also shown that suggestibility is not a very good predictor of treatment success (Kirsch, 1999).

One of Barber's students, Nicholas Spanos (1942-1994) developed an extensive research program (Spanos, 1986; Spanos & Chaves, 1989) focused on social-psychological processes (e.g., expectancies, attributions and interpretations of hypnotic communications) and the importance of goal directed activities and strategic responding (e.g. imagery, fantasy, attention)

(Lynn & Kirsch, 2006). According to Spanos (1982), hypnotic behavior, like other social behavior, can be described as *goal-directed* action. Nevertheless, hypnotized participants define their actions as involuntary rather than self-initiated, which reflects the interpretation that participants make about their own behavior, which in turn is brought about by the hypnotic situation, especially the wording of suggestions. From this perspective, responses are initiated intentionally, but the person is unaware of that intention and makes mistaken attributions about the causes of hypnotic behavior. The idea of responses being initiated intentionally, with the subject interpreting them as automatic, is similar to Hilgard's neodissociation model, but with misattribution replacing the division of the executive ego posited by Hilgard.

Irving Kirsch focused his research program on expectancies and introduced the concept of *response expectancies*, i.e. expectancies of the occurrence of non-volitional responses (Kirsch, 1985). Response expectancies are anticipations of automatic subjective and behavioral responses to particular situational cues, and have the ability to elicit automatic responses in the form of self-fulfilling prophecies (Kirsch & Lynn, 1999; Lynn & Kirsch, 2006). Kirsch's *response expectancy theory* (Kirsch 1985, 1991, 1994c) is an extension of Rotter's social learning theory and is based on the idea that expectancies can generate nonvolitional responses. According to Kirsch (1994c, 1999) hypnosis is like a placebo, it produces important therapeutic changes by changing patient's expectancies (although placebos require deception and hypnosis does not). Thus the efficacy of the hypnotic procedure, the nature of the response and the degree of the responsiveness is a function of participant's expectancies (Kirsch, 1985).

Stephen Jay Lynn proposed an *integrative model* (see Lynn & Sherman, 2000) based on a research program that documented the importance of a variety of sociocognitive variables. Together with Kirsch, they developed a new sociocognitive theory of suggested involuntariness in hypnosis (Kirsch & Lynn, 1997, 1999; Lynn, 1997), the *theory of response sets*. Kirsch and Lynn's *response set theory*, is an extension of Kirsch's theory on expectancies and an extension

of Lynn's integrative model. It is centered on the idea that much of human activity seems to be unplanned and automatic, and makes the radical proposal that all behavior, hypnotic or otherwise, including novel and intentional behavior are at the moment of activation, initiated automatically, rather than by a conscious intention (Kirsch & Lynn, 1997; Lynn & Kirsch, 2006). Routine behavior is executed automatically under the guidance and control of cognitive structures that have been termed schemas, plans and scripts (Kirsch & Lynn, 1999). Its automaticity is evidenced by the speed and fluidity by which behaviors, such as writing, speaking or driving are produced. The radical proposal of Kirsch and Lynn is that even in the production of novel acts, such as writing a paper, speaking spontaneously and driving to a novel destination, there is a high degree of automaticity. According to Kirsch and Lynn's theory, automatic processes are involved in the instigation of the component movements of planned behavior, in the selection of behavioral schemas for activation (Norman and Shallice 1986, as cited by Kirsch & Lynn, 1997, 1999) and in the activation of behavioral responses to external cues and the initiation of uncued behaviors (Kirsch & Lynn, 1997). Kirsch and Lynn (1997) hypothesized that response expectancies together with intentions, functions as *response sets* in that they prepare behavioral schemas for automatic activation (e.g. stopping at a stop sign or responding to a hypnotic suggestion) (Kirsch & Lynn, 1997, 1999, Lynn & Kirsch, 2006). In the case of hypnotic experiences, hypnotic involuntariness can be explained by a combination of the ambiguity of the subjective experience (e.g. the experience of lightness), and cultural-shaped (the popular notion that hypnotic responses are the product of a special altered state of consciousness) and stimulus-cued response expectancies (suggested physical movement) (Kirsch & Lynn, 1997; Lynn & Kirsch, 2006).

However disparate the two competing models (dissociation and sociocognitive) may seem, the notion of warring camps is a myth (Kirsch & Lynn, 1995). According to Kirsch and Lynn, these disparate positions can no longer be viewed as dichotomies, as they were in the

60's and the 70's (e.g. state vs non-state debate) and are better described as points on a continuum in which the various theorists align. More recently, Benham, Woody, Wilson and Nash (2006) proposed a structural model to integrate ability, attitude and hypnotic response, in which hypnotic performance, rather than simply being an outcome to be predicted either by aptitudes or attitudes, is predicted by both and serve in turn as a cause for subsequent expectancies. This model allows the hypothesis of trait and expectancy theories of hypnotic response to provide a context for each other, paving the road for future work in which hypnotic performance is predicted by multiple hypothesized mechanisms (Benham et al., 2006).

Assessment of hypnotic suggestibility. It has long been acknowledged that the way people respond to hypnosis varies between individuals. Research has confirmed that suggestibility is a characteristic that varies between extremes around a central tendency (Heap, Brown & Oakley, 2004). Several terms are used interchangeably to refer to individual differences in hypnotic suggestions (Council, 1999). It is important to distinguish these terms because the differences in terms imply different theoretical rationales. The term "hypnotic susceptibility", usually used as a synonym of "hypnotizability", is historically defined as the increase in suggestibility produced by hypnosis (Bernheim 1886/1897; Hilgard & Tart, 1966; Hull, 1933; Weitzenhoffer, 1980, as cited by Kirsch, 1997; Kirsch, Mazzoni & Montgomery, 2007) and implies an underlying personality factor that predisposes a person to respond to a hypnotic procedure. On the other hand, terms like "hypnotic suggestibility" or "hypnotic responding" refers to the behaviors and experiences that can be observed and measured in hypnotized subjects, and indicates a conception of hypnotic responses as something that the person does, rather than something that the person is (Council, 1999). However, the term hypnotic responsivity has also been criticized because it does not account for the contribution of suggestibility (Kirsch, 1997). There has been some debate about what the scales really measure. For example, Kirsch and colleagues (Kirsch, 1997; Kirsch & Braffman, 2001) have pointed out that the scales measure

the effect of suggestion in a hypnotic context, rather than the effect of hypnosis, thus the use of the term “hypnotizability” is inaccurate and the term “suggestibility” should be preferred. Moreover, research has shown that people also respond to suggestions without the induction of hypnosis (Barber & Glass, 1962; Braffman & Kirsch, 1999; Hilgard & Tart, 1966; Hull, 1933; Weitzenhoffer & Sjobergh, 1961 as cited by Kirsch & Braffman, 2001; Kirsch, Mazzoni & Montgomery, 2007). Therefore a term that reflects the degree to which a person succeeds in having the suggested experiences in or out of hypnosis was necessary. Kirsch (1997) proposed the term “imaginative suggestibility” indicating an acknowledgment that what is really asked of hypnotized people is to engage in fantasies that lead to subjective experiences, different from what participants know is objectively true.

Basically a hypnotic scale consists of a number of tests suggestions in which participants can either pass or fail. The suggestions can be for motor production (involuntary movements), motor inhibitions (paralyses), cognitive productions (hallucinations) and cognitive inhibitions (sensory inhibition, amnesia) (Kirsch & Braffman, 2001). Suggestions can be preceded by a hypnotic-induction ritual, usually instructions for muscular and mental relaxation with mention to the word “hypnosis”. A number of standardized scales for measuring hypnotic suggestibility have been developed during the 20th century. The Stanford Hypnotic Susceptibility Scale, Forms A and B (SHSS:A and B Weitzenhoffer & Hilgard, 1959) were the first standardized suggestibility scales. Later, a Form C was developed by the same authors (SHSS:C; Weitzenhoffer & Hilgard, 1962), which differ from its predecessors Forms A and B in the presentation order of the items (from least to most difficult) and on including a greater proportion of cognitive items. The SHSS:C is conventionally considered the “gold standard” for measuring hypnotic response. The Harvard Group Scale of Hypnotic Susceptibility, Form A (HGSHS:A, Shor & Orne, 1962) is a group adaptation of the SHSS:A which allow researchers to assess larger samples with a greater economy of time. Although it is widely used

internationally (norms are available for American, Australian, Canadian, Denmark, Italian, Finland, German, Romanian, Spanish and Sweden samples), some authors have cautioned against the possibility that the HGSHS:A might be more prone to misclassify participant's suggestibility than the SHSS:C (Bowers, 1993; Perry, Nadon & Button, 1992). The two scales typically correlate about .60 (Bentler & Roberts, 1963; Coe, 1964; Evans & Schmiedler, 1966; Kihlstrom & Evans, 1979; Register & Kihlstrom, 1986, as cited by Bowers, 1993) which is not high enough to ensure that the HGSHS:A is a satisfactory substitute of the SHSS:C. The Waterloo-Stanford Group Scale of Hypnotic Susceptibility, Form C (WSGC; Bowers, 1993, 1998) (see appendix C) derived from the SHSS:C, and was designed to be a better predictor of performance of the SHSS:C (Bowers, 1993). Internal consistency has been reported as .80 in one sample and .81 in another (Bowers, 1993). Factorial Analysis of the WSGC has shown that the scale seems to approach the psychometric ideal of unidimensionality (Sadler & Woody, 2004). High correlation with the individually administered SHSS:C ($r=.85$) indicates that this group adaptation is a valid measure of hypnotic response (Bowers, 1993). These reasons, together with the fact that it is a group administration scale, which allows efficient assessment of suggestibility of a large number of participants, made the WSGC the choice for the present study. The Stanford scales were also adapted for clinical testing of adults (Hilgard & Hilgard, 1979; Morgan & Hilgard, 1978-1979a) and children (Morgan & Hilgard, 1978-1979b), as well as a scale to differentiate the abilities of the good hypnotic subjects (Stanford Profile Scales of Hypnotic Ability, Forms I and II, Weitzenhoffer & Hilgard, 1967). It is interesting to note that although terms as susceptibility and ability (which are commonly used as synonyms of hypnotizability) are used in the denomination of the Stanford scales, Weitzenhoffer (1980), a co-author of the SHSS, scales argue that instruments like SHSS are not measures of hypnotizability, but rather suggestibility (Kirsch, Mazzoni & Montgomery, 2007). Other suggestibility measures were developed, namely the Barber Suggestibility Scale (BSS; Barber,

1965), the Creative Imagination Scale (CIS; Barber & Wilson, 1979), the Carlton University Responsiveness to Suggestions Scale (CURSS; Spanos, 1983) and the Hypnotic Induction Profile (HIP; Spiegel & Spiegel, 1978) but they are beyond the scope of this introduction and therefore will not be further considered here (for a review of the history and content of suggestibility scales in the 19th and 20th centuries see Council, 1999, 2002. See also Perry, Nadon & Button, 1992, for descriptions, data and interrelationships between scales)

High levels of test-retest reliability for suggestibility measurements taken over a period of 25 years have been reported (Piccione, Hilgard & Zimbardo, 1989), providing support for the trait theory of hypnosis. Nevertheless other researchers have presented evidence demonstrating that behavioral and subjective measures of hypnotic suggestibility can be modified by training, which provides support for sociocognitive theories. For example, Spanos and colleagues developed a suggestibility modification training procedure, the *Carleton Skills-Training program* (CSTP, Gorassini & Spanos, 1986), designed to modify participant's attitudes and interpretations of hypnotic communications during a standardized 75 minute single session. An impressive number of studies (e.g. Bertrand, Stam & Radtke, 1993; Gfeller; Lynn, & Prible, 1987; Gorassini & Spanos, 1986; Robertson, McInnins & St. Jean, 1992; Spanos; Flynn & Gabora, 1993; Spanos, Robertson, Menary, Brett & Smith, 1987) showed that the CSTP can produce large and long lasting positive effects on suggestibility. A shorter 15 minutes version was further developed by Gorassini and collaborators and also proved to be effective in enhancing suggestibility (Gorassini, Sowerby, Creighton & Fry, 1991). The current question is whether the CSTP engenders compliant performance on specific tests or if it really alters fundamental skills and abilities on an enduring basis. Research is still needed to clarify the robustness of training effects (Lynn, 2004).

Researchers have also looked for correlates of hypnotic suggestibility (also referred to in the literature as hypnotizability) and have failed to find a relation between suggestibility and

personality, measured by such personality inventories as the MMPI (Deckert & West, 1963), the Big Five (Green, 2004), and dissociation (e.g. the capacity for dissociative experiences) (Silva & Kirsch, 1992). However, suggestibility seems to be positively associated to absorption, i.e. the capacity for absorbed and self-altering attention (Tellegen & Atkinson, 1974), fantasy proneness (i.e. fantasizers, individuals at the extreme of the continuum imaginative / fantasy) (Lynn & Rhue, 1988), response expectancy (Kirsch 1985; Braffman & Kirsch, 1999), reaction time (Braffman & Kirsch, 2001) and empathy (Wickramasekera II & Szlyk, 2003). Favorable attitudes toward hypnosis also seem to increase participant's response to hypnotic standardized scales (Cronin, Spanos & Barber, 1971).

Research on gender differences in suggestibility have shown mixed results. However recent studies (reported by Cardeña, Kallio, Terhune, Buratti & Löf, 2007) have found small but significant gender differences favoring women on the HGSHS:A. Non-hypnotic suggestibility (or imaginative suggestibility (Kirsch & Braffman, 2001), i.e. suggestibility measured in the absence of hypnosis induction) has been found to be predicted by expectancy, motivation, absorption and fantasy proneness, but effects of absorption and fantasy proneness seemed to be mediated by participant's expectancy (Braffman & Kirsch, 1999). Interestingly, Braffman and Kirsch also reported that the induction of hypnosis was found to decrease suggestibility in about 25% of the participants.

Effectiveness of hypnotic-based interventions. In an era of evidence-based practice it is a matter of importance to know in which health conditions is hypnosis an empirically supported intervention. In recent years several research reviews and meta-analysis have been published aiming to clarify this issue, and the top leading journal of the field, the International Journal of Clinical and Experimental Hypnosis has dedicated several issues to this matter (vol. 48(2), 2000, and vol. 55(2) and (3), 2007). Research reviews have revealed that hypnosis is effective in a variety of medical and psychological conditions. It can be classified as a well-established

intervention for pain management (e.g. chronic pain, acute pain associated to cancer and pain in childbirth) (Montgomery, DuHamel & Redd, 2000); it is effective as an adjunct to medical care for anxiety related to medical and dental procedures, asthma, dermatological diseases, gastrointestinal diseases, hemorrhagic disorders, nausea and emesis in oncology and obstetrics/gynecology (Pinnell & Covino, 2000), it is effective in the treatment of the irritable bowel syndrome (Golden, 2007), psychosomatic disorders (Flammer & Alladin, 2007), chronic pain (Elkins, Jensen & Patterson, 2007), non-biological sleep disorders, particularly if combined with cognitive behavioral therapy (CBT) (Graci & Hardie, 2007), side effects of cancer therapy (nausea, emesis, acute pain, treatment anxiety) (Néron & Stephenson, 2007), obstetrics and childbirth (Brown & Hammond, 2007), headaches and migraines (Hammond, 2007), asthma (the emotional and behavioral components) (Brown, 2007), and weight loss (Kirsch, 1996). As for psychological disorders, albeit the scarcity of studies that meet rigorous methodological criteria, evidence suggests that hypnosis enhances the efficacy of cognitive behavioral treatments (Alladin & Alibhai, 2007; Kirsch, Montgomery and Sapirstein, 1995; Lynn, Kirsch, Barabasz, Cardeña & Patterson, 2000; Schoenberger, 2000). However, the findings for hypnotic interventions for smoking cessation (Green & Lynn, 2000), eating disorders (Barabasz, 2007), and posttraumatic conditions (Cardeña, 2000; Lynn & Cardeña, 2007), produced mixed findings or are still insufficient in number. Therefore hypnosis can not yet be regarded as a well-established treatment for these conditions.

Hypnosis and adherence to health-related requests. Despite the fact that hypnosis is non-invasive, non-pharmacological, relatively inexpensive, and can be considered as the modality of choice for minimizing discomfort and improving adherence with medical regimens (Temes, 1999), the use of hypnosis to enhance adherence is a virtually unexplored area. Suggestibility, as an individual variable that might be associated with adherence, received only one mention in the literature (Czajowski, Chesney & Smith, 1998 as cited by DiClementi, Berrenberg & Giese,

2007), and there is only one experimental study addressing this relationship between suggestibility and adherence to a health-related task (pill-taking) (DiClementi et al., 2007). The DiClementi study revealed that highly hypnotizable individuals adhere to a complex treatment schedule better than low hypnotizable (as assessed by the HIP, Spiegel & Spiegel, 1978), and hypnotic suggestibility alone showed greater effects on adherence compared to self-efficacy and health-provider contact in a non clinical college sample, indicating that the effects of suggestibility and hypnosis on adherence deserve to be investigated. However, the review of literature through structured searches of PsycINFO, PsycArticles, Academic Search Premier, MEDLINE and the Cochrane Library, retrieved only five studies. Two of them were case studies on the efficacy of hypnosis on improving adherence to medical instructions or health-related behaviors. Anbar (2002) reported a case of the use of self-hypnosis to alter the perception of taste thus improving tolerance to medication in a 9-year-old boy. LaGrone (1993) reported a case where a 10-year-old boy in which a 10-session intervention of hypnosis combined with imagery, relaxation, direct suggestion, adaptive self-talk, self-monitoring, and self-reinforcement, reduced psychogenic vomit and nausea associated to pill ingestion, still effective in a one year of follow up. Forman (1985) presented three cases in which hypnosis was effective in improving adherence to medication among psychiatric patients. Kelly, McKinty & Carr (1988) used a hypnotic procedure to increase adherence to routine dental floss in 96 patients of a Dental University Center. After 8 months, 67% of the participants continued to floss daily, against 15% of the control group. In a case study, Ratner, Gross, Casas & Castells (1990) used hypnotherapy to increase adherence to treatment in 6 insulin-dependent adolescents with a previous history of poor adherence. A 6-months follow up using biochemical measures of adherence, confirmed the effectiveness of the hypnotic intervention. To the best of our knowledge, only one study used posthypnotic suggestion to enhance adherence. Meo, Mazzoni, Kirsch, Santandrea & Marucci (2003) (described in appendix B) tested the effects of

posthypnotic suggestion and implementation intention in adherence to placebo pill taking for three weeks in 68 healthy college students and found a percent of pills taken ranging from 90% (among participants that formed goal intention and did not received posthypnotic suggestion) to 99% (among participants that formed implementation intention instructions and received posthypnotic suggestion). Albeit differences in design, these studies suggests that hypnosis may be an effective tool to promote adherence to medical regimens and health-related behavior change.

Hypnotic involuntariness and implementation intentions. There is general agreement that an essential part of hypnotic responding is the loss of a sense of personal agency or the creation of a sense of involuntariness which has been termed the “classic suggestion effect” (Weitzenhoffer, 1980). Whether the processes underlying suggestion really are effortless, or are just perceived as being effortless, is the matter of some debate and is the key underlying point of contention between a number of theories of hypnosis as seen above. In the present research we are interested in testing whether the performance of a health-related task can be enhanced by means of posthypnotic suggestion and implementation intentions, hypothetically both favoring the effortless and automatic remembrance of doing the task. Kirsch & Lynn’s (1997) response set theory provides the theoretical rational for this study, by suggesting a parallel between implementation intentions and suggested involuntariness.

According to Kirsch and Lynn (1997) response expectancies are functionally equivalent to implementation intentions taking the form “*emit response X (the suggested response) when situation Y (the suggestion) is found*”. Hypnosis can here be understood as the adoption of an intention to respond to hypnotic suggestions, which then allows for automatic activation of the suggested response, but instead of forming intentions for specific actions, hypnotized individuals appear to delegate some control of their experience and behavior to the hypnotist. However, this phenomenon of delegating control does not require dissociation, rather it can be

characterized as an experiential set marked by the willingness to experience suggested events as occurring effortlessly and nonvolitionally. Thus, implementation intentions and hypnosis differ in terms of the person's perception about the volitional status of the behavior. If the response (the behavior) is interpreted to be volitional, the set is an intention. If it is interpreted as nonvolitional, the set is expectancy. This does not mean that intentions and expectancies are the same. For example, intentions and expectancies can be in conflict. A person may expect to emit a response that is inconsistent with his/her goals (e.g. as in anxiety disorders) or might intend to emit a nonvolitional response but expect to be unable to do so (e.g. as in sexual dysfunction). The resulting behavior will then be a function of the person's belief about his/her self-control abilities as well as the strength of intention and expectancies. Response expectancies and intentions share the following characteristics: (1) both are response sets that prepare the person to automatically emit the appropriate response when triggering conditions are found; (2) once established they can fade from awareness continuing to determine behavior; (3) once the response is set conscious intervention may be needed to inhibit it.

In the present study we tested the hypothesis whether hypnosis and implementation intentions, alone and combined, could lead to an automatic, or at least perceived as automatic, remembrance and performance of an intended sustained behavior whenever the previously set triggering conditions were met.

2. Aims and scope of the present research

The literature reviewed above provides the following rationale for the present study: (1) non-adherence to health-enhancing behaviors is a health problem and feasible interventions are needed to address this problem, and (2) no previous studies could be located that examined the effect of implementation intentions combined with posthypnotic suggestion in adherence to a sustained health-related task using a behavioral measure. We selected a physical activity task, because a growing number of studies have been providing support for the notion that physical activity is a lifestyle factor that might lead to increased physical and mental health throughout life (Hillman, Erickson & Kramer, 2008). Physical activity is linked to the prevention of cardiovascular diseases, improvement of mood, well-being, self-concept and self-esteem and has a positive effect on buffering stress (for a review see Ribeiro, 1998). Research has also shown a positive association between physical activity and the prevention and alleviation of depression (for a review see Phillips, Kiernan & King, 2003), health-related quality of life (for a review see Bize, Johnson & Plotnikoff, 2007), and seems to have positive effects on cognition and brain function (Hillman, Erickson & Kramer, 2008). The hypothesis tested here are: (1) the implementation intentions intervention will increase adherence to the physical activity and report task for a sustained period of 21 days; (2) the use of posthypnotic suggestions will increase adherence to the physical activity and report task for a sustained period of 21 days; (3) the combined intervention of implementation intentions and posthypnotic suggestions will lead to higher rates of adherence to the physical activity and report task. The first study in this dissertation was conducted with a North-American sample of college students from New Jersey. The second study was a replication and extension of the first study and was conducted with a Portuguese sample of college students from Lisbon. A second variable was added to the second study because several studies addressing the effect of implementation intentions in different types of tasks have shown mixed results (Bermudez, Contreras, Margüenda & García,

2004; Dewitte, Verguts & Lens, 2003; Gollwitzer and Brandstätter, 1997), thus we decided to test a third hypothesis concerning the role of task difficulty as a potential moderator of the effect of implementation intentions on adherence to a prescribed behavioral task. In the first adherence study we have found that the effect of posthypnotic suggestion on adherence was moderated by suggestibility. Therefore an instrument to assess hypnotic suggestibility in Portuguese language was needed for the second study. Since there was no instrument to assess hypnotic suggestibility in Portuguese language, we translated and adapted the Waterloo-Stanford Group Scale of Hypnotic Susceptibility, Form C (WSGC; Bowers, 1993, 1998), the same instrument used to assess hypnotic suggestibility in the north-American study. During the process of assessing suggestibility among Portuguese participants, finding high suggestible participants revealed itself to be harder than expected. The percentage of high suggestible participants found with the WSGC in North-American samples varied from 18.3 to 20.5% (Bowers, 1993; Kirsch, Milling, & Burgess, 1998) whilst in the Portuguese sample was only 11.8%. These results, together with the findings of the adherence study, lead us to hypothesize that attitudes toward hypnosis might have influenced participant's responsiveness. Previous research indicated that attitudes toward hypnosis affect hypnotic suggestibility. Spanos, Brett, Menary and Cross (1987) found that strong negative attitudes appear to selectively inhibit the occurrence of high suggestibility scores on the CURSS (Spanos, 1983) and Page, Handley and Green (1997) found that the belief about a good hypnotic ability predicts high suggestibility levels in the HGSHS:A (Shor & Orne, 1962). Moreover, participants with no experience of scientific hypnosis seem to be more prone to hold negative and stereotypical attitudes and beliefs about hypnosis (Green, 2003; McConkey and Jupp, 1985-86; McConkey, 1986). The adherence study was not designed to include a measure of attitudes toward hypnosis, therefore we examined a random sample of participants who took part in the study after the study was finished, and compared it with an equivalent sample of students with neither information nor

experience on hypnosis. Since there are no instruments to assess attitudes toward hypnosis in Portuguese language, we translated and adapted to Portuguese the most recent version of the *Escala de Valencia de Actitudes y Creencias Hacia la Hipnosis, Versión Cliente* developed by the research group on hypnosis of the Valencia University lead by Antonio Capafons, PhD. Since this version was not yet studied in any population, we conducted its factorial analysis and compare it with its related form, the *Escala de Valencia de Actitudes y Creencias Hacia la Hipnosis, Versión Terapeuta*. The choice for a Spanish instrument to assess attitudes was based on the cultural proximity between the two countries (for a description of the main features on Spanish people see Capafons, 2004a), and the widely spread lack of knowledge about hypnosis among the public and the health professionals (Capafons, 2004b) common to both countries.

With the present study we hope to contribute to a better understanding about what are the strategies that are, and are not, effective in helping people to adhere to health sustained behaviors, as well as contributing to the establishment of scientific research on hypnosis in our country by providing instruments in Portuguese language that might encourage future research on hypnosis in Portugal.

3. Dissertation structure

The present dissertation is organized in two parts that contains two chapters each. The chapters correspond to four separate papers, each one displaying a different experimental study carried out during the doctoral work and highlighting a specific aspect that contributes to the overall body of the dissertation.

Chapter 1 investigates the effects of implementation intentions and posthypnotic suggestion in adherence to a sustained health-related request, run in place, take their pulse rate before and after, and send an email report to the experimenter each day for three weeks. Results showed a significant interaction between participant's suggestibility and the effects of posthypnotic suggestion. Posthypnotic suggestion enhanced adherence among highly suggestible participants, but lowered it among low suggestible individuals. This study was carried out in a North American sample of one hundred twenty four undergraduate students at Seton Hall University in New Jersey. The chapter was edited for the purpose of this dissertation only. Full text of the published paper is presented in appendix B.

Chapter 2 replicates the north-American study in a larger Portuguese sample. Another variable was also included, the difficulty of the task, thus participants was asked to perform one out of two health-related requests, the daily running in place as in the first study, and a daily mood monitoring. Both tasks included a behavioral measure which consists of sending in a text message (SMS) everyday confirming that the request was fulfilled. Three hundred twenty three college students from two colleges in Lisbon were part of the study. Results show that adherence was significantly greater for the easy task than for the difficult task, that posthypnotic suggestion decreased adherence significantly and that implementation intentions did not affect adherence rates. No significant interactions were found. This study suggests that implementation intentions and posthypnotic suggestion do not increase adherence to requests

for sustained tasks when a behavioral measure is included. The chapter provides the basis for papers currently under the process of preparation.

Chapter 3 presents the Portuguese adaptation of a standardized scale designed to assess hypnotic suggestibility in a group setting, the Waterloo-Stanford Group C (WSGC) scale of hypnotic susceptibility. Since hypnotic suggestibility was found to mediate the effect of posthypnotic suggestion on adherence in the first adherence study, an instrument to assess hypnotic suggestibility in the Portuguese sample was needed and no such instrument existed in Portuguese. Six hundred twenty five college students were assessed with a translation of the WSGC and compared to three North American samples, providing the psychometric properties of the present Portuguese adaptation of the WSGC. This chapter was published under the following reference: Carvalho, C.; Kirsch, I.; Mazzoni, G. & Leal, I. (2008). Portuguese norms for the Waterloo-Satnford Group C (WSGC) Scale of Hypnotic Susceptibility. *International Journal of Clinical and Experimental Hypnosis*, 56, 295-305.

Chapter 4 investigates the attitudes toward hypnosis in Portuguese college students. The interest in learning about Portuguese' attitudes and beliefs toward hypnosis resulted from the findings of the previous studies in the Portuguese samples, raising the hypothesis that attitudes about hypnosis might be influencing hypnotic suggestibility. Since there was not an instrument designed to assess attitudes about hypnosis in Portuguese language, we chose to translate and perform the exploratory factorial study of an original Spanish questionnaire, the *Escala de Valencia de Actitudes y Creencias Hacia la Hipnosis, Versión Cliente*. Four hundred forty four Portuguese college students were assessed and data provided the psychometric properties and factorial structure of attitudes scale. This chapter was published under the following reference: Carvalho, C., Capafons, A., Kirsch, I., Espejo, B., Mazzoni, G. & 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.

The General Discussion presents the integration of the four studies, the main conclusions and ends with some recommendations for future research.

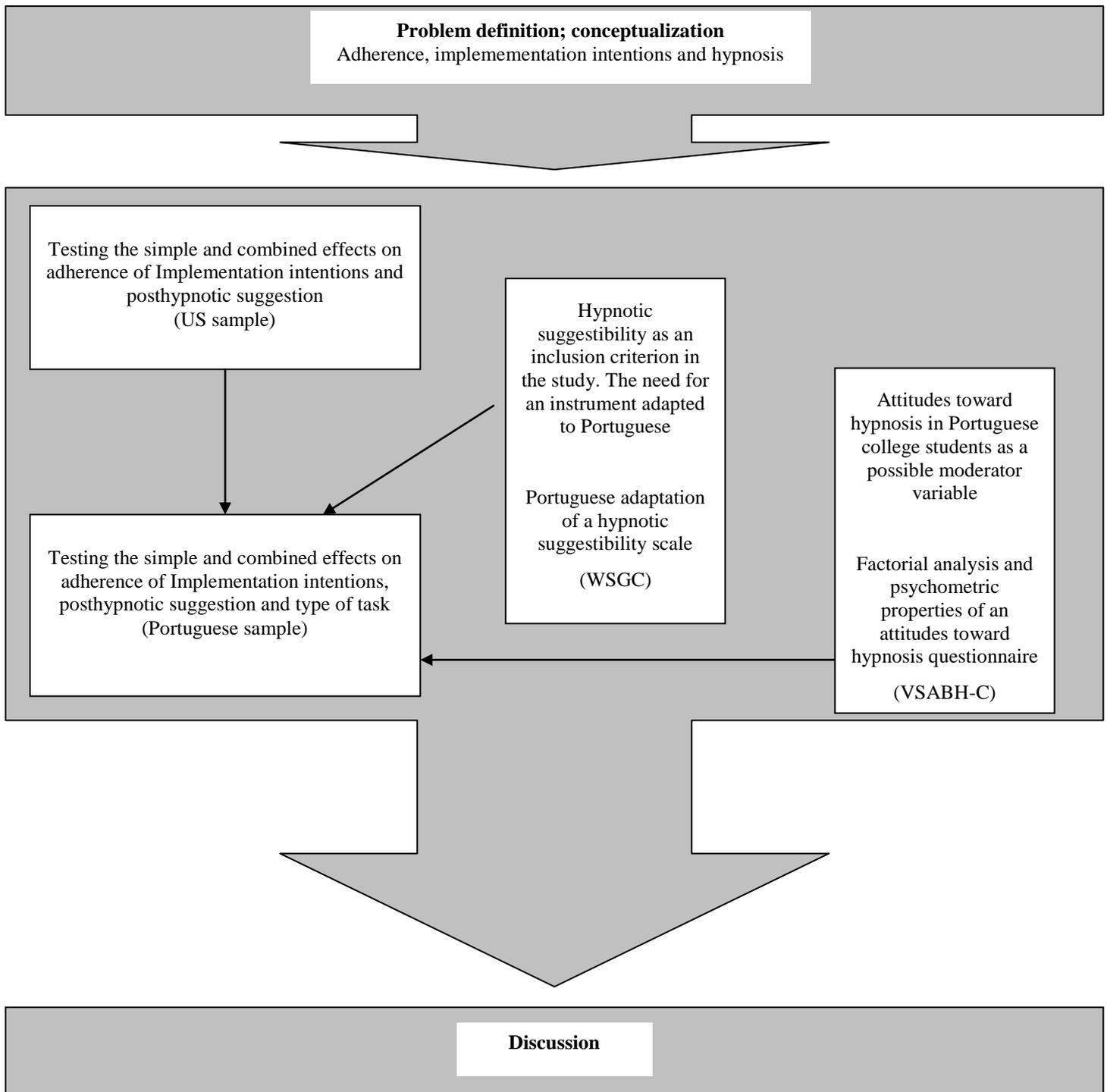


Figure 1. Schematic representation of the present dissertation and positioning of the research studies/ chapters

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Part I

EFFECTIVENESS OF TWO STRATEGIES TO ENHANCE HEALTH-RELATED BEHAVIORS: IMPLEMENTATION INTENTIONS AND POSTHYPNOTIC SUGGESTIONS

Chapter 1

The Effect of Posthypnotic Suggestion, Hypnotic Suggestibility, and Goal Intentions on Adherence to a Health-Related Task.

The present chapter is based on the article published in *The International Journal of Clinical and Experimental Hypnosis*, 56, 143-155 (for the full paper see appendix B).

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(2008)

Abstract

The effects of implementation intentions and posthypnotic suggestion on adherence to a health-related task over a three week period were investigated. Participants with high, medium, and low levels of hypnotic suggestibility were asked to run in place, take their pulse rate before and after, and send an email report to the experimenter each day. The study failed to find any significant main effects, but found a significant interaction between suggestibility and the effects of posthypnotic suggestion. Posthypnotic suggestion enhanced adherence among highly suggestible participants, but lowered it among low suggestibles.

Key words: adherence, compliance, implementation intentions, hypnosis, suggestion

The Effect of Posthypnotic Suggestion, Hypnotic Suggestibility, and Implementation Intentions on Adherence to a Health-Related Task

In medical contexts, compliance or adherence has been defined as “the extent to which a person’s behavior coincides...with medical or health advice” (Haynes, 1979, pp. 2-3). Poor adherence to medical instructions and treatments increases hospitalization rates, work days lost, and the number of drug-resistant strains of organisms. Adherence rates of 60% for pharmacological prescriptions (Ley, 1997) and less than 50% for non-pharmacological treatments (Dunbar-Jacob, Burke & Puczinsky, 1995) have been reported, the latter diminishing further over time. Thus, increasing the rate of adherence to medical instruction is an important task. In the study reported here, we evaluated the effectiveness of two strategies for enhancing adherence to a health-related task: the formation of implementation intentions and the administration of posthypnotic suggestion. Both interventions have been linked to automaticity in behavior (Gollwitzer, 1999; Kirsch & Lynn, 1999).

Gollwitzer (1999) distinguished between two types of intentions, goal intentions and implementation intentions. Goal intentions specify a particular end state (e.g., losing weight) or desired behavior (e.g., taking prescribed medication). Implementation intentions specify when and where a particular behavior will be performed (e.g., I will take my pill with my orange juice at breakfast each morning). The facilitative effect of implementation intentions on health related behaviors has been demonstrated in a number of studies. Among the behaviors facilitated by implementation intentions are performing breast self-examinations (Orbell, Hodgkins & Sheeran, 1997), taking vitamins (Sheeran & Orbell, 1999), and participating in vigorous exercise (Milne, Orbell, & Sheeran, 2002).

Gollwitzer (1999) hypothesized that implementation intentions place the intended behavior under the control of the situational cues (time and place) designated in the intention,

so that the response is performed automatically. The idea that these intentions automatize the behavior suggested to us the possibility that health behaviors might also be enhanced by the use of posthypnotic suggestion. Posthypnotic suggestion is a request made during hypnosis that a behavior will be performed automatically after hypnosis has been terminated. As with implementation intentions, a cue that is to control the behavior is generally specified (e.g., you will touch your right ankle when I clap my hands, but you will not be aware of my having asked you to do this), and the emission of the response is reported as having been automatic by those hypnotized subjects who respond. The experience of automaticity has been identified as a hallmark of hypnotic responding and termed the classic suggestion effect (Kirsch & Lynn, 1999).

Barnier and McConkey (1998a,b) reported two studies on the use of posthypnotic suggestion to facilitate the performance of a daily behavior (mailing postcards to the experimenter) by participants who had been screened for high levels of hypnotic suggestibility. In the first study, highly suggestible participants given a posthypnotic suggestion mailed significantly fewer postcards than those given a simple social request. In the second study, posthypnotic suggestion did not differ significantly from social request. At first glance, these data seem to suggest that the effect of posthypnotic suggestion on adherence to health-related requests might be negative rather than positive. However, it is possible that the negative results reported by Barnier and McConkey were a consequence of the particular posthypnotic suggestion they used. Their suggestion was a statement that the participant will enact the desired behavioral response. One reason for involuntary non adherence with medical instruction is a failure of prospective memory. The person simply forgets to take the prescribed medication, do a physical exercise, or follow some other health-related instruction. Indeed, Gollwitzer (1999) hypothesized that the formation of implementation intentions might improve prospective memory. With this in mind, we decided to test a different type of posthypnotic

suggestion. Instead of telling participants that they would emit the requested behavior, we told them that the thought of emitting the response would come to mind without any effort at the appropriate moment. Thus, our suggestion was aimed at reducing involuntary non adherence, by helping participants remember to perform the intended action.

A previous study (Meo, Mazzoni, Kirsch, Santandrea & Marucci (2003), see appendix B for details) in which this particular wording of suggestion was used and combined with an implementation intention intervention on self-reported pill-taking task, indicated that both implementation instructions and posthypnotic suggestion significantly enhance pill taking. Nevertheless differences between these methods were not significant, and the combination of the two was not significantly different than the use of either alone. This, however, may have been due to a ceiling effect. The percent of pills taken ranged from 90% (among participants given goal intention instructions without posthypnotic suggestion) to 99% (among participants given implementation intention instructions with posthypnotic suggestion). The present study was designed to provide a more sensitive test of differences between implementation intentions alone, posthypnotic suggestion alone, and the two combined, by increasing the difficulty of the task. In this study, we replaced the pill taking task with instructions to engage in strenuous physical activity, monitor pulse rates, and report the results to the experimenter. Altering the task will also reduce the potential for dissembling. Participants might report greater adherence than actually exhibited behaviorally, and pill counts might only control this partially, as one could simply discard some or all of the pills. The task we use in the present study requires participants to send an e-mail to the experimenter each day. This provided a reliable behavioral measure of adherence. While the content of the email might contain inaccurate information, the act of sending the email is itself a form of adherence to instruction and cannot be feigned. The participants in the Meo et al. (2003) study had been selected for high levels of hypnotic suggestibility. This enhanced the likelihood of finding an effect of posthypnotic suggestion, but

it reduced the generalizability of the results. In the present study, equal numbers of high, medium, and low suggestibility participants are included. In addition to enhancing generalizability of the results, this change allows us to test the hypothesis that the effect of hypnosis would be moderated by the participant's level of hypnotic suggestibility.

To summarize, the intent of the present study is to evaluate the separate and combined effects of a) instructions to form implementation intentions and b) posthypnotic suggestion, on adherence to a health-related request. The study uses a 2x2x3 experimental design, in which high, medium and low suggestible participants were asked to form a goal intention or an implementation intention and either were or were not given a posthypnotic suggestion to remember to emit the intended behavior. Motivation was induced by describing the seriousness of the problem of non adherence to participants and telling them that the study was designed to learn how health professionals might most effectively communicate instructions. To our knowledge, this is the first study assessing the effect of posthypnotic suggestion on adherence with a health-related task over a sustained period of time using a behavioral measure.

Method

Participants.

One hundred twenty four undergraduate students at Seton Hall University (64 female and 60 male), ranging in age from 17 to 26 years old, were selected for participation from a sample of 235 students who had completed the Waterloo-Stanford Group Scale of Hypnotic Susceptibility, Form C (WSGC; Bowers, 1993, 1998). The WSGC is a group adaptation of the Stanford Hypnotic Susceptibility Scale: Form C (SHSS:C, Weitzenhoffer & Hilgard, 1962). A standard eye closure induction and twelve hypnotic suggestions are presented via audiotape, following each participants complete a response booklet in which they are asked to indicate whether or not an outside observer would have seen an overt response to each of the twelve hypnotic suggestions. Each suggestion is rated pass or fail, yielding total behavioral scores

ranging from 0 to 12. Internal consistency has been reported as .80 in one sample and .81 in another (Bowers, 1993). A correlation with the individually administered SHSS:C indicates that this group adaptation is a valid measure of hypnotic response (Bowers, 1993). Selection criteria were gender and suggestibility score, the aim being to include an approximately equal number of males and females and equal numbers of low, medium, and high suggestible participants. For the purpose of participant selection and assignment to condition, high suggestibility was operationalized as scores of 9-12 on the WSGC, medium suggestibility as scores of 5-8, and low suggestibility as scores from 0-4. The main study was completed by 38 high, 45 medium, and 41 low suggestible students, who were randomly assigned, within suggestibility levels, to form implementation or goal intentions and to receive or not receive hypnotic suggestions.

Procedure.

Participants were asked to run in place for 5 minutes each day for a three-week period, to take their pulse rate before and after the exercise, and to send a daily email report to the experimenter. They were also asked to send an email if they did not complete the exercise and pulse rate task. This provided two measures of task adherence: number of emails sent and reported number of days on which the exercise task was done. To motivate them to do so, they were told that the purpose of the study was to learn the factors that influence people's ability to follow their doctor's instructions and that the results could have important implications for the way in which health professionals communicate instructions to patients. The experiment used a 2x2x3 (intention x posthypnotic suggestion x suggestibility level) factorial design. Participants were randomly assigned to receive goal intention or implementation intention and to receive or not receive a posthypnotic suggestion. Participants in the goal intention condition were simply asked to run in place and send the e-mail once a day. Those in the implementation intention condition were further asked to specify the exact place and time they would perform the exercise and send the e-mail. In addition, half of the participants were given a posthypnotic

suggestion indicating that the thought of running in place would come to mind without effort at the appropriate moment. The other half did not receive a posthypnotic suggestion. Wording of the suggestion varied depending on whether the participant was in the goal intention or the implementation intention condition. This was done so that the content of the suggestion would be as consistent as possible with the instruction that was given. In the goal intention condition, the posthypnotic suggestion following a standard hypnotic induction (see appendix D) was:

Once a day for the next three weeks you will running in place for 5 minutes, taking your pulse before and afterward, and sending an email message containing your resting and exercise pulse rates. Doing this is very important for you and it will be easy to remember doing it. The thought of doing these tasks will come to your mind on the right time of the day, and you will want to do them. The thought of doing these tasks will come to mind in an automatic way, without any effort on your part. The instructions to run for 5 minutes and the willingness to do it will come to your mind easily and without any effort, and you will have no problem whatsoever in following these instructions.

In the implementation intention condition, the posthypnotic suggestion was:

Once a day for the next three weeks you will running in place for 5 minutes, taking your pulse before and afterward, and sending an email message containing your resting and exercise pulse rates. Doing this is very important for you and it will be very easy to remember doing it. The thought of doing these tasks will come to your mind at the time of the day and the place you decided to do them. Imagine that it is (chosen time) and that you are in (chosed location) and that in this place and at this time that you are imagining you are finding yourself wanting to do the exercise task. This will happen automatically, without any effort on your part. The instructions to run for 5 minutes and the willingness

to do it will come to your mind easily and without any effort, and you will have no problem whatsoever in following these instructions.

Results

Self-reported task completion was highly correlated with behavioral adherence to the instruction to send email messages ($r = .95, p < .001$). The mean emails sent and reported task completions in each experimental condition is presented in Table 1.

Table 1

Number of Emails Sent and Reported Task Completions

		<i>Emails Sent</i>		<i>Task Completions</i>	
<i>Suggestion</i>	<i>Intention</i>	<i>Mean</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>
No	Goal	8.63	1.20	9.75	1.26
	Implementation	8.71	1.22	9.10	1.28
Yes	Goal	8.65	1.22	9.39	1.28
	Implementation	8.13	1.24	9.10	1.30

These data were analyzed via hierarchical regressions, in which main effects of intention, posthypnotic suggestion, and suggestibility level were entered first, followed by the interaction of intention and posthypnotic suggestion with suggestibility level (see Baron & Kenny, 1986, for an explanation of this data-analytic strategy). These analyses did not yield any significant main effects for intention or posthypnotic suggestion, but did reveal significant posthypnotic suggestion by suggestibility level interactions on both the number of emails sent, $Beta = .71, p < .01$, and the number of reported task completions, $Beta = .60, p < .05$. As shown in Figures 1 and 2, posthypnotic suggestion enhanced adherence among high suggestible participants but hindered it among low suggestible participants.

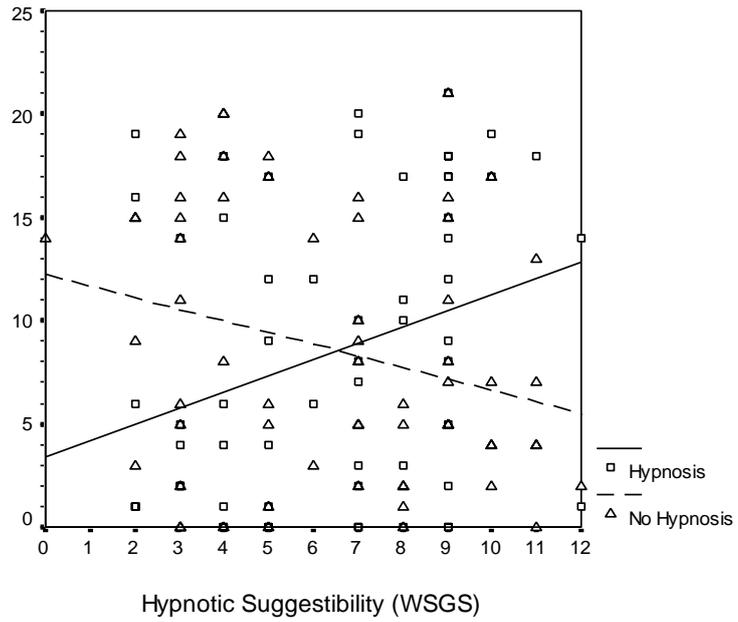


Figure 1. Number of emails sent as a function of hypnotic suggestibility and hypnotic suggestion.

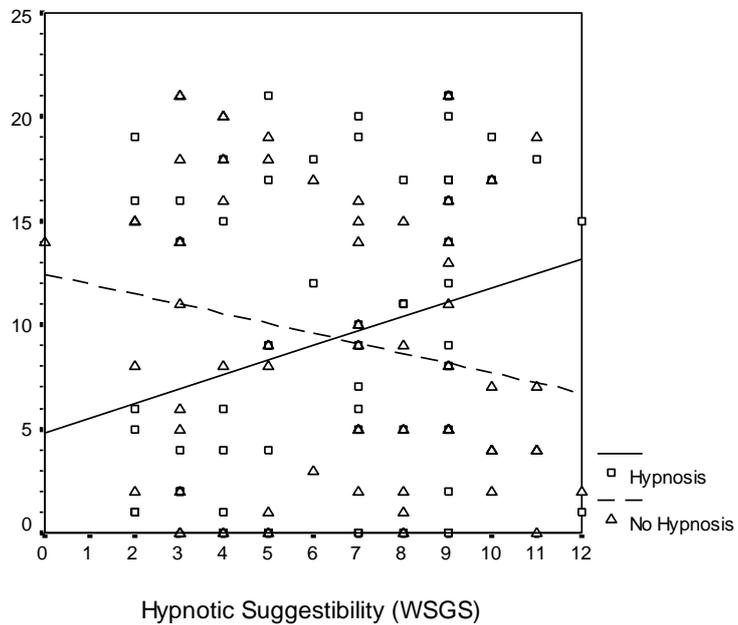


Figure 2. Number of reported task completions as a function of hypnotic suggestibility and hypnotic suggestion.

Discussion

We found that the effect of posthypnotic suggestion on adherence is moderated by suggestibility. Consistently with the results found in the Meo et al. (2003) study (see appendix B) posthypnotic suggestion enhanced adherence with health-related instructions among highly suggestible individuals. However, this benefit did not extend to low or medium suggestible, and, in fact, the use of hypnosis significantly lowered adherence among low suggestibles. This lowering of adherence may have been a form of defiance, motivated by these participants' desire to demonstrate that hypnosis would not affect them. In contrast, high suggestibles might have been motivated toward greater adherence by the application of hypnotic procedures. Another possibility is that the posthypnotic suggestion led participants to rely on its effect to trigger the thought of the task, whereas without the suggestion, they engaged in a more active effort to remember to do it. If so, then high suggestibles might have experienced enough of a suggestion effect to overcome the reduction in effort, whereas the behavior of lows, who are relatively unaffected by suggestion, would suffer from the absence of effort. With moderate levels of suggestibility, the suggestion effect might offset the decrease in effort, leading to no change in behavior. Theoretically, the finding of a significant effect linked to hypnotic suggestibility is generally taken as a sign that the effect is a true hypnotic effect. Practically, these data suggest that hypnotic suggestibility be assessed before using hypnotic suggestion to enhance adherence.

The psychological mechanism underlying this effect of posthypnotic suggestion on high suggestibles is worthy of further exploration, as it can have practical as well as theoretical implications. One possible mechanism is motivation, such that hypnosis motivates highs to demonstrate their hypnotic ability by intentionally complying with suggestion, whereas it motivates lows to demonstrate their lack of response by performing even less well than when not hypnotized (Spanos, 1986). Another possible mechanism is the facilitation of prospective

memories by hypnotic suggestion. These are not contradictory hypotheses, and it is possible that both are at play. If this is the case, low and medium suggestible participants might benefit from a modification of the procedure, in which the suggestion is administered without the induction of hypnosis. Many studies have shown that hypnotic suggestions can be effective even when given without prior induction of hypnosis (Barber & Glass, 1962; Braffman & Kirsch, 1999; Hilgard & Tart, 1966; Hull, 1933; Weitzenhoffer & Sjoberg, 1961). These studies also indicate that some people are less responsive following a hypnotic induction than they are when the same suggestions are given without inducing hypnosis. Thus, investigation of the effects of nonhypnotic suggestions on adherence to health-related instructions might be a worthwhile follow-up to the present studies.

Unlike the results of the Meo et al. study, we did not find a significant benefit for the formation of implementation intentions. These data are at variance with those reported in prior studies (Milne et al., 2002; Orbell et al., 1997; Sheeran & Orbell, 1999). Their inconsistency with the data reported by Milne et al. (2002) is particularly striking, as that study also involved requests for exercise. We note, however, that the dependent variable in that study was self-report. The significant effect of implementation intentions in the Milne et al. study may have been partially due to over-reporting exercise adherence. In the present study, we also have a behavioral measure, in the form of daily emails sent to the experimenter, which may have constrained over-reporting.

Unlike previous studies of the effect of implementation intentions on health behaviors, the behavioral measure included in our study not be feigned. Thus, our data challenge the conclusion that the formation of implementation intentions can facilitate adherence with medical instructions. These effects may be due to another form of adherence, namely adherence with the demand characteristics of the experimental situation. Future studies on the effects of implementation intentions on health behaviors should include behavioral measures

that are difficult to feign, and the possibility of simple adherence with demand should be investigated.

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Chapter 2

The Effect of Implementation Intentions, Posthypnotic Suggestion and Task difficulty on Adherence to Health-Related Requests

Abstract

The effects of implementation intentions and posthypnotic suggestions on adherence to sustained easy and difficult tasks were assessed using a behavioral measure of adherence. Three hundred twenty three students received instructions to either monitor their mood or engage in physical exercise daily over a 21 days period, and to send an SMS message to the experimenter immediately after doing so each day. Adherence was significantly greater for the easy task than for the difficult task. Posthypnotic suggestion decreased adherence significantly. Implementation intentions did not affect adherence rates, and there were no significant interactions. These data suggest that implementation intentions and posthypnotic suggestion do not increase adherence to requests for sustained tasks when a behavioral measure (sending an SMS message) is included.

Key Words: implementation intentions, hypnosis, posthypnotic suggestion, adherence, treatment compliance, health behavior

The Effect of Implementation Intentions, Posthypnotic Suggestion, and Task Difficulty on Adherence to Health-Related Requests

Adherence to medical advice is an important theme in Health Psychology. Adherence is broadly defined as closely following the advice of a health care provider. This includes advice pertaining to medications and lifestyle changes like losing weight or quitting smoking, as well as recommendations about preventive measures like starting an exercise program or avoiding fatty foods (Straub, 2007). However, people who seek health care do not always follow the treatment that is prescribed for them, a behavior that has important personal and social consequences (Bennett, 2002; Dunbar-Jacob, Burke & Puczynski, 1995; Royal Pharmaceutical Society, 1997; Straub, 2007; World Health Organization, 2003).

A number of studies have focused on increasing adherence to health-related behavioral prescriptions by having participants form “implementation intentions”, a concept developed by Gollwitzer (1993, 1999) to bridge the gap between cognition and action. Implementation intentions specify when and where a particular behavior will be performed (“I intend to initiate behavior x whenever the situational conditions y are met”) as opposed to goal intentions, which specify a particular end state (“I intend to pursue x ”). According to Gollwitzer (1993, 1999), planning the performance of a behavior in a clearly specified time and place in the near future (i.e., forming an implementation intention) enhances the likelihood that the behavior will be performed. The claim is that implementation intentions delegate control of the behavior to the specified situational cues, which then initiate the behavior automatically (Brandstätter, Lengfelder & Gollwitzer, 2001; Gollwitzer, 1993).

Considerable research has shown that the formation of implementation intentions to perform health-related behaviors tends to enhance their performance (Armitage, 2004, Armitage, 2007a, 2007b; Bermúdez, Contreras, Margüenda & García (2004); Carvalho,

Mazzoni, Kirsch, Meo & Santandrea, Experiment 1, 2008; Kellar & Abraham, 2005; Kwak, Kremers, Baak & Brug, 2007; Luszczynska, 2006, Luszczynska, Scholz & Sutton, 2007; Luszczynska, Sobczyk & Abraham, 2007; Milne, Orbell & Sheeran, 2002; Murgraff, White & Phillips, 1996; Nooijer, de Vet, Brug & de Vries, 2006; Orbell & Sheeran, 2000; Orbell, Hodgkins & Sheeran, 1997; Osch, Reubsæet, Lechner & Vries, in press, Prestwich, Conner, Lawton, Bailey, Litman & Molyneaux, 2005; Sheeran & Orbell, 1999, 2000; Steadman & Quine, 2004; Verplanken & Faes, 1999; Ziegelmann, Luszczynska, Lippke & Schwarzer, 2007). However, there are also studies that have failed to find a benefit of implementation intentions on the performance of a requested health-related behavior (Brickell, Chatzirantis & Pretty, 2006; Budden & Sagarin, 2007; Carvalho et al. Experiment 2, 2008; Hill, Abraham & Wright, 2007; Jackson, Lawton, Knapp, Raynor, Conner, Lowe & Closs, 2005; Jackson, Lawton, Raynor, Knapp, Conner, Lowe & Closs, 2006; Lavin & Groarke, 2005; Prestwich, Lawton & Conner, 2003; Sniehotta, Scholz & Swarzer, 2006). Thus, it would be useful to establish the conditions in which implementation intentions facilitate health behavior and the conditions in which they do not.

Only four of the studies of implementation intentions on health behavior included behavioral measures that are not prone to distortions due to demand characteristics and social desirability (Carvalho et al., 2008, Experiment 2; Kwak et al. 2007; Luszczynska, Sobczyk & Abraham, 2007; Sheeran & Orbell, 2000). Twenty four studies relied exclusively on self-report measures (Armitage, 2004; Armitage, 2007a, 2007b; Bermudez et al, 2004; Brickell et al., 2006; Budden & Sagarin, 2007; Hill et al., 2007; Jackson et al., 2005, 2006; Kellar & Abraham, 2005; Lavin & Groarke, 2005; Luszczynska, 2006; Luszczynska, Scholz & Sutton, 2007; Milne, et al., 2002; Murgraff et al., 1996; Nooijer et al., 2006; Orbell & Sheeran, 2000; Orbell, Hodgkins & Sheeran, 1997; Osch et al., in press; Prestwich et al., 2005; Prestwich, et al., 2003; Sniehotta et al. 2006; Steadman & Quine, 2004; Ziegelmann et al., 2007). In three studies, the

required task was daily pill taking, and pill counts performed by the experimenter were included (Sheeran & Orbell, 1999, Experiments 1 and 2; Carvalho et al., 2008, Experiment 1). However, pill counts do not necessarily reflect adherence accurately. Studies in patient samples, comparing pill counts with electronic devices that provide an objective measure of pill bottle opening, have reported an overestimation of adherence of approximately 20% (Cheng, Woo, Chan, Tomlinson & You, 2005; George, Peveler, Heiliger & Thompsom, 2000; Liu et al., 2001). Therefore, we designed the present study to include a behavioral measure of adherence that is impossible to feign.

In the four studies that used objective measures of adherence, three reported a positive effect of implementation intentions (Kwak et al., 2007; Luszczynska, Sobczyk & Abraham, 2007; Sheeran & Orbell, 2000). However in Luszczynska, Sobczyk and Abraham study, implementation intentions combined synergically with a preexistent volitional intervention (a weigh watchers structured program) aiming the same goal (weigh loss), and the target in both the Kwak et al. 2007, and the Sheeran & Orbell, 2000 studies was “one-off” behaviors (using the stairs once immediately after forming implementation intentions about stair use, and attending a medical consultation for cervical screening respectively). Although one-off behaviors can have important health consequences, most important health-related behaviors require performance over a sustained period of time (e.g., exercise, healthy eating, nicotine abstention, and adherence to prescribed medication). Studies of the effects of implementation intentions on one-off behaviors show consistent positive effects on adherence (Orbell et al., 1997; Prestwich et al., 2005; Sheeran & Orbell, 2000; Steadman & Quine, 2004; Verplanken & Faes, 1999). In contrast, studies of the effects of implementation intentions on sustained behavior show mixed results (Armitage, 2004; Armitage, 2007a, 2007b; Bermúdez et al., 2004; Brickell et al. 2006; Budden & Sagarin, 2007; Carvalho et al., 2008; Hill et al., 2007; Jackson et al., 2005, 2006; Kellar & Abraham, 2005; Lavin & Groarke, 2005; Luszczynska, 2006,

Luszczynska, Scholz & Sutton, 2007; Milne et al., 2002; Murgraff et al., 1996; Nooijer et al., 2006; Orbell & Sheeran, 2000; Osch et al., in press; Prestwich et al., 2003; Sheeran & Orbell, 1999; Ziegelmann et al. 2007). Therefore, in the present study we assessed adherence on tasks requiring repeated performance over a sustained period of time.

One potential moderator of the effect of implementation intentions on adherence is the difficulty of the prescribed task. Studies examining the role of implementation intentions in different types of tasks have reported mixed results, with some studies indicating a greater effect on easy tasks (Carvalho et al., 2008; Dewitte, Verguts, & Lens, 2003) and others showing a greater effect on difficult tasks (Bermúdez et al., 2004, Gollwitzer and Brandstätter, 1997). Therefore, in the present study, we decided to examine the role of task difficulty as a moderator of the effect of implementation intentions on adherence to a prescribed behavioral task.

Finally, we attempted to replicate and extend the finding of our previous studies (Carvalho et al., 2008) showing that adherence could be enhanced by a posthypnotic suggestion. With a difficult task (Experiment 2), suggestion improved adherence for highly suggestible participants, but not for those of moderate or low suggestibility. Indeed, it appeared to hinder adherence among low suggestible participants. A significant effect of suggestion was also shown in Experiment 1, in which an easy task was prescribed, but this experiment was confined to high suggestible individuals; hence we do not know the effect of suggestion on adherence to easy tasks among moderate and low suggestible individuals. The present study was designed to clarify this issue.

In summary, the intent of the present study was to investigate the separate and combined effects of implementation intentions, task difficulty, and posthypnotic suggestion on health-related behavior, using behavioral measures of adherence. We instructed half of the participants to engage in daily physical exercise (difficult task) and half to perform the easy task of providing an easy daily mood rating on a 1 to 5 scale. Half of the participants were

asked to form implementation intentions, and half were asked to form goal intentions. Half were given a posthypnotic suggestion indicating that the thought of performing the prescribed task would come to mind without any effort at the appropriate moment. To facilitate interpretation of potential non-significant findings, we aimed for a sample size of 320 participants, yielding a power of .95 for finding a small effect size ($d = .20$; Cohen, 1992).

Method

Participants.

Participants were 323 college students (246 females) in Lisbon, Portugal, who had been screened for hypnotic suggestibility, as measured by the Waterloo-Stanford Group Scale of Hypnotic Susceptibility, Form C (WSGC; Bowers, 1993, 1998). Their ages ranged from 17 to 42 years old ($M = 22.3$, $SD = 3.13$, 91% age 26 and under). Selection was based on suggestibility level. Specifically, of the 707 students that had been screened, all of those showing very high or very low levels of suggestibility were asked to participate, to ensure adequate representation of these levels of suggestibility. Invitations to students with moderately low and moderately high levels of suggestibility were limited so as to have roughly equal numbers of individuals at various levels of hypnotic suggestibility.

For the purpose of this study, we used the following categories of suggestibility: High: WSGC scores between 8-12; Medium High: 6-7; Medium Low: scored 4-5, and Low: 0-3. With this four-level classification, participants were evenly distributed across the full range of suggestibility. The study was completed by 81 high, 80 medium high, 79 medium low and 83 low suggestible participants.

Procedure.

The experiment used a 2 x 2 x 2 x 4 factorial design (task x instructions x hypnosis x level of suggestibility) resulting in a total of 8 experimental conditions repeated across the four levels of suggestibility. Participants at each suggestibility level were randomly assigned to the

difficult or the easy task, to receive goal intention instructions or implementation intention instructions, and to receive or not receive posthypnotic suggestions to perform the task.

Participants assigned to the easy task were asked to assess their mood daily on a 1 to 5 Likert scale for a period of three weeks and to send the mood rating by SMS to the experimenter. Participants were asked to send the SMS even if they had difficulty in assessing their mood. Participants assigned to the difficult task were asked to run in place for 5 minutes each day for a three-week period, take their pulse rate before and after the exercise, and send an SMS report to the experimenter. They were also asked to send an SMS if they did not complete the exercise and pulse rate task. This provided two measures of task adherence: a behavioral measure (the number of SMS messages sent) and a self-report measure (the number of days on which the task was reported to have been done).

Participants assigned to the goal intention condition were simply asked to perform the exercise or assess their mood and send the SMS daily to the experimenter. Those in the implementation intention condition were further asked to specify the exact place and time they would perform the task (exercise or mood evaluation) each day.

Half of the participants were given a posthypnotic suggestion indicating that the thought of performing the task would come to mind without effort at the appropriate moment. The other half did not receive a posthypnotic suggestion. Wording of the suggestion varied depending on whether the participant was in the goal intention or the implementation intention condition. This was done so that the content of the suggestion would be as consistent as possible with the instruction that was given. In the goal intention condition, the posthypnotic suggestion, given after a standard hypnotic induction (see appendix D), was as follows:

Doing this is very important for you and it will be easy for you to remember to do it. The thought of doing these tasks will come to your mind at the right time of the day, and you will want to do them. The thought of doing these tasks will come to mind in an automatic

way, without any effort on your part. The instructions to [easy or difficult task] and the willingness to do it will come to your mind easily and without any effort, and you will have no problem whatsoever in following these instructions.

In the implementation intention condition, the posthypnotic suggestion was:

Doing this is very important for you and it will be very easy for you to remember to do it. The thought of doing these tasks will come to your mind at the time of the day and place you decided to do them. Imagine that this is the time of day that you have decided to do the [specified] task... you are in the place you decided to be when you [easy or difficult task is specified]. Imagine being there now...imagine the place and see what is around you. Imagine what time it is. Imagine [easy or difficult task is specified]...imagine writing down the number...imagine typing the message and clicking the “send” button ... the thought of doing these tasks will come to mind in an automatic way, without any effort on your part. The instructions to [easy or difficult task is specified] and the willingness to do it will come to your mind easily and without any effort, and you will have no problem whatsoever in following these instructions.

Motivation to participate in the research was induced by explaining to participants the problem of non-adherence in health care, and noting that this study would help health professionals to make therapeutic prescriptions more effective. Participants were also paid for their participation with vouchers that could be redeemed in the college cafeteria or bookshop for a total amount of 8€ (5€ were paid initially to cover the SMS costs and the remaining was paid after completing participation).

Measures

Measures of adherence. We used two measures of adherence, a behavioral measure (the number of SMS messages sent, regardless of their content) and a self-report measure (whether the content of the SMS message indicated task completion).

WSGC. The WSGC is as a group adaptation of the Stanford Hypnotic Susceptibility Scale: Form C (SHSS:C, Weitzenhoffer & Hilgard, 1962) in which a standard eye closure induction is followed by twelve hypnotic suggestions that are presented via audiotape. Participants then rate their responses by indicating whether or not they had responded behaviorally to the twelve suggestions. Each suggestion is rated pass or fail, yielding total behavioral scores ranging from 0 to 12. We used a Portuguese translation of the WSGC (Carvalho, Kirsch, Mazzoni & Leal, 2008). Normative data indicated that this translation is reliable (Cronbach's $\alpha = .62$). Correlations of item difficulty between the Portuguese and English versions of scale ranged from .92 to .94 (Carvalho et al., 2008).

Prospective questionnaire. Following the experimental manipulations described above, participants were asked to answer a 5-item questionnaire, assessing intention ("I intend to do the task and send the SMS every day [definitely no / definitely yes]"), perceived behavioral control (assessed with two items: "For me, doing the task and reporting in every day will be [very difficult / very easy]" and "If I want to, It will be easy to do the task [disagree completely/ agree completely]"), expected prospective memory ("How often do you think you will forget to do the task [often / never]") and expected adherence ("My degree of confidence that I will do the task is [very low/ very high]"). All items were rated on a 7-point Likert scale.

Retrospective questionnaire. At the end of the 21 days, participants were asked to answer a 4-item questionnaire that assessed the difficulty of remembering to do the task ("For me remembering to do the task was [very difficult/ very easy]"), perceived memory effort ("I put some effort into remembering to do the task [not at all / a lot]"), use of memory strategies ("I made use of strategies to help me remember to do the task [not at all / a lot]"), and sense of automaticity ("I found my self doing the task without even thinking about it [never / always]"). All items were rated in a 7-point Likert scale. It was explained to the participants that memory strategies included using alarm clocks, and similar devices.

Past Behavior. We also asked about frequency and intensity of regular physical exercise, assessed by the questions: “How many days per week do you usually exercise enough to be tired and sweating? [0 / 7 days]” and “When you exercise enough to be tired and sweating, how much time do you usually spend per session? [0= don’t exercise, 1= less than 15 minutes, 2= between 15 and 30 m, 3= between 30 m and 1 hr, 4 = between 1 and 2 hrs, 5= between 2 and 3 hrs and 6 = more than 3 hrs]. The scores of the two questions were combined multiplicatively to provide a measure of physical exercise to indicate the number of hours per week in which the participant engaged in strenuous exercise (from 0 to 42).

Results

There were no significant between group differences in gender, age, or regular exercise practice. Mean scores indicate a low regular exercise practice in the sample of 163 participants assigned to the exercise task ($M=5.05$, $SD=6.37$, $Mode=0$). Fifty participants did not return to complete the retrospective questionnaire. Fourteen participants did not send any SMS message or report any task completion and therefore their score on both adherence measures is 0. We included all 323 participants in the data analysis.

Group Differences in Adherence.

The mean number of SMSs sent (behavioral measure of adherence) in each experimental condition are presented in Table 1. Behavioral adherence to the instruction to send SMS messages was highly correlated with self-reported task completion ($r = .99$, $p < .001$), and a regression analysis including the interaction term did not reveal any difference in the level of this association as a function of task difficulty. The proportion of participants sending SMSs reporting that they had not completed the task was significantly ($p < .001$) greater in the difficult task condition (22%) than in the easy task condition (3%). In contrast, task difficulty did not affect the extent to which participants claimed to have performed the task on a previous day, without having sent an SMS that day (easy task = 4%; difficult task = 6%). Data were

analyzed using both behavioral adherence and self-reported adherence as dependent variables. As both analyses yielded the identical patterns of results, we report analyses of the behavioral data only.

A 2 x 2 x 2 x 4 (task x instructions x hypnosis x suggestibility level) analysis of variance (ANOVA) failed to reveal any effect of implementation intentions on behavior, $F(1,291) = .120, p = .73$. There were, however, significant effects of task difficulty, $F(1,291) = 28.58, p < .001, \eta^2 = .09$ and posthypnotic suggestion $F(1,291) = 10.14, p = .002, \eta^2 = .03$. Participants showed greater adherence to the easy task ($M = 15.51, SD = 5.80$) than to the difficult task ($M = 11.69, SD = 7.25$). Adherence was also higher for participants in which posthypnotic suggestions were *not* utilized ($M = 14.70, SD = 6.45$) than in the group that received posthypnotic suggestions ($M = 12.49, SD = 7.03$).

Suggestibility level failed to reveal any significant effects and there were no significant interactions between factors. Figure 1 displays the pattern of adherence. Most participants (85%) sent messages on the first day, but this had decreased to 52% by the end of the 21 day period. This affirms the importance of examining sustained behavior when assessing strategies for enhancing adherence.

Table 1
 Mean and Standard Deviation of SMS sent in each condition

Type of Task	Posthypnotic Suggestion	Type of Intention	SMS's sent	
			Mean	SD
<i>Low suggestible (0-3)</i>				
Easy	No	Goal	18.70	2.87
		Implementation	15.73	4.00
	Yes	Goal	17.10	4.20
		Implementation	14.27	7.32
Difficult	No	Goal	12.40	7.55
		Implementation	11.50	8.36
	Yes	Goal	10.91	7.70
		Implementation	9.10	7.39
<i>Medium Low suggestible (4-5)</i>				
Easy	No	Goal	15.70	4.19
		Implementation	19.44	1.88
	Yes	Goal	13.90	3.87
		Implementation	16.50	6.26
Difficult	No	Goal	14.40	5.52
		Implementation	13.00	8.74
	Yes	Goal	10.50	7.66
		Implementation	8.30	7.42
<i>Medium High suggestible (6-7)</i>				
Easy	No	Goal	13.40	7.71
		Implementation	17.20	5.99
	Yes	Goal	9.5	7.55
		Implementation	13.90	7.55
Difficult	No	Goal	9.20	7.63
		Implementation	15.10	7.45
	Yes	Goal	12.91	7.92
		Implementation	9.90	6.84
<i>High suggestible (8-12)</i>				
Easy	No	Goal	15.71	5.02
		Implementation	18.80	2.49
	Yes	Goal	15.73	4.15
		Implementation	13.27	7.28
Difficult	No	Goal	13.00	6.04
		Implementation	13.00	6.41
	Yes	Goal	12.70	7.76
		Implementation	9.90	6.62

Proportion of SMS sent

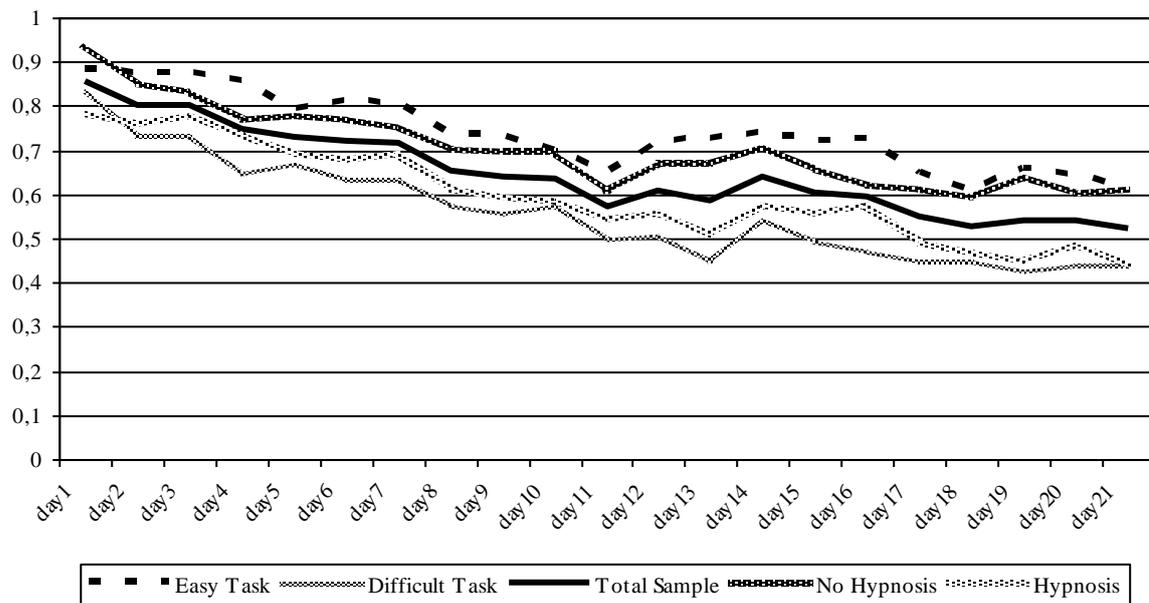


Figure 1. Mean proportion of SMS sent in the total sample and as a function of task difficulty and hypnotic suggestion over the 21 day period

Prospective and retrospective variables associated with adherence.

The prospective questionnaire included five items. The two items measuring perceived behavioral control on the prospective questionnaire were highly correlated ($r = .64$) and were combined to provide a single measure of this construct.

A multivariate analysis of variance (MANOVA) on the prospective questionnaire yielded only a significant three-way interaction (suggestibility level by type of intention by type of task), $F(12,870)=1.88$, $p=.03$, $\eta^2=.03$. Tests of between-subjects effects indicated that the three-way interaction was significant on the prospective variables perceived behavioral control $F(3, 291) = 3.44$, $p = .008$, $\eta^2=.04$ and expected adherence $F(3,291)= 3.84$, $p<.01$, $\eta^2=.04$. These interactions are displayed in Figures 2 and 3.

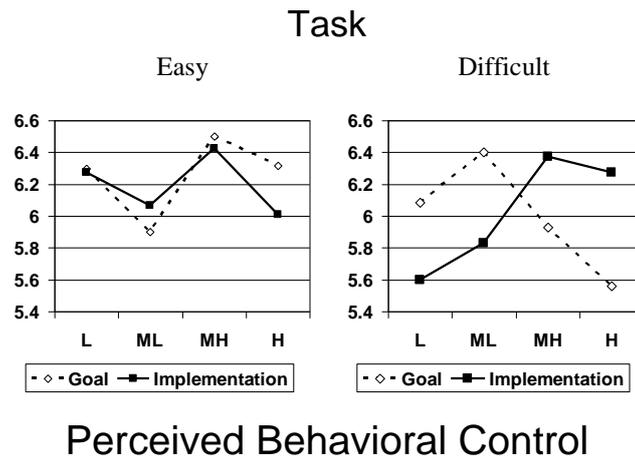


Figure 2. Interaction between Suggestibility Level, Type of Task (Easy vs Difficult), and Type of Intention (Goal vs Implementation Intentions) on Perceived Behavioral Control

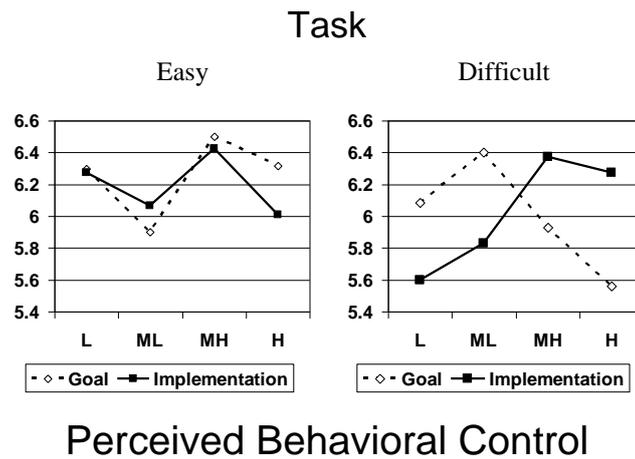


Figure 3. Interaction between Suggestibility Level, Type of Task (Easy vs Difficult), and Type of Intention (Goal vs Implementation Intentions) on Expected Adherence

A MANOVA on the retrospective questionnaire yielded significant main effects of manipulation intention, task difficulty, and hypnosis (intention: $F(4,238) = 3.75, p = .006, \eta^2 = .06$; task: $F(4,238) = 5.70, p < .001, \eta^2 = .09$; hypnosis: $F(4,238) = 5.94, p < .001, \eta^2 = .09$). Participants reported using more memory strategies in the implementation intention condition ($M = 3.90, SD = .18$) than in the goal intention condition ($M = 2.94, SD = .18$), $F(1, 273) =$

14.90, $p < .001$, $\eta^2 = .06$, in the easy task condition ($M = 3.78$, $SD = .18$) than in the difficult task condition ($M = 3.06$, $SD = .18$), $F(1, 273) = 8.44$, $p = .004$, $\eta^2 = .03$, and in the no-hypnosis condition ($M = 4.02$, $SD = .18$) compared to the hypnosis condition ($M = 2.82$, $SD = .18$), $F(1, 273) = 23.32$, $p < .001$, $\eta^2 = .09$). Participants also reported that it was easier to remember to do the easier task ($M = 4.62$, $SD = .15$) than the difficult task ($M = 3.91$, $SD = .16$), $F(1, 273) = 10.02$, $p = .002$, $\eta^2 = .04$) and that the easy task ($M = 3.05$, $SD = .14$) was perceived as more automatic than the difficult task ($M = 2.44$, $SD = .15$), $F(1, 273) = 9.22$, $p = .003$, $\eta^2 = .04$).

Correlations between predictors, retrospective self-evaluation and the behavioral measure of adherence are presented in table 2. To correct for multiple correlations, we set a conservative alpha of .01. All but one item (expected prospective memory) on the prospective questionnaire correlated modestly but significantly with adherence. On the retrospective questionnaire, all four items showed significant correlations with the behavioral measure of adherence. Regression analyses indicated that group assignment did not moderate these associations.

Table 2

Correlations between predictors, retrospective self-evaluation and adherence

	Predictors				Retrospective			Adherence
	Perceived behavioral control	Prospective memory	Expected adherence	Easiness of remembering	Perceived memory effort	Use of memory strategies	Sense of automacity	
Pearson's R								
<i>Predictors</i>								
Intention	.404*	.317*	.519*	.073	-.072	.140	.057	.230*
Perceived behavioral control		.359*	.606*	.095	-.093	.079	.071	.172*
Prospective memory			.504*	.056	-.093	.081	.040	.126
Expected adherence				.128	-.165*	.160*	.040	.188*
<i>Retrospective</i>								
Easiness of remembering					-.689*	.142	.429*	.639*
Perceived memory effort						-.046	-.348*	-.550*
Use of memory strategies							-.069	.240*
Sense of automacity								.427*

Note:* Correlation is significant at the 0.01 level (2-tailed).

Discussion

The aim of the present study was to assess the effect of implementation intentions, alone and combined with posthypnotic suggestion, on adherence to health-related behavioral prescriptions in two types of task which differed in difficulty. As expected, there was greater adherence to the easy mood rating task (74%) than to the more difficult exercise task (56%).

Contrary to expectations, there were no significant differences in adherence to either task between the implementation intentions condition and the goal intention condition —this despite the use of a sufficiently large sample to provide a high likelihood of detecting small effects. These results are inconsistent with the body of research that supports the effectiveness of

implementation intention interventions (Armitage, 2004; Armitage, 2007a, 2007b; Bermúdez et al., 2004; Carvalho et al., 2008, Experiment 1; Kellar & Abraham, 2005; Kwak et al., 2007; Luszczynska, 2006, Luszczynska, Scholz & Sutton, 2007; Milne et al., 2002; Murgraff et al., 1996; Nooijer et al., 2006; Orbell, et al., 1997; Orbell & Sheeran, 2000; Osch et al., in press; Prestwich et al., 2005; Sheeran & Orbell, 1999; 2000; Steadman & Quine, 2004; Verplanken & Faes, 1999; Ziegelmann et al., 2007). However these studies differ from the present study in a number of ways. First, we used a behavioral measure that cannot be feigned in addition to a self report measure. Second, we asked participants to perform a repeated ongoing behavior that needed to be performed daily for 21 days. Asking participants to perform a task at least once in a given period of time is different from asking to establish a routine behavior for an extended period of three weeks, as we did. Consistent with our findings, a number of previous studies have failed to find significant effects of implementation intentions on adherence to various ongoing health-related requests, including taking antibiotics for 14 days (Jackson et al., 2006), increasing fruit and vegetables consumption in a three months period (Jackson et al., 2005) and increasing dental flossing for three weeks (Lavin & Groarke, 2005). Particularly in physical activity requests, implementation intentions have failed to find significant effects on adherence to an exercise plan over a sustained period of time two weeks (Prestwich et al., 2003), three weeks (Carvalho et al., Experiment 2; Hill et al., 2007), five weeks (Brickell et al., 2006), and two months (Sniehotta et al., 2006). Indeed, one study found that forming implementation intentions actually significantly decreased the performance of the intended behavior in comparison with controls (exercise for 7 days, Budden & Sagarin, 2007). Therefore our results seem to confirm that implementation intentions is not an effective strategy to enhance adherence of repeated and ongoing tasks,

A possible explanation is that repeated, everyday behaviors require flexibility, and specific plans may hurt performances that require flexibility (Gollwitzer, Fujita & Oettingen,

2004; Gollwitzer, Bayer & McCulloch, 2005). The requested goal of sending in the SMS with the mood report or the exercise report can be achieved in several different ways. It may be possible that the implementation intention group felt constrained by their specific plans. If they failed the task for some reason on a specific day (e.g., due to work, not being in the right place at the right time as specified in the plan, or simply having no charge on their cell phones), they were not able to generate alternative plans, and gave up doing the task and reporting it on that day and even on future days. Anecdotal reports from our participants support this claim.

The second type of intervention tested in the present study was hypnosis. Posthypnotic suggestions were combined with goal or implementation intentions. The aim of adding hypnosis to the implementation intentions intervention was to test whether or not posthypnotic suggestions facilitated the automatic contextual trigger postulated by Gollwitzer (1993, 1998). According to Gollwitzer, implementation intentions prepare behaviors for automatic activation, and a subjective sense of automaticity is a central feature of hypnotic responding (Kirsch & Lynn, 1999). We wanted to test whether or not the use of hypnosis with posthypnotic suggestion would facilitate such automatic activation. In the present study we did not confirm this hypothesis. On the contrary, our results revealed that posthypnotic suggestions significantly *decreased* adherence rates in all participants, independently of their level of hypnotic suggestibility, the instructions they received (goal or implementation intentions), and the task to which they were assigned (easy or difficult). This is consistent with previous findings by Barnier and McConkey (1998), where participants who received a social request responded significantly more than participants who received a posthypnotic suggestion away from the hypnotic setting.

Consistent with objective results, in the retrospective questionnaire participants reported that it was easier to remember the easy than the difficult task. They also reported that they used more strategies in the easy task, without hypnosis and in the implementation intentions

condition. This latter result indicates that the formation of implementation intentions, far from resulting in a greater subjective feeling of automaticity, triggered a greater self-reported use strategies.

Forming implementation intentions and giving posthypnotic suggestions are appealing strategies to help people to adhere to health-related behaviors. However, in our sample, these strategies did not produce the desired effects. Making specific plans about reporting their mood/exercise did not produce any positive effect on performance. Using hypnosis with posthypnotic suggestions produced negative effects. This last finding is inconsistent with previous data, in which posthypnotic suggestion was shown to enhance adherence among highly suggestible participants (Carvalho et al., 2008). Further research will be needed to clarify the reason for this difference.

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Part II

ASSESSMENT OF HYPNOTIC SUGGESTIBILITY AND ATTITUDES TOWARD HYPNOSIS IN PORTUGUESE COLLEGE STUDENTS

Chapter 3

Portuguese adaptation of a measure of hypnotic suggestibility: The Waterloo-Stanford Group C (WSGC) Scale of Hypnotic Susceptibility

The present chapter was published in *The International Journal of Clinical and Experimental Hypnosis*, 56, 295-305.

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Abstract

Portuguese norms for the Waterloo-Stanford Group C (WSGC) scale of hypnotic susceptibility are presented. A Portuguese translation of this scale was given to 625 Portuguese college students. Score distribution, item analysis and reliability of the WSGC are presented and compared to three North American samples. The findings show that data from the Portuguese sample are congruent with the reference samples. The only significant difference obtained was a lower proportion of participants scoring within the high range of hypnotic suggestibility on the WSGC.

Key words: hypnotic suggestibility, hypnosis, norms, scale, group version

Portuguese Adaptation of a Measure of Hypnotic Suggestibility: The Waterloo-Stanford Group
C (WSGC) Scale of Hypnotic Susceptibility

Initial screening of participants' hypnotic suggestibility as a part of research on hypnosis has become routine. Among the instruments used to assess hypnotic suggestibility, the Stanford Hypnotic Susceptibility Scale, Form C (SHSS:C; Weitzenhofer & Hillgard, 1962) is frequently referred to as the "gold standard." The SHSS:C has been translated into several languages and normative data have been reported for various countries, including Spain (Lamas, Valle-Inclán & Diaz, 1996), Italy (De Pascalis, Bellusci & Russo, 2000), Germany (Bongartz, 1985), Netherlands (Naring, Roelofs & Hoogduin, 2001), and Mexico (Sánchez-Armás & Barabasz, 2005). However, the SHSS:C is an individually administered scale that takes more than one hour to administer to each participant. To overcome this limitation the Waterloo-Stanford Group C Scale of Hypnotic Susceptibility (WSGC) was developed by Bowers (1993, 1998) as a group adaptation of the SHSS:C. In the WSGC a standard eye closure induction followed by twelve hypnotic suggestions are presented via audiotape. Participants then rate their responses by indicating whether or not they had responded behaviorally to the twelve suggestions.

Factorial Analysis of the WSGC has shown that the scale seems to approach the psychometric ideal of unidimensionality (Sadler & Woody, 2004). Reliability of the WSGC is indicated by internal consistency coefficients of .80 in one sample and .81 in another (Bowers, 1993). Bowers (1993) also demonstrated the validity of the WSGC by high correlations with the SHSS:C ($r = .85$) and the Harvard Group Scale of Hypnotic Susceptibility, Form A ($r = .77$).

The present article describes the psychometric properties of a Portuguese translation of the WSGC and compares them to data obtained from three North American samples. It has

been argued that differences in laboratories and inadvertent changes in how hypnosis is presented can lead to artefactual differences in mean hypnotic suggestibility scores (Sadler & Woody, 2004). To ensure a very high degree of consistency in the administration of the scale, we compare the data of the Portuguese sample with a North American sample collected one year earlier at a North American university, by the same experimenter, following the same protocol for administration and score rating. Data is also compared with a large reference sample of almost 1000 individuals from the United States (Kirsch, Milling & Burgess, 1998) and the original Canadian normative study conducted at the University of Waterloo (UWaterloo; Bowers, 1993).

Method

Portuguese Sample.

Participants. The WSGC was administered to a total of 707 college students who agreed to participate on a voluntary basis. Of these, 45 submitted incomplete response protocols and 37 were eliminated due to poor conditions of administration (e.g. sudden and persistent noise during administration). Thus the sample was composed of 625 participants (479 female) ranging in age from 17 to 49 years ($M=21.97$, $SD=4.32$). 90% of the sample was under 26 years of age. 84% were college students in the undergraduate psychology course at the Instituto Superior de Psicologia Aplicada (ISPA). The remaining participants were undergraduate students enrolled in courses on of engineering (10%) and architecture (6%), all in the city of Lisbon, Portugal.

Materials. The WSGC was translated into Portuguese by the first author and independently reviewed by a Portuguese psychologist trained in hypnosis and fluent in both English and Portuguese. As a check on this translation, a native English speaker who is fluent in Portuguese translated the scale back into English (see appendix C for both versions of the scale, English and Portuguese). The scale administration followed the exact instructions of the

original version (Bowers, 1998), with the exception of item 10 (negative visual hallucination). For this suggestion, instead of placing three balls on a wood platform on the floor, we placed three 20x20cm colored squares in a 60x90cm board. This followed the procedure used in the Seton Hall University (SHU) and University of Connecticut (UConn; Kirsch et al., 1998) comparison samples and was done so that the stimuli would be more easily visible to all participants.

After screening the first 109 participants in the Portuguese sample, it became clear that a slight change was needed in the wording of the response booklet options for items 1, 5 and 7. Specifically, we changed the expression “at least” (e.g., item 1, option A: “My hand had lowered *at least* six inches by then” into the Portuguese equivalent of the English expression “*more than.*” The reason for this change is that the translation to the Portuguese language of the expression “at least” is confusing and not easy to discriminate from “less than,” as used to denote the alternative response (e.g., item 1, option B: “My hand had lowered *less than* six inches by then”). This led participants to frequently ask for the examiner’s help in order to be able to discriminate between the two possibilities of response. A Wilcoxon test found no statistical differences between the two versions of the response booklet ($z = -.079$; $p=.94$) and all protocols were included in the analysis.

Procedure

The WSGC was administered in groups of 7 to 17 individuals. The experimenter presented a brief introduction describing the experimental procedure (i.e., that there would be a relaxation-based hypnotic induction followed by suggestions and a response questionnaire), responded to participants’ questions, and obtained informed consent. The procedure was presented by audio tape. All sessions took place in normal classrooms with normal light. Duration of the entire procedure was approximately 90 minutes. All booklets were rated independently by two experimenters with a correlation between the two raters of .95 ($p<.001$).

For protocols rated differently, final score was decided by consensus. Participants did not receive any compensation, monetary or other, for participating in the study.

North American Sample

The WSGC was administered in groups of 2 to 11 individuals to a total of 234 college students who agreed to participate on a voluntary basis. Of these, 8 submitted incomplete protocols. Thus the sample was composed of 226 participants (132 female) ranging in age from 17 to 26 years ($M= 18.99$, $SD= 1.35$). All participants were undergraduate college students from introductory psychology classes at Seton Hall University. The procedure was identical to that described above for the Portuguese sample.

Results

Score Distribution

Mean scores for the Portuguese and North American samples are presented in Table 1, which also includes data from two reference samples (Bowers, 1993; Kirsch et al., 1998).

Table 1

Sample size, Mean, and Standard deviation for the Portuguese, the North American, and two reference samples

	N	Mean	SD
Portugal	625	5.47	2.34
Seton Hall University	226	5.95	2.62
University of Connecticut	926	5.75	2.95
University of Waterloo	259	5.81	3.09

Portuguese participants scored lower than SHU participants $t(851)=2.59$, $p=.01$, but the magnitude of the difference was very small (Standardized Mean Difference = 0.20). Both sample distributions presented normal skew ($sk=.102$; $z = 1.04$, $p = .29$ in the Portuguese

sample, $sk = .12$; $z = .71$, $p = .48$ in the North American sample) and a negative kurtosis ($ku = -.625$; $z = -3.21$, $p < .001$ in the Portuguese sample and $ku = -.67$; $z = -2.08$, $p = .04$ in the North American sample). The Shapiro-Wilks test indicated that hypnotic suggestibility scores were not distributed normally in either sample (Portuguese: $W = .98$; $p < .001$; North American: $W = .97$, $p < .001$). Figure 1 shows the distribution of scores in the Portuguese sample, the North American sample, and the two reference samples.

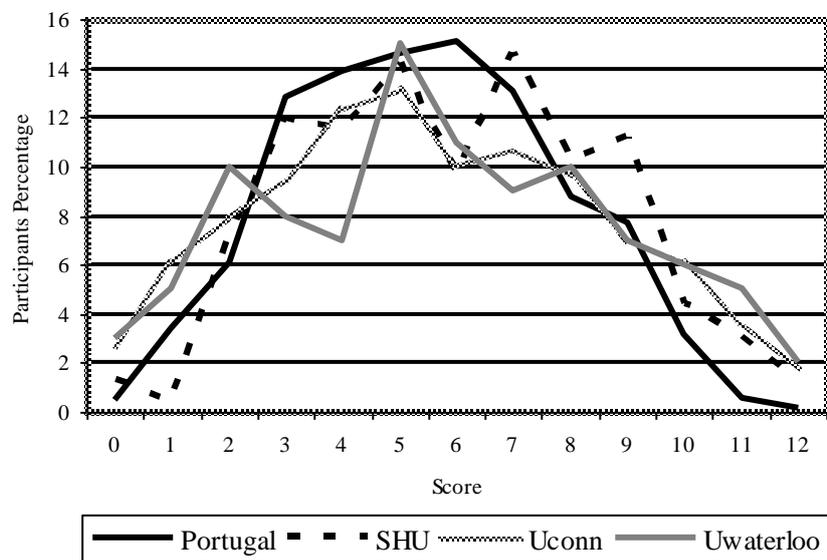


Figure 1. Score distribution in the WSGC in the Portuguese sample, North American, and reference samples.

Frequencies and percentages of participants at each score of WSGC for each sample are presented in Table 2. The four samples present similar distributions. However, significantly fewer participants in the Portuguese sample score the high range (9-12) of hypnotic suggestibility than in the North American (SHU) sample ($z = 2.69$, $p < .01$).

Table 2

Frequencies (and percentages) of participants at each score of WSGC in the Portuguese, North American, and reference samples

Scale score	Portuguese sample		Seton Hall University		University of Connecticut		University of Waterloo	
	N° of cases	% of cases	N° of cases	% of cases	N° of cases	% of cases	N° of cases	% of cases
12	1	.2	3	1.3	16	1.7	6	2
11	4	.6	7	3.1	34	3.6	14	5
10	21	3.4	10	4.4	56	6.0	16	6
9	48	7.7	23	10.2	65	7.0	17	7
8	55	8.8	23	10.2	90	9.6	27	10
7	82	13.1	33	14.6	99	10.6	23	9
6	94	15.0	22	9.7	93	10.0	29	11
5	91	14.6	32	14.2	122	13.1	40	15
4	87	13.9	26	11.5	115	12.3	19	7
3	80	12.8	27	11.9	88	9.4	22	8
2	38	6.1	16	7.1	74	7.9	25	10
1	21	3.4	1	0.4	56	6.0	13	5
0	3	.5	3	1.3	25	2.7	8	3
High (9-12)	74	11.8	43	19	171	18.3	53	20.5
Medium (4-8)	409	65.4	136	60.2	519	55.6	138	53.3
Low (0-3)	142	22.7	47	20.8	243	26	68	26.2

Female Portuguese participants obtained significantly higher mean scores than male Portuguese participants on the total scale $t(623) = -3.66$, $p < .001$, but the difference was relatively small ($SMD = 0.35$). The mean scores were 5.65 ($SD = 2.32$) for females and 4.85 ($SD = 2.30$) for males. T-tests ($\alpha = .05$) revealed that significantly more females than males passed suggestions for taste hallucination, arm immobilization, age regression, music

hallucination, negative visual hallucination, and amnesia, all with small effect sizes ($SMD < 0.31$). Kirsch, Milling, and Burgess (1998) also reported females total mean scores as being significantly higher ($M= 5.97$; $SD=3.00$) than males total mean scores ($M=5.42$; $SD=2.89$). On our North American sample, however, this difference was not statistically significant. This is not surprising given the small effect sizes for these differences and the fact that the sample was smaller.

Item Analysis

Table 3 shows the percentage of participants passing each of the WSGC items in the Portuguese and the three reference samples. The pattern of item difficulty is similar in all samples (see figure 2). Rank order correlations were calculated between the passage rate of the Portuguese and reference samples. Highly significant correlations were found between the Portuguese and the SHU ($r_s= .94$, $p<0.001$), UConn ($r_s= .92$, $p<0.001$) and UWaterloo ($r_s= .93$, $p<0.001$) samples, indicating that the relative difficulty of suggestions are comparable across the Portuguese, North American, and reference samples.

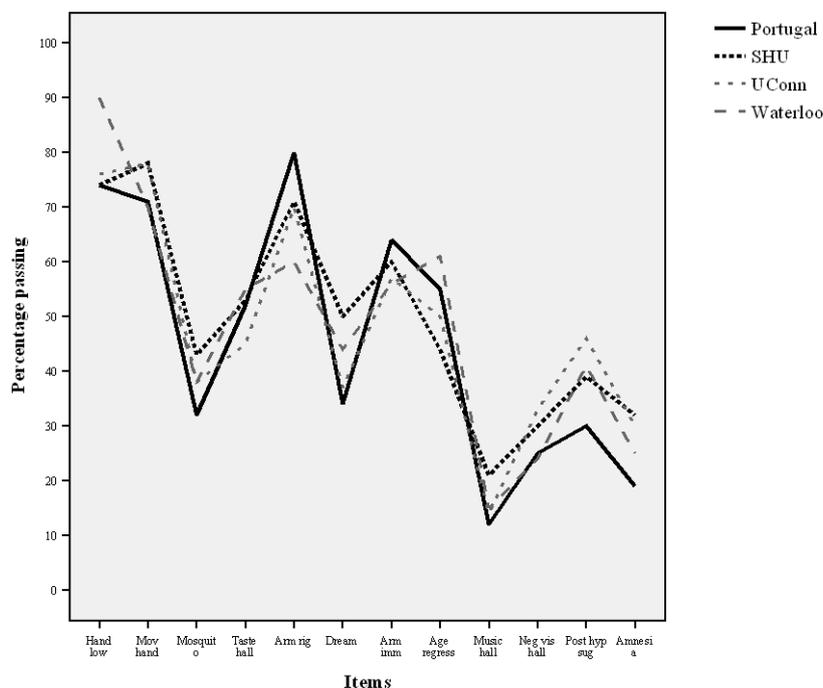


Figure 2. Pattern of item difficulty for the Portuguese and the reference samples

Table 3

Item difficulty for the Portuguese, North American, and reference samples

Items ^a	Percentage passing			
	Portugal (n=625)	U.S. (SHU) (n= 226)	Un. of Connecticut (n=926)	Un. Of Waterloo (n=259)
Hand lowering	74	74	76	90
Moving hands together	71	78	78	70
Mosquito hallucination	32	43	38	38
Taste hallucination	52	53	45	55
Arm rigidity	80	71	70	60
Hypnotic dream	34	50	37	44
Arm immobilization	64	60	57	56
Age regression	55	44	50	61
Music hallucination	12	21	14	15
Negative visual hallucination	25	30	33	24
Posthypnotic suggestion	30	39	46	41
Amnesia ^b	19	32	30	25

a. Items are listed by order of administration

b. Amnesia criterion used is the one proposed by Bowers (1998) of remembering 3 or less items before cancellation of suggestion and 3 or more items after cancellation of suggestion

Reliability

Corrected item-total correlations (i.e., the correlation of each item of the scale and the total score minus the contribution of that item) for all four samples are presented in table 4. Cronbach's alpha reliability coefficient was .62. in the Portuguese sample and .67 in the SHU sample. Reliability coefficient in the reference samples are .70 as reported by Kirsch et al. (1998) and .80 and .81 on two samples as reported by Bowers (1998).

Table 4

Item-Total Correlations for the Portuguese, North American, and reference samples^a

Items ^a	Corrected item-total correlation ^b			
	Portugal	SHU	UConn	UWaterloo ^c
Hand lowering	.17	.19	.29	.47
Moving hands together	.17	.10	.32	.50
Mosquito hallucination	.38	.36	.47	.73
Taste hallucination	.36	.47	.46	.71
Arm rigidity	.25	.31	.46	.57
Hypnotic dream	.35	.42	.44	.58
Arm immobilization	.25	.21	.38	.46
Age regression	.43	.40	.48	.46
Music hallucination	.23	.32	.35	.65
Negative visual hallucination	.24	.41	.50	.74
Posthypnotic suggestion	.12	.19	.34	.67
Amnesia ^d	.25	.36	.41	.49

a. Items are listed by order of administration

b. Calculated correlating each item with the entire scale minus the item

c. Coefficients for the Waterloo sample are biserial r 's, where as those for the other samples are point biserial r 's.

d. Amnesia criteria used is the one proposed by Bowers (1998) of remembering 3 or less items before cancellation of suggestion and 3 or more items after cancellation of suggestion

Discussion

In general, the data reported here indicate that the Portuguese sample behave in a very similar way as the reference samples on the WSGC. Distribution shapes and item difficulty patterns are similar in Portuguese and reference samples. The high significant correlations between Portuguese and the three North American samples show that the Portuguese translation is a valid instrument for assessing hypnotic suggestibility.

In the Portuguese sample female participants scored significantly higher than males, and a similar difference was also found in the UConn reference sample. In the total scale, Portuguese participants scored significantly lower than their North American counterparts, but

this difference was very small. The mean difference was approximately 0.5 suggestions passed, and the standardized mean difference was 0.20. However, the proportion of Portuguese students scoring in the high range of hypnotic suggestibility (WSGC scores 9-12) was lower than in the North American sample. It has been argued that differences in hypnotic suggestibility scores across studies can be an artefact produced by lab differences (Sadler & Woody, 2004). In the current study, the same experimenter collected the data using the same protocol in both the Portuguese and SHU samples, thus rendering a lab artefact unlikely. Instead, these may indicate underlying cultural differences between Portugal and North America.

In summary, the present results suggest that the Portuguese translation of the WSGC is a reliable and valid measure of hypnotic suggestibility. It also indicates that hypnotic suggestibility is similarly distributed in Portuguese and North American populations, with the exception that fewer Portuguese students score within the upper ranges of hypnotic suggestibility. Future studies should be directed at clarifying the reasons for this difference.

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Chapter 4

Portuguese Adaptation of a Measure of Attitudes Toward Hypnosis: Factorial Analysis and Psychometric Properties of the Revised Valencia Scale of Attitudes and Beliefs Toward Hypnosis – Client Version

The present chapter was published in *Contemporary Hypnosis*, 24, 76-85.

Paper authored by

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Abstract

Psychometric properties and factorial structure of the *Revised Valencia Scale of Attitudes and Beliefs toward Hypnosis – Client Version* using a Portuguese sample are presented. Exploratory factor analysis on a Portuguese population of undergraduate college students (N = 444) yielded 8 factors: *Interest / Liking, Memory/Magic, Help, Control, Cooperation, Marginal, Fear* and *Automaton*. The overall 8-factor structure is similar to the one found in the therapist version of the scale, and as in therapist version, each factor of the client version showed good internal consistency and reliability. Differences among participants that had and had not experienced hypnosis previously were also assessed. The results indicated that participants with prior experience of hypnosis scored higher on factors indicating positive attitudes and accurate beliefs (*Interest / Liking, Help, Control* and *Cooperation*), whereas participants that had not experienced hypnosis scored higher in factors indicating misconceptions about hypnosis (*Memory/Magic, Fear, Marginal* and *Automaton*). These results indicate that the scale is sensitive to changes in attitudes and beliefs toward hypnosis brought about by the experience of hypnosis in a scientific context.

Key words: hypnosis, beliefs, attitudes, exploratory factor analysis, assessment, scale

Portuguese Adaptation of a Measure of Attitudes Toward Hypnosis: Factorial Analysis and Psychometric Properties of the Revised Valencia Scale of Attitudes and Beliefs Toward Hypnosis – Client Version

The importance of assessing people's attitudes toward hypnosis has been pointed out by several authors who have drawn attention to the role played by attitudes in therapeutic change when hypnosis is used as a treatment adjunct (Chaves, 1999; Capafons, Alarcón, Cabañas & Espejo, 2003). In addition, attitudes toward hypnosis affect hypnotic suggestibility (Spanos, Brett, Menary & Cross, 1987) and are important in the development of therapeutic rapport (Capafons et al. 2003, Capafons, Cabañas, Alarcón, Espejo, Mendoza, Chaves & Monje, 2006a). The present study aims to establish the psychometric properties and factorial structure of the revised client version of the *Valencia Scale on Attitudes and Beliefs about Hypnosis – Client* (Capafons et al. 2003; Capafons, Cabañas, Espejo, & Cardeña, 2004).

Originally consisting of 28 items, the Valencia Scale is based on the Hypnosis Survey Beliefs by Keller (1996) as well as other questionnaires (Eimer & Freeman, 1998; Nickisson, 1997; McConkey, 1986; McConkey & Jupp; 1985/86; Spanos et al., 1987) and includes assessment of seven misconceptions about hypnosis discussed by Capafons (1998). An exploratory factor analysis of a preliminary version of the scale resulted in six factors (Capafons et al., 2003). Later, one item was eliminated because of low loading in a factor analysis, three items were added to form a new factor related to memory recollection associated with hypnosis, three other items were added to create a new factor related to the notion of hypnosis as seen as separate from scientific research, and a final item was added to the *Magical Solution* factor. This resulted in a 34 item version that measured eight attitudinal factors. Confirmatory factor analysis confirmed this 8-factor structure (Capafons et al., 2004).

Recently Capafons, Morales, Espejo and Cabañas (2006b) enlarged and modified the Valencia Scale providing a revised 37-item version. This version clarified the wording of some of the items in earlier versions, and items containing two statements were split into two different items. Most important, this version of the Valencia Scale was designed to assess therapist's beliefs and attitudes toward hypnosis. The difference between the client and therapist versions lies only in the wording of the items (e.g., item 1 "Hypnosis can be very helpful *to others*" in the client version, "Hypnosis can be very helpful to *my clients*" in the therapist version). Exploratory factor analysis of the therapist version of the Valencia Scale indicated an 8 factor-structure: *Fear* (of losing control, being at mercy of the hypnotist or being lost in a hypnotic trance), *Memory / Trance* (hypnotized people are in a deep hypnotic trance that allow them to access past memories), *Help* (hypnosis is helpful as a co-adjuvant to treatments), *Control* (hypnotized people control their actions and hypnotic responses are voluntary), *Cooperation* (collaboration between the hypnotist and the subject is necessary to achieve an adequate hypnotic response), *Interest / Liking* (desire to be hypnotized), *Magic* (hypnosis is a magical solution to problems and no other factors are needed to promote change) and *Marginal* (hypnosis is outside the domain of science). This factorial structure was confirmed by a confirmatory factor analysis (Capafons, Espejo & Mendoza, 2008), in which good internal consistency coefficients and reasonable test-retest correlations were reported for all 8 factors.

In the present study we assessed the factorial structure of the client version of the revised 37-item Valencia Scale and compared it to the factor structure of Therapist version. Despite the similarity between the therapist and client versions of the scale, some differences in factorialization were expected because of the difference in populations assessed (therapists versus college students).

Method

Participants.

The Revised Valencia Scale of Attitudes and Beliefs about Hypnosis – Client version (VSABH-C, Capafons et al., 2003) was completed by 444 participants, 96 males (22%) and 341 females (77%) (7 failed to give this information), ranging in age from 18 to 54 years old ($M=21,38$, $SD=4.96$, 92% age 26 and under), from two Portuguese colleges in Lisbon (Instituto Superior de Psicologia Aplicada -ISPA and Instituto Superior Técnico- IST). Of these 444 participants, 172 (39%) had participated in a hypnosis study at the university one year earlier, and 272 (62%) did not have such experience. Of these, only 8 (2%) reported having experienced hypnosis before outside of a university context, 5 by a psychologist, 2 by an MD and 1 by another person not further specified. The remaining 263 participant reported no prior contact with clinical or experimental hypnosis.

Procedure.

The VSABH-C, was translated from the Spanish original version into Portuguese by three Portuguese psychologists and then translated back into Spanish by a bilingual Spanish person to ensure the accuracy of the translation (see appendix E for the Portuguese version). Data were collected both in class, at introductory psychology classes (ISPA) and introductory architecture classes (IST), and by email, by contacting students that had participated previously in a different study about hypnosis (see Chapter 2). Some of the students who had participated in the previous study were also contacted in classes they were attending at the time and were asked to fill out the questionnaires *in situ*. Of the participants who had previously taken part in a hypnosis study, 59% of the questionnaires were completed in classrooms and 42% responded by email. Data were collected during the school year 2005/2006. All participation was voluntary and without any payment.

Results

Factor Analysis for the VSABH-C.

Data from the 444 participants on the 37 items were subjected to a principal axis factoring with an oblique rotation (*oblimin* with Kaiser normalization). Oblique rotation was used because we started with the assumption that the variance in a given variable could be explained by a number of underlying common factors and that there would be some correlation among two or more of the factors being rotated (Pett, Lackey & Sullivan, 2003), as found in the analyses of other versions of the scale (Capafons et al., 2004; Capafons et al., 2006b). See Capafons et al. (2004) for the content of the earlier 28-item version.

Principal axis factoring extracted 9 factors (using as criteria *eigenvalues* over 1.00 and factor loadings above .30), but the ninth factor only had one item (item 3; “*one must be in a hypnotic trance in order to fulfill the goals of the intervention*”) loading above .30, which by definition cannot constitute a factor. Therefore we preferred to extract an 8-factor structure, as the authors did for the earlier client version and for the current therapist version.

For the current analysis we display results given by the structure matrix (see Table 1), because (1) the structure matrix provided slightly higher factor loadings than pattern matrix (all above .45, with the exception of item 21 (factor loading .34) and item 33 (factor loading .33); (2) the structure matrix excluded only one item (item 3, factor loading lower than .27) whereas in the pattern matrix items 3, 9, 33, and 6 saturate below .30 and therefore could not be included in any factor. Overall the 8-factor structure is similar in both matrixes with the exception of factor 2 which includes 3 more items (items 6, 9, and 33) in the structure matrix than in the pattern matrix. As Cronbach’s alpha increases with the number of items, a 6 item factor should have a higher internal consistency coefficient than a 3 item factor. In the present data, Cronbach’s alpha increased from .67 to .71 when the 3 additional items were included as a part

of factor 2, however a reliability alpha of .71 is also obtained for the 5-item factor that includes items 6, 9, 30, 31 and 32 and excludes item 33.

The obtained 8 factor structure explains 48.22% of the common variance. The factors and items that comprise them are displayed in Table 1. Gender differences were not significant for any factor.

Intercorrelations among factors are displayed in Table 2. Although moderate, many of these correlations were significant, thus supporting the choice of the oblique rotation. With two exceptions, significant correlations were in the predicted direction. That is, positive beliefs were correlated with positive attitudes (e.g. *Interest / Liking* with *Help*) and negative beliefs were correlated with negative attitudes (e.g. *Memory/ Magic* with *Automaton*). There were however two exceptions. One is the positive correlation between *Memory/Magic* (in which a higher score reflects a negative belief) and *Interest / Liking, Help* and *Cooperation* (in which high scores indicate positive attitudes and beliefs). The second is the positive correlation between *Help* (in which high scores indicated a positive belief) and *Automaton* (in which high scores reflect a negative belief).

Table 1

Loadings and variance explained of the 37 Revised VSABH-C items on the Rotated Factor Structure Matrix^a

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8
	<i>Interest/ Liking</i>	<i>Memory/ Magic</i>	<i>Help</i>	<i>Control</i>	<i>Cooperation</i>	<i>Marginal</i>	<i>Fear</i>	<i>Automaton</i>
Variance explained	18.55%	12.59%	4.38%	4.24%	2.67%	2.28%	2.03%	1.47%
<i>Eigenvalues</i>	7.29	5.15	2.12	1.98	1.51	1.35	1.26	1.07
ITEM_27	,917	,182	,387	,189	,190	-,164	-,376	-,117
ITEM_26	,904	,225	,407	,173	,211	-,131	-,317	-,079
ITEM_28	,789	,287	,326	,197	,156	-,183	-,310	,026
ITEM_29	,453	,297	,325	,268	,096	-,056	-,147	-,024
ITEM_31	,098	,685	,184	-,172	,114	,114	,223	,275
ITEM_30	,351	,642	,334	,193	,210	-,001	-,039	,050
ITEM_32	,191	,625	,209	,005	,154	,192	,091	,303
ITEM_6	,248	,482	,321	-,026	,126	,332	,177	,416
ITEM_9	,327	,450	,315	,103	,119	,231	,083	,295
ITEM_37	,340	,287	,823	,094	,203	-,130	-,074	,055
ITEM_12	,372	,304	,821	,101	,363	-,100	-,124	,108
ITEM_23	,350	,295	,799	,157	,253	-,148	-,072	,034
ITEM_10	,302	,197	,798	,147	,284	-,134	-,104	,058
ITEM_1	,294	,305	,613	,135	,356	-,049	-,098	,082
ITEM_25	,169	-,089	,123	,823	,056	-,247	-,410	-,299
ITEM_15	,224	-,011	,140	,724	,083	-,220	-,353	-,226
ITEM_14	,137	-,127	,159	,705	-,016	-,244	-,306	-,228
ITEM_22	,162	-,225	-,016	,558	,039	-,403	-,505	-,446
ITEM_24	,145	,081	,181	,542	,164	-,091	-,256	-,127
ITEM_17	,363	,199	,274	,460	,008	-,089	-,190	-,050
ITEM_21	,037	,033	-,048	,344	-,101	,117	-,090	-,029
ITEM_2	,220	,178	,345	,033	,709	-,063	-,054	,027
ITEM_13	,118	,167	,328	,076	,536	-,201	-,015	-,012
ITEM_8	,111	,102	,106	,045	,462	,095	,075	-,157
ITEM_36	-,211	,061	-,217	-,194	-,073	,711	,324	,210

ITEM_35	-,183	,096	-,090	-,105	-,054	,676	,265	,273
ITEM_34	-,024	,150	-,105	-,133	,034	,394	,196	,249
ITEM_20	-,275	,021	-,107	-,353	,037	,409	,761	,174
ITEM_18	-,201	,207	-,071	-,243	,010	,201	,740	,277
ITEM_19	-,214	,178	-,086	-,413	,090	,394	,694	,309
ITEM_4	-,391	,095	-,052	-,237	-,011	,091	,636	,229
ITEM_16	-,303	-,151	-,285	-,471	,019	,244	,565	-,010
ITEM_5	-,021	,232	,048	-,119	-,053	,219	,171	,695
ITEM_7	-,152	,277	-,054	-,450	-,030	,499	,464	,624
ITEM_11	-,141	,133	-,053	-,236	-,083	,239	,306	,484
ITEM_3	,132	,237	,190	-,139	,255	,186	,074	,270
ITEM_33	,063	,330	,194	-,226	,118	,163	,224	,293

^aExtraction Method: Principal Axis Factoring.
 Rotation Method: Oblimin with Kaiser Normalization.
 Items comprising each factor are highlighted.

Table 2

InterCorrelations among factors of the Revised VSABH-C

Factors	Interest / Liking	Memory / Magic	Help	Control	Cooperation	Marginal	Fear
Memory / magic	.347*						
Help	.437*	.415*					
Control	.231*	.003	.170*				
Cooperation	.237*	.271*	.423*	.022			
Marginal	-.113	.231*	-.159*	-.237*	-.032		
Fear	-.358*	.183*	-.110	-.465*	.038	.427*	
Automaton	-.037	.463*	.129*	-.305*	-.033	.445*	.352*

*Correlation is significant at the 0.01 level (1-tailed) with the Bonferroni Correction ($\alpha = .01/28 < .001$)

VSABH-C Reliability.

Cronbach's alpha reliability coefficient was computed for the 8 factors considered as subscales. All subscales presented acceptable to good internal consistency coefficients, ranging from .57 (*Cooperation*) to .88 (*Help*). Table 3 displays Cronbach's alpha reliability coefficients, items, mean and standard deviation for each factor. As a reference, the same parameters resulting from the exploratory factor analysis of the therapist version are displayed, as reported by Capafons, Morales Espejo & Cabañas, 2006).

Table 3

Cronbach's alpha reliability coefficients, number of items, mean and standard deviation for each factor for both Client and Therapist VSABH version

Factors	Client version (N= 444)				Therapist version ^a (N= 775)			
	α	Number of items	Mean	SD	α	Number of items	Mean	SD
1. Interest / Liking	.85	4	3.48	1.17	.85	3	3.91	1.22
2. Memory / Magic ^b	.71	5	3.23	.84	.77	5	2.95	.92
3. Help	.88	5	4.40	.87	.82	7	4.34	.89
4. Control	.80	7	3.31	.81	.87	6	4.02	.93
5. Cooperation	.57	3	4.80	.74	.61	3	4.82	.79
6. Marginal	.63	3	2.84	.91	.57	3	2.35	.89
7. Fear	.81	5	3.30	1.03	.82	6	2.31	1.89
8. Automaton ^c	.65	3	3.05	.98	.59 ^c	3 ^c	1.86 ^c	.68 ^c

a. Cronbach's alpha found on exploratory factor analysis (N=775) as reported by Capafons, Morales, Espejo & Cabañas (2006)

b. in therapist version factor is labelled "*Memory/Trance*"

c data presented on this row is for factor "*Magic*" of the therapist version

Effects of Previous Exposure to Experimental Hypnosis.

To establish the effect of previous experience of hypnosis on attitudes, we compared factor scores for those with previous experience and those without such experience. These data are presented in Table 4.

Table 4.

Mean scores, Standard Deviation and t values for the 8 factors of the Revised VSABH-C on the groups that were and were not exposed to hypnosis prior to attitudes evaluation

Factors	Non-exposed to experimental hypnosis (n=272)		Exposed to experimental hypnosis (n=172)		Test for equality of means ^a	Standardized Mean Difference
	M	SD	M	SD	t	d
Interest / Liking	3.22	1.18	3.89	1.03	-6.32**	-.60
Memory / Magic	3.34	.86	3.07	.78	3.28*	.33
Help	4.30	.90	4.54	.82	-2.78	-.28
Control	3.08	.68	3.70	.85	-8.11**	-.82
Cooperation	4.75	.76	4.86	.72	-1.58	-.14
Marginal	3.08	.82	2.48	.91	7.04**	.70
Fear ^(a)	3.65	.95	2.75	.90	9.81**	.97
Automaton	3.21	.96	2.81	.93	4.36**	.42

a. Assumption for equality of variance was not met for factors Interest, Control and Marginal, as revealed by Levene's Test for Equality of Variances. T test was conducted with equal variances not assumed for the three cited factors

* t test for equality of means is significant at the 0.05 level with the Bonferroni Correction (alpha=.05/16=.003)

** t test for equality of means is significant at the 0.01 level with the Bonferroni Correction (alpha=.01/16<.001)

Mean differences between the two groups were statistically significant for all factors except *Help* and *Cooperation* (t tests with Bonferroni Correction). Mean scores of participants that had previous exposure to experimental hypnosis were significantly higher in "positive" factors, that is, factors that express positive beliefs and realistic notions about hypnosis (*Interest / Liking* (M=3.22, SD=1.18 in the non exposed group and M=3.89, SD=1.03 in the exposed

group) and *Control* (M=3.08, SD=.68 in the non exposed group and M=3.70, SD=.68 in the exposed group). Mean scores of participants that were not exposed to the experimental hypnosis session were significantly higher in all “negative” factors, that is factors that express misconceptions about hypnosis (*Memory/Magic* (M=3.34, SD=.86 in the non exposed group and M=3.07, SD=.78 in the exposed group), *Marginal* (M=3.08, SD=.82 in the non exposed group and M=2.48, SD=.91 in the exposed group), *Fear* (M=3.65, SD=.95 in the non exposed group and M=2.75, SD=.90 in the exposed group) and Automaton (M=3.21, SD=.96 in the non exposed group and M=2.81, SD=.93 in the exposed group))

Of the 172 participants who had personal experience of being hypnotized with a standardized hypnotic suggestibility scale, the Waterloo-Stanford Group Scale of Hypnotic susceptibility, Form C (WSGC) (Bowers, 1998), 70% had been hypnotized once and 30% were part of a subsequent experimental study and were hypnotized twice. The first hypnosis exposure was to assess hypnotic suggestibility only while the second hypnosis experience was to test an experimental hypothesis that hypnosis could help to perform a task better (see Chapter 2). Participants that were hypnotized twice, scored significantly higher (t tests with Bonferroni Correction $\alpha < .003$) on *Interest / Liking* $t(171) = -3.17, p=.002$, than participants that only had their hypnotic suggestibility assessed. This indicates that participants who participated in an experimental study where they received posthypnotic suggestions to perform a task, find hypnosis more interesting (M= 4.26, SD= 1.04) than participants that only had their hypnotic ability tested (M= 3.73, SD=.99).

Discussion

The *Revised Valencia Scale of Attitudes and Beliefs toward Hypnosis – Client* presents a factorial structure of 8 factors. Most intercorrelations among factors were statistically significant, and all subscales presented acceptable to good internal consistency coefficients, confirming that the revised version of the VSABH-C has good psychometric properties.

When the structure found for the revised VSABH-C is compared with the exploratory factor analysis of the VSABH-therapist version, factorialization of the two scales are remarkably similar (Capafons et al., 2006b) as shown in table 5.

Table 5

Factors and correspondent items for the VSABH- Therapist version and solution found in the current study for the Revised VSABH - Client version

Factors	Description	Items Client version	Items Therapist version ^a
Interest / Liking	Desire to be hypnotized	26, 27, 28, 29	26, 27, 28
Memory	Idea of hypnosis inducing a trance-like state in which people can access past memories that would remain hidden without hypnosis; notion of hypnosis as a “truth machine”	6, 9, 30, 31, 32 ^b	3, 30, 31, 32, 33 ^c
Help	Hypnosis seen as a technique that improves therapeutic results, both medical and psychological	1, 10, 12, 23, 37	1, 10, 12, 17, 23, 29, 37
Control	Idea that individual maintain voluntary control under hypnosis	14, 15, 17, 21, 22, 24,25	14, 15, 21, 22, 24, 25
Cooperation	Beliefs about having to develop some effort to collaborate with the hypnotist in order to experiment hypnotic suggestions	2, 8, 13	2, 8, 13
Marginal	Hypnosis as seen as apart from scientific research and hypnotized people as abnormal	34, 35, 36	34, 35, 36
Fear	Fear of loosing control to the hypnotist or stay stuck on a hypnotic-trance state	4, 16, 18, 19,20	4, 7, 16, 18, 19, 20
Automaton	Refers to the idea of losing voluntary control while hypnotized and act robot-like	5, 7, 11	Non applicable
Magical solution	Perception of hypnosis as magical solution for problems	Non applicable	5, 6, 9
Items excluded		3, 33	11

Differences in factor structure are highlighted

a - Data from the exploratory factor analysis as reported by Capafons, Morales, Espejo & Cabañas (2006)

b- We labeled this factor “*Memory/Magic*” referring to a perception of hypnosis as having an especial hypermnnesia effect as well as hypnosis seen as wonderful technique to solve problems without effort

c - Capafons et al. (2006b) labeled this factor “*Memory/Trance*” indicating that the person under hypnosis is in a trance-like state that aloud access to past memories that would stay hidden by any other means

Item structures for factors *Cooperation* and *Marginal* match exactly those in the therapist version. For the remaining factors, differences found in item composition were very minor. *Interest / Liking* and *Control* factors have one more item each in the client version than in the therapist version. These are item 29 in the *Interest / Liking* factor “*One learns more quickly under hypnosis*” and item 17 in the *Control* factor of the client version “*Hypnosis boosts one’s capacity for self-control*”, both of which are in factor *Help* in the therapist version. The content of item 29 is one that might make the prospect of being hypnotized attractive to students, and item 17 relates to control. Therefore the inclusion of these two items on the above mentioned factors is reasonable. On the other hand, it is not surprising that therapists consider that learning abilities and improvement of self control are part of a major dimension, labeled on the therapist version as *Help*.

The major difference in the exploratory factor structure between the client and the therapist version exploratory factor structures lies in the fact that in the current analysis the 3-item factor composed by items 5, 7 and 11, *Automaton*, emerged and the factor *Magical solution* (items 5, 6 and 9) presented in the therapist version did not. Item 5 “*Under hypnosis, achievements can be reached without any effort on the part of the client*”, item 7 “*I believe that, under hypnosis, a person is like an automaton at the mercy of the individual who is doing the hypnosis*” and item 11 “*A hypnotized person is passive*” share the common idea of passivity of the hypnotized person. Therefore, we labelled this emergent factor as “*Automaton*,” as in the first VSABH-C version. In this version, however, the factor stresses the notion of a robot-like behaviour.

In the current factorialization, we included items 6 and 9 together with the items 30, 31 and 32 which are related to memory, therefore labelling this factor as “*Memory / Magic*”, a factor that expresses the notion of hypnosis as a procedure that can enhance memory in an almost supernatural, magical way. In the therapist version, the *Memory* factor includes the

“trance” items (item 3 “*One must be in a hypnotic trance in order to fulfil the goals of the intervention*”, and 33 “*Hypnosis involves a trance state*”), expressing the notion of hypnosis as a truth machine in which a trance state is needed to gain access to covert memories. This difference might reflect differences in points of view, with students having a more “magical” interpretation of hypnosis and therapist presenting a more scientific notion of the trance state hypothesized to be involved in hypnosis. Nevertheless, both the therapist version factors and the client version factor reflect the idea of hypnosis as a memory-help tool. In any case, given the fact that two different populations were studied, college students and therapists, the same exact factorial structure on the two VSABH versions were not expected.

A confirmatory factor analysis of the VSABH – Client conducted with a larger sample would be useful for several of reasons: (1) to verify if the factorial structure found in the present study is maintained, (2) to observe the behaviour of items 6 and 9, which loaded on different factors in the therapist and client versions, (3) to further investigate item 3, which was excluded in the current analysis because it did not saturate above .30 on any factor, and (4) to observe if internal consistency coefficients improve on factors *Cooperation* and *Marginal*, since in the current study they are modest although acceptable (.57 and .63 respectively). Exploratory factor analysis on the therapist version found also internal consistency coefficients of .61 and .57 for factors *Cooperation* and *Marginal* respectively (see table 3), but a later confirmatory factor analysis showed an increase in all reliability coefficients, as can be expected using this methodology (Capafons, Espejo & Mendoza, 2008). It would also be interesting to evaluate other populations, namely clinical populations, which also will provide an important measure of predictive validity.

Regarding the association between experience with hypnosis and participant’s attitudes and beliefs, we found that participants who had previous exposure to a standardized hypnotisability scale (the WSGC) scored significantly higher in the “positive” factors *Interest /*

Liking and *Control* than participants who did not have such experience. Conversely, participants who had never been exposed to hypnosis scored significantly higher than their counterparts in all factors expressing negative and unrealistic attitudes and beliefs (factors *Memory/ Magic*, *Marginal*, *Fear* and *Automaton*). As shown in Table 4, effect sizes for these comparisons ranged from moderate to very large. These data confirm previous research on the association between hypnosis experience and attitudes toward hypnosis. McConkey and Jupp (1985-86), for example, found that participants who had not experienced hypnosis were more likely to believe that hypnosis can make individuals tell the truth and can improve memory (which is consistent with the content of VSABH-C factor *Memory/Magic*). Green (2003) found that after being exposed to a standardized scale of hypnotic susceptibility (the HGSHS:A), participants were less likely to believe that hypnosis can make people tell the truth about things they would normally lie about it (which is also consistent with the content of VSABH-C factor *Memory/Magic*), that hypnosis is an altered state of consciousness (belief included in the VSABH-C' factor *Marginal*), that the experience of hypnosis depends on the ability of the hypnotist (belief included in the VSABH-C factor *Control*), that hypnotized persons are not conscious of their surroundings (belief included in the VSABH-C factor *Marginal*), and that suggestions are so powerful that they cannot be resisted (belief included in the VSABH-C factor *Automaton*). The association between factors that express positive attitudes / beliefs and respondents that had previous exposure to hypnosis as well as the association between factors that express negative beliefs and participants that had not had hypnosis experience, also provide validity for the VSABH-C, along with confirmation of the hypothesis that experience with scientific hypnosis diminishes negative and stereotypical attitudes and beliefs about hypnosis.

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General Discussion

The present set of adherence studies did not confirm the hypothesis that the implementation intentions intervention would increase adherence either to the physical exercise task (performing a daily 5 minutes period of strenuous physical activity) or to the mood report task (sending a mood report by SMS) for a sustained period of 21 days. Our results showed that despite the strong intention revealed by participants in the questionnaires to adhere to the prescribed behaviors, as well as the high perceived behavioral control, the formation of implementation intentions did not increase the probability of enacting the goals, thus suggesting that implementation intentions is not an effective strategy to enhance adherence to repeated and ongoing health-related tasks.

There were, however, statistically significant differences between adherence to the easy task (mood rating report) and the more difficult task (physical activity and report), independently of the condition to which participants were assigned (implementation intentions or hypnosis), indicating that in our study, adherence was higher in an easy and effortless sustained task, as compared to a more difficult and physical demanding task.

The findings also suggest that the effect of posthypnotic suggestion in adherence to the physical activity task was moderated by suggestibility. High suggestible participants receiving the hypnosis intervention demonstrated higher adherence rates than low suggestible participants, and the use of hypnosis significantly lowered adherence among low suggestible participants. However this result found in the North American sample was not confirmed in the Portuguese participants. Results of the Portuguese study showed that posthypnotic suggestions significantly decreased adherence rates in *all* participants, independently of their level of hypnotic suggestibility. These results will be discussed in more detail in a later section. This inconsistency between the North American and Portuguese data precludes a definitive answer to the question of how the use of posthypnotic suggestions affects adherence to the prescribed tasks for a sustained period of 21 days.

The results of both North American and Portuguese studies also did not revealed any significant interactions between factors (implementation intentions and hypnosis), indicating that the combined intervention had no significant effect in increasing adherence rates in comparison with the other conditions and with controls. Therefore the hypothesis that the combined intervention of implementation intentions and posthypnotic suggestions would lead to higher rates of adherence to the exercise and report task was not supported.

Implementation intentions, combined intervention and automaticity

Possible explanations for these findings were already discussed throughout the chapters of this dissertation. In sum, several hypotheses can explain why our results differ from the studies in which implementation intentions was found effective. First, one should consider the measure utilized to assess adherence in the present studies. As extensively reported earlier in this dissertation, most of the studies on implementation intentions rely on self-report measures, which are well known to be prone to distortion. Differently from most other studies, we used a behavioral measure difficult to feign. In addition, ours was a behavioral measure of an ongoing behavior, which no prior study has assessed. It is possible that the positive results found in previous implementation intentions studies was due to over-reporting adherence, which is possible in subjective but not in objective measures. The behavioral measure used in the two studies included in this dissertation asses adherence in a more reliable way. Second, as Gollwitzer recognized in recent years (Gollwitzer, Fujita and Oettingen, 2004; Gollwitzer, Bayer & McCulloch, 2005) the formation of implementation intentions may hurt performances that require flexibility. It may be possible that the implementation intention group felt constrained by their specific plans, whenever an obstacle to fulfill the plan was encountered, such as not having the cell phone battery charged to send the message at the time and place required. The study of Sniehotta, Scholz & Schwarzer (2006) provides a first confirmation of this hypothesis. They failed to show an improvement in exercise frequency in cardiac patients

that formed implementation intentions compared with controls, but revealed a significant enhancement in exercise frequency in patients in which implementation intentions were combined with coping plans on how to deal with anticipated barriers. The possibility of using coping skills to engender alternatives whenever unexpected barriers were encountered might be a key element which was not considered in our combined intervention, since our focus was on enhancing automaticity rather than generating alternatives. Our results show that the combination of implementation intentions and posthypnotic suggestion did not prove to be an effective strategy to enhance adherence. The effects of the posthypnotic suggestion might have overlapped with the effects of implementation intentions, or reinforced implementation intentions inflexibility. In both cases the possibility is raised that posthypnotic suggestions may have hindered the emergence of flexible, alternative plans to goal attainment. Third, as previously mentioned in Chapter 2, contrary to what had been hypothesized, participants reported to use more external strategies (such as setting the cell phone's alarm clock to the previously specified time) in the implementation intentions condition indicating that implementation intention did not lead to the emergence of a sense of automaticity in performing the tasks. It may be possible that the use of such external reminders precluded participants from using internal memory strategies, thus preventing the activation of the postulated (Gollwitzer & Brandstätter, 1997) automatic link between the environmental trigger and the behavior.

Nevertheless, we obtained a good overall level of adherence, independently of condition. Adherence to the difficult task was above 60% on the first 8 days, and never went below 42% during the entire three week period, and was above 70% for the easy task in the first 10 days, never decreasing below 61% during the three week period (see Figure 1 on page 111). These are good rates of adherence for behavioral interventions, and support previous research that found that people adhere to health-related requests whenever they receive an explanation about it and are shown interest by the health care provider about behavior performance. For example,

in the often cited successful implementation intention intervention conducted by Sheeran and Orbell (2000), a post card sent by the medical practitioner advising for a cancer screening test was the recruiting method, and may have also acted as an adherence enhancing intervention in itself to perform the test. In a recently published study, Godin, Sheeran, Conner & Germain (2008) found that participants that received a postal questionnaire measuring cognitions about blood donation were more likely to subsequently register for a blood drive 6 months and 12 months later, suggesting that the mere measurement by itself is relevant to promote the target behavior.

Hypnosis with posthypnotic suggestion

A second finding of the present studies was the lowering in adherence found in participants in which hypnosis with posthypnotic suggestion were used. It is important to emphasize that an interaction between suggestibility level and adherence was found in the north-American participants, in which the pattern of lowering adherence was found only in low suggestibles that were exposed to hypnosis and posthypnotic suggestion, whereas in the Portuguese sample, all participants, regardless their suggestibility level, displayed this pattern. Therefore cultural differences might modulate response to hypnosis and posthypnotic suggestion. Two possible explanations can be drawn for the behavior of low suggestible in the American sample, and the entire Portuguese sample: (1) participants may have reacted to hypnosis in a defiant way, motivated by their desire to show that they were unaffected by hypnosis; or (2) participants may have reacted to hypnosis in an over trusting way and suffered for lack of effort put into remembering and performing the task. We also hypothesized that a possible psychological mechanism behind this effect of posthypnotic suggestion might be a motivation to demonstrate a lack of response by performing even less well than when not hypnotized.

The differences between the American and Portuguese samples in responding to hypnotic suggestions were further examined. As previously described, hypnotic suggestibility (high, medium and low) was an inclusion criteria on the studies, thus we assessed participant's suggestibility with a group standardized scale, the WSGC. The results of the large sample (N= 625) of Portuguese students showed that, although Portuguese participants behaved in a very similar way as the reference samples, the proportion of Portuguese students scoring in the high range of hypnotic suggestibility was lower than in the North American samples. One possible explanation for this finding may be that in Portugal participants refrained from responding in order to verify their expectations about the effect of hypnosis, i.e., that hypnosis would act by automatically provoking specific phenomena without any need for them to do anything to make it happen. In other words, it may be possible that the result was due to misconceptions such as believing in the "irresistible" power of hypnosis which forces people to do things against their will. This belief is measured in the VSABH-C under the label of "automaton". Participants that have no prior experienced hypnosis score significantly higher in this VSABH-C subscale than participants that experienced hypnosis (Carvalho, Capafons, Kirsch, Espejo, Mazzoni & Leal, 2007). There is no hypnosis tradition in Portugal, neither in research, nor in clinical contexts, and the major source of information about hypnosis is the media (movies and stage hypnosis shows). Therefore, when confronted with hypnosis for the very first time in their lives, many of the Portuguese participants might have offered some resistance in order to verify if hypnosis really works in the expected 'irresistible' way, and were penalized by not experiencing it fully. Another possible explanation is that participants may have restrained from giving genuine hypnotic responses in a group setting for fear of appearing foolish in front of their peers. A third possibility is lack of motivation to experience hypnosis. A limitation of this study is a difference in recruitment procedures between Seton Hall University (SHU) and Instituto Superior de Psicologia Aplicada (ISPA). SHU students were regularly required to participate in

laboratory experiments in exchange for course credits for the introductory course of Psychology. However, they had a number of studies from which to choose, and the hypnosis study was just one of them. At ISPA, this credit system does not exist and the recruitment procedure consisted of going to classes and asking students to participate on the WSGC session that would take place immediately in most of the cases. In addition, SHU participants received the minimum required course credit for their participation in the WSGC screening, while the Portuguese participants received nothing at that stage. It may be possible that SHU students that registered for the hypnosis study were more motivated to experience hypnosis, in comparison with ISPA's students that were surprised with this possibility while their were in class, and some might felt constrained to participate, generating either invalid protocols or protocols with very low scores. In fact, the number of incomplete protocols at SHU was negligible, while at ISPA's was of 6% (45 incomplete protocols in 707 participants). In addition, the introductory briefing in which the study was explained, the informed consent form was given, and questions regarding the study and hypnosis were answered, took in average 10 minutes at SHU, whilst at ISPA was usually never less than 20 minutes. This difference in time was due to a larger number of questions asked (usually related with myths about hypnosis), possibly indicating a higher degree of misconceptions about hypnosis and a greater resistance to experience it in Portuguese participants.

The lack of personal experience with hypnosis was found to be associated with more negative attitudes and misconceptions (Carvalho et al., 2007). When attitudes about hypnosis were studied in an equivalent sample (undergraduate students that never had any contact with hypnosis) we found that these participants scored significantly higher in all factors expressing negative and unrealistic attitudes and beliefs about hypnosis, in comparison with participants that had the experience with the WSGC. Thus it may be possible that participants first screened with the WSGC and later recruited for the adherence study had negative attitudes about

hypnosis which not only affected their suggestibility scores, but, in case they were randomly selected to the adherence study in the hypnosis condition, affected their adherence rates as well.

Additionally, we found that participants that had never experienced hypnosis showed a stronger belief in the hypermnesic “powers” of hypnosis in comparison with participants with hypnosis experience. The instructions of the posthypnotic suggestion specifically focused on prospective memory (“the thought of performing the task would come to mind without effort”). It is possible that a misconception about the ability of hypnosis to enhance memory was translated in to a lack of effort to remember to do the task, thus decreasing adherence.

Limitations and perspectives for future studies

As in all research that involves experimental studies the results found here may not generalize to all individuals. Thus these set of studies represent a first attempt to study the effects of implementation intentions and hypnosis with posthypnotic suggestions in a Portuguese setting. It is hoped that this research prompts future studies to be conducted in order to test these interventions in different populations, for example in clinical patients.

Another limitation to the studies is that, as mentioned, the recruitment method in the Portuguese sample for the initial suggestibility screening may have enhanced the proportion of individuals scoring as low suggestibles. It may be possible that a different recruitment method (e.g., a sign up in a wall sheet) would not include participants that had no interest or desire in being hypnotized, thus reflecting their suggestibility level more accurately.

A third limitation refers to the assessment of attitudes toward hypnosis. In order to really learn about the change in attitudes due to experiencing hypnosis, the same group should have been measured before and after hypnosis, in a more elegant design than the one used in our fourth study (Carvalho et al., 2007). However, the interest in assessing attitudes emerged from the data of the previous studies. Therefore comparing two different groups was the only possible assessment at that point.

A further limitation is related to the tasks prescribed in the adherence studies. In order to have a behavioral measure impossible to be feigned we prescribed simple tasks (although one was strenuous, the physical activity). The literature suggests that goal attainment is dependent on certain characteristics of the goal, such as its specificity, its importance to the individual, being not too easy or too hard, and being attainable in a restricted time frame (Maes & Karoly, 2005). The goals we set for participants did meet all of these criteria with the exception of the importance to the individual. In the reviewed studies on implementation intentions, the target behaviors were taking vitamins, eating fruit, flossing their teeth, perform self examinations to prevent cancer, and exercise, and although the importance of these behaviors to the participants was not assessed, these are behaviors commonly known for having important health consequences. There is the possibility that the prescription of a goal such as a health behavior at a sufficient level to confer health benefits would be of more interest to participants and therefore would have an effect on adherence of greater magnitude. Future studies should thus investigate health-related behaviors easily identifiable by participants for their health benefits, or even, self-set health goals, using objective measures other than self-report. This will allow testing the effects of the interventions in tasks that present goals more relevant to the individual over an extended period of time.

Future studies could also focus on the content of implementation intentions, and compare “regular” plans with flexible plans, in order to test whether or not flexible plans increase adherence to ongoing target behaviors.

The present set of studies did not provide a conclusive answer to the question whether or not hypnosis with posthypnotic suggestion could be an effective intervention to increase adherence to health-related behaviors. However, it revealed a number of important issues that must be considered when doing research in this field. First, the recruitment method should exclude any possibility of non motivated participation. Secondly, attitudes toward hypnosis

should also be assessed prior to intervention, in order to evaluate whether or not beliefs about hypnosis are a moderator of adherence. Another possible future study could include the use of nonhypnotic suggestions, which would allow to test the effect of the suggestions to increase adherence without performing the hypnotic procedure, thus diminishing the possible negative reaction to it.

Implications for health care practice

The Theory of Planned Behavior (Ajzen, 1988, 1991) indicates that prior to give a health-related prescriptions it is important to assess the patient's attitudes toward the target-behavior, its perceived expectations on how others will regard behavioral performance (i.e., subjective norm), as well his or her perceived ease or difficulty of performing the behavior depending on resources and opportunities (i.e., perceived behavioral control). To help bridge the gap between intentions and actions, thus to maximize adherence to health-related interventions, the research reviewed in this dissertation indicates that implementation intentions seems to be an effective intervention for one-off behaviors (e.g., attending the next consultation).

The outcome of the present set of studies suggests however, that for sustained behaviors such as adherence to physical activity, a careful explanation about the target behavior, stressing its importance and how to perform it, as well as showing interest on people's performance by monitoring it and asking for feed-back, is as effective as implementation intentions, thus is a recommended procedure. Additionally, the positive findings suggest that setting easy goals must also be preferred to difficult goals. When considering using hypnosis and posthypnotic suggestion to increase adherence to health-related behaviors, a prior evaluation of patient's suggestibility is highly recommended, which in a one to one relationship can be done with very simple techniques, not requiring the use of standardized scales (e.g., Chevreul Pendulum illusion; see Lynn & Kirsch, 2006 for details on how to prepare the patient to a clinical hypnosis session). Our results indicate that hypnosis with posthypnotic suggestion to increase

adherence should be used in highly suggestive patients. However, it may be possible that in the context of a one to one empathic relationship between the health care provider and the patient, posthypnotic suggestions in medium suggestible patients can be considered, provided the patient is motivated to experiencing hypnosis. That does not preclude the need of an introductory discussion with the patient about what hypnosis is, in order to satisfy any doubts or misconceptions that the patient might have, which is mandatory in all cases.

All of the above recommendations fit well in the core meaning of the concept of adherence (RPSGB, 1997; WHO, 2003) since our data confirmed that the health-care practitioner must provide information, show openness, respect and interest to the patient, and ask for feed-back in order to enhance adherence to health-related requests. In order to enhance adherence to health care prescriptions, health care providers must not change only the term (from compliance to adherence) but also change their attitudes and behaviors towards the patients. Health Psychologists have here an important role in favoring these attitudes change in health contexts.

A final word about hypnosis. It is of importance to underline that despite the numerous research that have shown the efficacy of hypnosis in a variety of health conditions (as reviewed in section 1.1.2), hypnosis is severely under utilized in Portugal by health practitioners. Reasons for this sparing use can be due to misconceptions that health care professionals, particularly psychologists, have about hypnosis. Nevertheless, hypnosis techniques are easy to learn, safe, accessible, minimally time consuming and within the legal and ethical guidelines for use in Portugal provided they are used by health care practitioners. Health Psychologists are reminded here of the advantages of the use of this tool in their practice. However, given the contradictory results found here, the question still remains whether hypnosis with posthypnotic suggestions is effective in enhancing adherence to health related behaviors and if adherence is moderated by

suggestibility as the first adherence study suggested. We hope that these set of studies contribute to prompt the interest in research on hypnosis in Portugal.

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APPENDICES

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Appendix A

Campaign of the National Pharmacies Association aiming to increase adherence in the general population. June and July 2007

COMEÇOU.

MELHOROU.

PAROU... QUEM MANDOU?

RECOMEÇOU.

Os medicamentos são para ser tomados a sério. Cumpra a prescrição do seu médico e as indicações do seu farmacêutico e leve o tratamento até ao fim. Só assim terá a garantia de uma cura efectiva, afastando as probabilidades de recaída.

MEDICAMENTOS. Tome-os até ao fim para não ter que voltar ao princípio.

opifarma anf

Campaign of the National Pharmacies Association aiming to increase adherence in the general population. June and July 2007

(Legend Translation: You've started, you've got better, and you stopped... who said so? You restarted. Medication is to be taken seriously. Follow your doctor's prescription and follow the treatment until its end. Only in this way you will have the guarantee of an effective cure, keeping away possibilities of relapse. Medication: take it all the way, so you don't have to start over again).

Appendix B

Carvalho, C., Kirsch, I. Mazzoni, G. Meo, M. & Santandrea, M. (2008). The Effect of Posthypnotic Suggestion, Hypnotic Suggestibility, and Goal Intentions on Adherence to Medical Instructions. *International Journal of Clinical and Experimental Hypnosis*, 56, 143-155.

THE EFFECT OF POSTHYPNOTIC SUGGESTION, HYPNOTIC SUGGESTIBILITY, AND GOAL INTENTIONS ON ADHERENCE TO MEDICAL INSTRUCTIONS

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Abstract: The effects of implementation intentions and posthypnotic suggestion were investigated in 2 studies. In Experiment 1, participants with high levels of hypnotic suggestibility were instructed to take placebo pills as part of an investigation of how to best enhance compliance with medical instruction. In Experiment 2, participants with high, medium, and low levels of hypnotic suggestibility were asked to run in place, take their pulse rate before, and send an e-mail report to the experimenter each day. Experiment 1 revealed enhanced adherence as a function of both implementation intentions and posthypnotic suggestion. Experiment 2 failed to find any significant main effects but found a significant interaction between suggestibility and the effects of posthypnotic suggestion. Posthypnotic suggestion enhanced adherence among high suggestible participants but lowered it among low suggestibles.

In medical contexts, compliance or adherence has been defined as "the extent to which a person's behavior coincides . . . with medical or health advice" (Haynes, 1979, pp. 2–3). Poor adherence to medical instructions and treatments increases hospitalization rates, workdays lost, and the number of drug-resistant strains of organisms. Compliance rates of 60% for pharmacological prescriptions (Ley, 1997) and less than

Manuscript submitted February 9, 2006; final revision accepted September 8, 2006.

¹Part of this research was funded by the Portuguese Foundation for Science and Technology (Fundação para a Ciência e Tecnologia) (Grant #SFRH/BD/13028/2003).

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50% for nonpharmacological treatments (Dunbar-Jacob, Burke, & Puczynski, 1995) have been reported, the latter diminishing further over time. Thus, increasing the rate of adherence to medical instruction is an important task. In the studies reported here, we evaluated the effectiveness of two strategies for enhancing compliance with medical instruction: the formation of implementation intentions and the administration of posthypnotic suggestion. Both interventions have been linked to automaticity in behavior (Gollwitzer, 1999; Kirsch & Lynn, 1999).

Gollwitzer (1999) distinguished between two types of intentions, goal intentions and implementation intentions. Goal intentions specify a particular end state (e.g., losing weight) or desired behavior (e.g., taking prescribed medication). Implementation intentions specify when and where a particular behavior will be performed (e.g., I will take my pill with my orange juice at breakfast each morning). The facilitative effect of implementation intentions on health-related behaviors has been demonstrated in a number of studies. Among the behaviors facilitated by implementation intentions are performing breast self-examinations (Orbell, Hodkins, & Sheeran, 1997), taking vitamins (Sheeran & Orbell, 1999), and participating in vigorous exercise (Milne, Orbell, & Sheeran, 2002).

Gollwitzer (1999) hypothesized that implementation intentions place the intended behavior under the control of the situational cues (time and place) designated in the intention, so that the response is performed automatically. The idea that these intentions automatize the behavior suggested to us the possibility that health behaviors might also be enhanced by the use of posthypnotic suggestion. Posthypnotic suggestion is a request made during hypnosis that a behavior be performed automatically after hypnosis has been terminated. As with implementation intentions, a cue that is to control the behavior is generally specified (e.g., you will touch your right ankle when I clap my hands, but you will not be aware of my having asked you to do this), and the emission of the response is reported as having been automatic by those hypnotized subjects who respond. The experience of automaticity has been identified as a hallmark of hypnotic responding and termed the classic suggestion effect (Kirsch & Lynn, 1999).

Barnier and McConkey (1998a, 1998b) reported two studies on the use of posthypnotic suggestion to facilitate the performance of a daily behavior (mailing postcards to the experimenter) by participants who had been screened for high levels of hypnotic suggestibility. In the first study, high suggestible participants given a posthypnotic suggestion mailed significantly fewer postcards than those given a simple social request. In the second study, posthypnotic suggestion did not differ significantly from social request. At first glance, these data seem to suggest that the effect of posthypnotic suggestion on medical compliance might be negative rather than positive. However, it is possible that the negative results reported by

Barnier and McConkey were a consequence of the particular posthypnotic suggestion they used. Their suggestion was a statement that the participant will enact the desired behavioral response. One reason for involuntary noncompliance with medical instruction is a failure of prospective memory. The person simply forgets to take the prescribed medication, to do a physical exercise, or to follow some other medical instruction. Indeed, Gollwitzer (1999) hypothesized that the formation of implementation intentions might improve prospective memory. With this in mind, we decided to test a different type of posthypnotic suggestion. Instead of telling participants that they would emit the requested behavior, we told them that the thought of emitting the response would come to mind without any effort at the appropriate moment. Thus, our suggestion was aimed at reducing involuntary noncompliance by helping participants remember to perform the intended action.

To summarize, the intent of these studies was to evaluate the separate and combined effects of (a) instructions to form implementation intentions and (b) posthypnotic suggestion on compliance with a medical instruction. Both studies used a 2×2 experimental design, in which participants were asked to form a goal intention or an implementation intention and either were or were not given a posthypnotic suggestion to remember to emit the intended behavior. Motivation was induced by describing the seriousness of the problem of nonadherence to participants and telling them that the study was designed to learn how health professionals might most effectively communicate instructions. In the first study, a pill-taking task was used with participants selected for high levels of hypnotic suggestibility.³ This was done to increase the likelihood of finding an effect of hypnosis if there was one. In the second study, an exercise task was used, and participants represented the full range of hypnotic suggestibility. This allowed us to test the hypothesis that the effect of hypnosis would be moderated by the participants' level of hypnotic suggestibility. To our knowledge, this is the first study assessing the effect of posthypnotic suggestion on compliance with medical instructions.

EXPERIMENT 1

Method

Participants. Sixty-eight students at the University of Rome, (37 female and 31 male) ranging in age from 18 to 25 years old, were

³Hypnotic suggestibility is sometimes referred to as *hypnotizability* or *hypnotic susceptibility*. Weitzenhoffer (1980), who was senior author of the scale conventionally considered the gold standard for measuring this construct, noted that what the scale measured was the effect of suggestion in a hypnotic context, rather than the effect of hypnosis. Hence, we use the more accurate term *hypnotic suggestibility*, rather than the more popular term *hypnotizability*.

selected for participation from a sample of 176 students who had scored between 8 and 12 on the Waterloo-Stanford Group Scale of Hypnotic Susceptibility, Form C (WSGC; Bowers, 1998). The WSGC is a group adaptation of the Stanford Hypnotic Susceptibility Scale: Form C (SHSS:C; Weitzenhoffer & Hilgard, 1962). A standard eye-closure induction and 12 hypnotic suggestions are presented via audiotape, following which participants complete a response booklet in which they are asked to indicate whether or not an outside observer would have seen an overt response to each of the 12 hypnotic suggestions. Each suggestion is rated pass or fail, yielding total behavioral scores ranging from 0 to 12. Internal consistency has been reported as .80 in one sample and .81 in another (Bowers, 1993). A correlation with the individually administered SHSS:C indicates that this group adaptation is a valid measure of hypnotic response (Bowers, 1993).

Procedure. Participants were asked to take one placebo pill per day for a period of 3 weeks. To motivate them to do so, they were told that the purpose of the study was to learn the factors that influence people's ability to follow their doctor's instructions and that the results could have important implications for the way in which physicians prescribe medications. The experiment used a 2×2 (instruction by suggestion) factorial design, with two levels on each factor. Participants were randomly assigned to receive goal-intention instructions or implementation-intention instructions and to receive or not receive a posthypnotic suggestion. Participants in the goal-intention condition were simply asked to take one pill per day. Those in the implementation-intention condition were further asked to specify the exact place and time they would take the pill each day. In addition, half of the participants were given a posthypnotic suggestion indicating that the thought of taking the pill would come to mind without effort at the appropriate moment. The other half did not receive a posthypnotic suggestion. Wording of the suggestion varied depending on whether the participant was in the goal-intention or the implementation-intention condition. This was done so that the content of the suggestion would be as consistent as possible with the instruction that was given. In the goal-intention condition, the posthypnotic suggestion was:

Everyday during the next 3 weeks you will take one pill. Taking this pill is very important for you, and it will be easy for you to remember to take it. The thought of taking the pill will occur at the right time, and you will find yourself wanting to take the pill. This will occur automatically, without any effort on your part. The instructions to take the pill and the desire to do so will come to your mind easily, without any effort, and you will have no problems in following the instructions.

In the implementation-intention condition, the posthypnotic suggestion was:

Everyday during the next 3 weeks you will take one pill. Taking this pill is very important for you, and it will be easy to remember to take it. The thought of taking the pill will occur at [time chosen by the participant] in [location chosen by the participant]. Imagine that it is [chosen time] and that you are in [chosen location], and that in this place and at this time that you are imagining you are finding yourself wanting to take the pill. This will happen automatically, without any effort on your part. The instructions to take the pill and the desire to do so will come to your mind easily, without any effort, and you will have no problems in following the instructions.

At the end of the 3 weeks, participants were instructed to return all remaining pills. The number of pills returned allowed us to calculate the number not taken and constituted the primary dependent variable.

Results

The mean number of pills not taken in each experimental condition is presented in Table 1. A 2×2 (instruction by suggestion) analysis of variance (ANOVA) revealed significant main effects for both type of instruction and the use of suggestion, instruction: $F(1, 64) = 23.61, p < .001, \eta^2 = .27$; suggestion, $F(1, 64) = 30.84, p < .001, \eta^2 = .33$, and both are very large effects as conventionally classified (Cohen, 1988). Participants given specific instructions took more pills (i.e., brought back fewer pills) than those given general instructions, and participants given posthypnotic suggestions took more pills than those not given suggestions. The interaction was also significant, $F(1, 64) = 18.43, p < .001$, and the effect size was once again large, $\eta^2 = .22$. Post hoc Fisher Least Significant Differences (LSD) tests ($\alpha = .05$) revealed that participants in the control condition (i.e., general instructions with no posthypnotic suggestion) took fewer pills than those in the other three groups but failed to reveal any significant differences among the three treatment groups. Thus, both interventions were effective, but the combination of the two was not more effective than either one of them alone.

Table 1
Number of Pills Returned by Participants at the End of the Study

Suggestion	Intention	Mean	SD
No	Goal	2.16	1.17
	Implementation	0.40	0.63
Yes	Goal	0.27	0.59
	Implementation	0.16	0.50

Inspection of the means in Table 1 reveals a high degree of compliance in all four groups, in that 90% of the pills were consumed even in the control condition. For this reason, we thought it worthwhile to also examine the proportion of participants who complied fully with instructions by taking all 21 pills over the course of the 3-week period (as indicated by returning with empty pill containers). Rates of full compliance were 11% in the goal-intention/no-suggestion condition, 67% in the implementation-intention/no-suggestion condition, 80% in the goal-intention/suggestion condition, and 90% in the implementation-intention/suggestion condition. Tests of differences between proportions ($\alpha = .05$) indicated lower rates of full compliance in the goal-intention/no-suggestion condition than in any of the other groups.

Discussion

The results of this study indicate that both implementation instructions and posthypnotic suggestion significantly enhance pill-taking instructions among high suggestible participants. The effect of these procedures is substantial; the proportion of variance (η^2) accounted for by the full model in the ANOVA was .56. With neither implementation instructions nor hypnotic suggestion, only 11% of the participants were fully compliant. With both methods added, the rate of full compliance rose to 90%.

EXPERIMENT 2

In Experiment 1, we found that implementation intentions and posthypnotic suggestion enhanced adherence. Differences between these methods were not significant, and the combination of the two was not significantly different than the use of either alone. This, however, may have been due to a ceiling effect. The percent of pills taken ranged from 90% (among participants given goal-intention instructions without posthypnotic suggestion) to 99% (among participants given implementation-intention instructions with posthypnotic suggestion). Experiment 2 was designed to provide a more sensitive test of differences between implementation intentions alone, suggestion alone, and the two combined by increasing the difficulty of the task. In this study, we replaced the pill-taking task with instructions to engage in strenuous physical exercise, monitor pulse rates, and report the results to the experimenter.

A second reason for altering the task was to reduce the potential for dissembling. Participants might report greater compliance than actually exhibited behaviorally, and pill counts might only control this partially, as one could simply discard some or all of the pills. The task we used in Experiment 2 required participants to send an e-mail to the

experimenter each day. This provided a reliable behavioral measure of compliance. While the content of the e-mail might contain inaccurate information, the act of sending the e-mail is itself a form of adherence to instruction and cannot be feigned.

The participants in Experiment 1 had been selected for high levels of hypnotic suggestibility. This enhanced the likelihood of finding an effect of posthypnotic suggestion, but it reduced the generalizability of the results. In Experiment 2, equal numbers of high, medium, and low suggestibility participants were included. In addition to enhancing generalizability of the results, this change allows us to assess the relationship between hypnotic suggestibility and the effect of posthypnotic suggestion and implementation intentions on adherence to medical instructions.

Method

Participants. From a sample of 235 students who had completed the WSGC, 124 undergraduate students at Seton Hall University (64 female and 60 male), ranging in age from 17 to 26 years old, were selected for participation. Selection criteria were gender and suggestibility score; the aim being to include an approximately equal number of males and females and equal numbers of low, medium, and high suggestible participants. For the purpose of participant selection and assignment to condition, high suggestibility was operationalized as scores of 9 to 12 on the WSGC, medium suggestibility as scores of 5 to 8, and low suggestibility as scores from 0 to 4. The main study was completed by 38 high, 45 medium, and 41 low suggestible students who were randomly assigned, within suggestibility levels, to form implementation or goal intentions and to receive or to not receive hypnotic suggestions.

Procedure. The procedures for this study were identical to those in Experiment 1, except that the pill-taking task was replaced with an exercise and e-mail task. Participants were asked to run in place for 5 minutes each day for a 3-week period, to take their pulse rate before and after the exercise, and to send a daily e-mail report to the experimenter. They were also asked to send an e-mail if they did not complete the exercise and pulse-rate task. This provided two measures of task compliance: number of e-mails sent and reported number of days on which the exercise task was done.

Results

Self-reported task completion was highly correlated with behavioral adherence to the instruction to send e-mail messages ($r = .95, p < .001$). The mean e-mails sent and reported task completions in each experimental condition are presented in Table 2. These data were analyzed via hierarchical regressions, in which main effects of instruction,

Table 2
Number of E-mails Sent and Reported Task Completions

Suggestion Intention		E-mails Sent		Task Completions	
		Mean	SD	Mean	SD
No	Goal	8.63	1.20	9.75	1.26
	Implementation	8.71	1.22	9.10	1.28
Yes	Goal	8.65	1.22	9.39	1.28
	Implementation	8.13	1.24	9.10	1.30

suggestion, and suggestibility were entered first, followed by the interaction of instruction and suggestion with suggestibility (see Baron & Kenny, 1986, for an explanation of this data-analytic strategy). These analyses did not yield any significant main effects for instruction or suggestion but did reveal significant suggestion by suggestibility interactions on both the number of e-mails sent, $\beta = .71, p < .01$, and the number of reported task completions, $\beta = .60, p < .05$. As shown in Figures 1 and 2, posthypnotic suggestion enhanced adherence among high suggestible participants but hindered it among low suggestible participants.

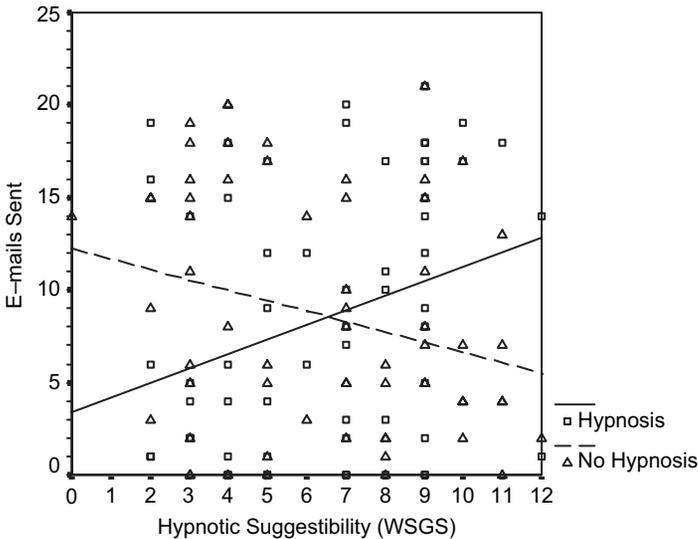


Figure 1. Number of e-mails sent as a function of hypnotic suggestibility and hypnotic suggestion.

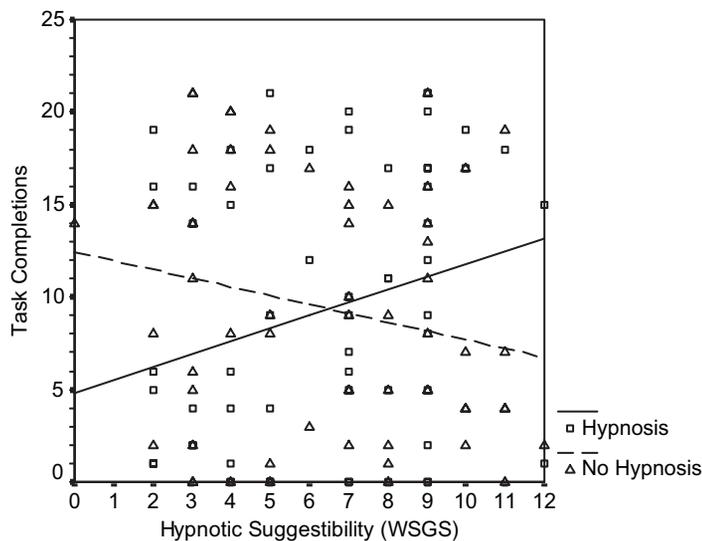


Figure 2. Number of reported task completions as a function of hypnotic suggestibility and hypnotic suggestion.

Discussion

In Experiment 2, we found that the effect of posthypnotic suggestion on adherence is moderated by suggestibility. Consistent with the results of Experiment 1, posthypnotic suggestion enhanced adherence with health-related instructions among high suggestible individuals. However, this benefit did not extend to low or medium suggestible people, and, in fact, the use of hypnosis significantly lowered compliance among low suggestibles. This lowering of compliance may have been a form of defiance, motivated by these participants' desire to demonstrate that hypnosis would not affect them. In contrast, high suggestibles might have been motivated toward greater compliance by the application of hypnotic procedures. Another possibility is that the posthypnotic suggestion led participants to rely on its effect to trigger the thought of the task, whereas without the suggestion they engaged in a more active effort to remember to do it. If so, then high suggestibles might have experienced enough of a suggestion effect to overcome the reduction in effort, whereas the behavior of lows, who are relatively unaffected by suggestion, would suffer from the absence of effort. With moderate levels of suggestibility, the suggestion effect might offset the decrease in effort, leading to no change in behavior.

Unlike the results of Experiment 1, we did not find a significant benefit for the formation of implementation intentions. These data are at

variance with those reported in prior studies (Milne et al., 2002; Orbell et al., 1997; Sheeran & Orbell, 1999). Experiment 2's inconsistency with the data reported by Milne et al. is particularly striking, as that study also involved requests for exercise. We note, however, that the dependent variable in that study was self-report. The significant effect of implementation intentions in the Milne et al. study may have been partially due to overreporting exercise compliance. In the present study, we also have a behavioral measure, in the form of daily e-mails sent to the experimenter, which may have constrained overreporting.

GENERAL DISCUSSION

Across these two experiments, we have obtained a consistent benefit for the use of posthypnotic suggestion to enhance adherence with health-related instructions among high suggestible individuals. Experiment 2, however, indicates that this benefit is limited to high suggestibles and that the effect of suggestion can be deleterious among low suggestibles. Theoretically, the finding of a significant effect linked to hypnotic suggestibility is generally taken as a sign that the effect is a true hypnotic effect. Practically, these data suggest that hypnotic suggestibility be assessed before using hypnotic suggestion to enhance adherence.

The psychological mechanism underlying this effect of posthypnotic suggestion on high suggestibles is worthy of further exploration, as it can have practical as well as theoretical implications. One possible mechanism is motivation, such that hypnosis motivates highs to demonstrate their hypnotic ability by intentionally complying with suggestion, whereas it motivates lows to demonstrate their lack of response by performing even less well than when not hypnotized (Spanos, 1986). Another possible mechanism is the facilitation of prospective memories by hypnotic suggestion. These are not contradictory hypotheses, and it is possible that both are at play. If this is the case, low and medium suggestible participants might benefit from a modification of the procedure, in which the suggestion is administered without the induction of hypnosis. Many studies have shown that hypnotic suggestions can be effective even when given without prior induction of hypnosis (Barber & Glass, 1962; Braffman & Kirsch, 1999; Hilgard & Tart, 1966; Hull, 1933; Weitzenhoffer & Sjöberg, 1961). These studies also indicate that some people are less responsive following a hypnotic induction than they are when the same suggestions are given without inducing hypnosis. Thus, investigation of the effects of nonhypnotic suggestions on compliance with health-related instructions might be a worthwhile follow-up to the present studies.

The effects of implementation intentions were inconsistent across our two studies. Formation of implementation intentions facilitated pill taking but not self-reported exercise or sending in exercise reports.

Unlike previous studies of the effect of implementation intentions on health behaviors, our study included a behavioral measure that could not be feigned. Thus, our data challenge the conclusion that the formation of implementation intentions can facilitate adherence with medical instruction. These effects may be due to another form of compliance, namely compliance with the demand characteristics of the experimental situation. Future studies on the effects of implementation intentions on health behaviors should include behavioral measures that are difficult to feign, and the possibility of simple compliance with demand should be investigated.

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Auswirkungen von posthypnotischer Suggestion, hypnotischer Suggestibilität und Zielintentionen auf die Adhärenz für medizinische Instruktionen

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Maria Meo und Maura Santandrea

Zusammenfassung: Die Auswirkungen von Implementationsintentionen und posthypnotischen Suggestionen wurden in zwei Studien untersucht. In Experiment 1 wurden Teilnehmer mit hoher hypnotischer Suggestibilität instruiert, Placebopillen einzunehmen. Dies geschah im Rahmen einer Untersuchung, deren Ziel es war herauszufinden, wie die Kompliance mit medizinischen Anweisungen am besten sichergestellt werden kann. In Experiment 2 wurden Teilnehmer mit hohen, mittleren und geringen hypnotischen Suggestibilitätswerten gebeten, auf der Stelle zu laufen, zuvor ihren Puls zu messen und dem Experimentator täglich eine Email zu schicken. Experiment 1 erbrachte eine erhöhte Adhärenz als Funktion von sowohl Implementationsintentionen als auch posthypnotischen Suggestionen. In Experiment 2 hingegen zeigten sich keine signifikanten Haupteffekte, jedoch eine signifikante Interaktion zwischen Suggestibilität und den Effekten von posthypnotischer Suggestion. Posthypnotische Suggestion erhöhte die Adhärenz bei hochsuggestiblen Teilnehmern, verringerte sie aber bei Geringsuggestiblen.

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L'effet de la suggestion post-hypnotique, de la suggestibilité hypnotique et des intentions de conformité aux directives médicales

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Résumé: Les effets des intentions de conformité aux directives et aux suggestions post-hypnotiques ont été étudiés dans deux recherches. Dans la

première expérience, des participants possédant un haut degré de suggestibilité à l'hypnose ont reçu la suggestion de prendre des placébos dans le cadre d'une investigation sur la façon de favoriser l'adhésion aux directives médicales. Dans la seconde expérience, on a demandé à des participants possédant des degrés de suggestibilité hypnotique haut, moyen ou bas, de courir sur place, de prendre leur pouls avant la « course » et d'en faire le rapport quotidien à leur expérimentateur. La première expérience a démontré une adhésion accrue résultant des intentions d'application et de la suggestion post-hypnotique. La seconde n'a révélé aucun effet principal significatif mais a démontré une interaction notable entre la suggestibilité et les effets de la suggestion post-hypnotique. La suggestion post-hypnotique a augmenté l'adhésion chez les participants hautement suggestibles, mais elle l'a diminué chez les sujets moins suggestibles.

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C. Tr. (STIBC)

El efecto de de la sugestión posthipnótica, la sugestionabilidad hipnótica, y las intenciones de meta sobre la adherencia a las instrucciones médicas

Claudia Carvalho, Giuliana Mazzoni, Irving Kirsch,
Maria Meo, y Maura Santandrea

Resumen: Investigamos los efectos de las intenciones de implementación y la sugestión posthipnótica en 2 estudios. En el experimento 1 pedimos a los participantes con niveles altos de sugestionabilidad hipnótica que tomaran pastillas placebo como parte de una investigación de cómo mejorar el cumplimiento con las instrucciones médicas. En el experimento 2 pedimos a los participantes con sugestionabilidad hipnótica alta, media, o baja que corrieran, tomaran su pulso antes, y enviaran un informe al experimentador todos los días. El experimento 1 mostró un incremento en la adherencia en función de las intenciones de implementación y la sugestión posthipnótica. El experimento 2 no mostró efectos principales significativos pero obtuvo una interacción significativa entre la sugestionabilidad y los efectos de la sugestión posthipnótica. Las sugestiones posthipnóticas aumentaron la adherencia entre los participantes muy hipnotizables pero la redujeron entre los poco sugestionables.

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Appendix C

Waterloo-Stanford Group Scale of Hypnotic Susceptibility, Form C

(Original Manual, Response Booklet and Scoring Key in English and Portuguese)

Waterloo-Stanford Group Scale of Hypnotic Susceptibility, Form C Manual and Response Booklet

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Abstract

The manual and response booklet for the Waterloo-Stanford Group Scale of Hypnotic Susceptibility, Form C (WSGC) is presented. The WSGC is a group adaptation of the individually administered Stanford Hypnotic Susceptibility Scale, Form C (SHSS:C; Weitzenhoffer & Hilgard, 1962).

Waterloo-Stanford Group Scale of Hypnotic Susceptibility, Form C Manual and Response Booklet

The Waterloo-Stanford Group Scale of Hypnotic Susceptibility, Form C (WSGC) is a group adaptation of the individually administered Stanford Hypnotic Susceptibility Scale, Form C (SHSS:C; Weitzenhoffer & Hilgard, 1962). Normative data for the scale were reported previously (Bowers, 1993). This article presents instructions for administration and scoring, along with additional normative data.

Preparation

Note to experimenters concerning Age Regression.

Each subject must be given a pencil and a clipboard with paper on it at the beginning of this item. In small groups of eight to twelve subjects it is feasible for the experimenter to hand out materials. In larger groups, however, an assistant will be required. Turn the subject's response booklet over so they can use the back page to write on. They will keep the clipboards until after the Negative Hallucination item. At that time it is important to remember to turn these booklets face side up when you are collecting the pencils at the end of the item. Otherwise, the handwriting on the page will cue the subject's memory before the amnesia suggestion has been released. Be sure that each subject returns completely to the present at the end of the regression item.

Materials Needed.

Scoring Booklet and pencil for each subject

Clipboard

Stopwatch for timing item responses (or wristwatch with second hand)

A. Induction and Suggestions

Preliminary Instructions.

In a few minutes I am going to administer a standard procedure for measuring hypnotic ability. At the end of the standard procedure you will be asked to report on your experience in the Response Booklet which has been given to you. Place the clipboard and your pencil or pen on the floor in front of you.

Now I think we can begin.

O. Induction by Eye Closure.

(1). Now, please seat yourself comfortably and rest your hands in your lap. That's right. Rest your hands in your lap. Now look at your hands and find a spot on either hand and just focus on it. It doesn't matter what spot you choose; just select some spot to focus on. I will refer to the spot you have chosen as the target. That's right... hands relaxed... look directly at the target.

I am about to help you to relax, and meanwhile I will give you some instructions that will help you to gradually enter a state of hypnosis. Please look steadily at the target and while staring at it, keep listening to my words. You can become hypnotized if you are willing to do what I tell you to, and if you concentrate on the target and on what I say. You have already shown your willingness by coming here today, and so I am assuming that your presence here means that you want to experience all that you can. Just do your best to concentrate on the target -- pay close attention to my words, and let happen whatever you feel is going to take place. Just let yourself go. Pay close attention to what I tell you to think about; if your mind wanders, that will be okay; just bring your thoughts back to the target and my words, and you can easily experience more of what it's like to be hypnotized.

Hypnosis is perfectly normal and natural, and follows from the conditions of attention and suggestion we are using together. It is chiefly a matter of focusing sharply on some particular thing. Sometimes you experience something very much like hypnosis when driving along a straight highway and you are oblivious to the landmarks along the road. The relaxation in hypnosis is very much like the first stages of falling asleep, but you will not really be asleep in the ordinary sense, because you will continue to hear my voice and will be able to direct your thoughts to the topics that I suggest. What is important here today is your willingness to go along with the ideas I suggest and to let happen whatever is about to happen. Nothing will be done to embarrass you.

(2) Now take it easy and just let yourself relax. Keep looking at the target as steadily as you can, thinking only of it and my words. If your eyes drift away, don't let that bother you... just focus again on the target. Pay attention to how the target changes, how the shadows play around it, how it is sometimes fuzzy, sometimes clear. Whatever you see is all right. Just let yourself experience whatever happens and keep staring at the target a little longer. After awhile, however, you will have stared long enough, and your eyes will feel very tired, and you will wish strongly that they were closed. Then they will close, as if by themselves. When this happens, just let it happen.

(3) As I continue to talk, you will find that you will become more and more drowsy, but not all people respond at the same rate to what I have to say. Some people's eyes will close before others'. When the time comes that your eyes have closed, just let them remain closed. You may find that I shall still give suggestions for your eyes to close. These suggestions will not bother you. They will be for other people. Giving these suggestions to other people will not disturb you, but will simply allow you to relax more and more.

You will find that you can relax completely, but at the same time sit up comfortably in your chair with little effort. You will be able to shift your position to make yourself comfortable as needed without it disturbing you. For now, just relax more and more. As you think of relaxing, your muscles will actually begin to relax. Starting with your right foot, relax the muscles of your right leg..... Now the muscles of your left leg..... Just relax all over. Relax your right hand... your forearm... upper arm... and shoulder.... That's right.... Now your left hand.... and forearm.... and upper arm.... and shoulder.... Relax your neck, and chest.... more and more relaxed.... completely relaxed.... completely relaxed.

(4) As you become relaxed, your body will feel deeply at ease.... comfortably heavy. You will begin to have this pleasant feeling of heaviness and comfort in your legs and feet.... in your hands and arms.... throughout your body.... as though you were settling deep into the chair. Your body feels comfortable and heavy.... Your eyelids feel heavy too, heavy and tired. You are beginning to feel very relaxed and comfortable. You are breathing freely and deeply, freely and deeply. You are becoming more and more deeply and comfortably relaxed. Your eyelids are becoming heavier, more and more heavy and difficult to keep open.

(5) Staring at the target so long has made your eyes very tired. Your eyes may hurt from staring and your eyelids feel very heavy. Soon you will no longer be able to keep your

eyes open. Soon you will have stood the discomfort long enough; your eyes are tired from staring, and your eyelids will feel too tired to remain open. Perhaps your eyes are becoming moist from the strain. You are becoming more and more relaxed and comfortable. The strain in your eyes is getting greater and greater. It would be a relief just to let your eyes close and to relax completely, relax completely. The strain in your eyes will eventually be so great that you will welcome your eyes closing of themselves, of themselves.

(6) Your eyes are tired and your eyelids feel very heavy. Your whole body feels heavy and relaxed. You feel a pleasant warm tingling throughout your body as you become more and more deeply relaxed ... deeper ... deeper ... more relaxed ... completely relaxed and drifting down into a warm pleasant state of relaxation. Keep your thoughts on what I am saying; listen to my voice. Your eyes are getting blurred from straining. You can hardly see the target, your eyes are so strained. The strain is getting greater, greater and greater, greater and greater. Your eyelids are heavy. Very heavy. Getting heavier and heavier, heavier and heavier. They are pushing down, down, down. Your eyelids seem weighted and heavy, pulled down by the weight so heavy ... your eyes are blinking, blinking closing, closing ...

Your eyes may have closed by now, and if they have not, they would soon close of themselves. But there is no need to strain them more. You have concentrated well on the target, and have become very relaxed. Now we have come to the time when you may just let your eyes close. That's it, eyes closed now.

(7) You now feel very relaxed, but you are going to become even more relaxed. It is easier to relax completely now that your eyes are closed. You will keep them closed until I tell you to open them or until I tell you to become alert ... You feel pleasantly, deeply relaxed and very comfortable as you continue to hear my voice. Just let your thoughts dwell on what I'm saying. You are going to become even more relaxed and comfortable. Soon you will be deeply hypnotized, but you will have no trouble hearing me. You will remain deeply hypnotized until I tell you to awaken later on. Soon I shall begin to count from one to twenty. As I count, you will feel yourself going down further and further into a deeply relaxed, a deeply hypnotized state... but you will be able to do all sorts of things I ask you to do without waking up... One... you are going to become more deeply relaxed and hypnotized.... Two... down, down deeper, and deeper... Three... Four... more and more deeply hypnotized.... Five... Six... Seven... you are sinking deeper and deeper into hypnosis. Nothing will disturb you... Just let your thoughts focus on my voice and those things I tell you to think of. You are finding it easy just to listen to the things I tell you. Eight... Nine, Ten... halfway there... always deeper... Eleven... Twelve... Thirteen... Fourteen... Fifteen... although deeply hypnotized you can hear me clearly. You will always hear me distinctly no matter how deeply hypnotized you become. Sixteen... Seventeen... Eighteen... deeply hypnotized. Nothing will disturb you. You are going to experience many things that I will tell you to experience... Nineteen... Twenty. Deeply hypnotized now! You will not wake up until I tell you to. You will wish to remain relaxed and hypnotized and to have the experiences I describe to you.

Even though you are deeply relaxed and hypnotized, I want you to realize that you will be able to write, to move, and even to open your eyes if I ask you to do so, and still remain just as hypnotized and comfortable as you are now. It will not disturb you at all to open your eyes, move about, and write things. You will remain hypnotized until I tell you otherwise... All right, then....

1. Hand Lowering.

Now hold your right hand out at shoulder height, with the palm of your hand facing up. Your right hand straight out in front of you, the palm up. There, that's right.... Attend carefully to this hand, how it feels, what's going on in it. Notice whether or not it's a little numb, or tingling; the slight effort it takes to keep from bending your wrist; any breeze blowing on it.

Pay close attention to your hand now. Imagine that you are holding something heavy in your hand... maybe a heavy baseball, or a billiard ball...something heavy. Shape your fingers around as though you were holding this heavy object that you imagine is in your hand. That's it.... Now the hand and arm feel heavy, as if the weight were pressing down...and as it feels heavier and heavier the hand and arm begin to move down... as if forced down... moving... moving... down... down... more and more down... heavier... heavier... the arm is getting more and more tired and strained... down... slowly but surely... down, down... more and more down, the weight is so great, the hand is so heavy... You feel the weight more and more... the arm is too heavy to hold back... it goes down, down... more and more down...

(Allow ten seconds.)

That's good... now let your hand go back to its original resting position, and relax. You probably experienced much more heaviness and tiredness in your arm than you would have if you had not concentrated on it and had not imagined something trying to force it down. Now just relax... Your hand and arm are now as they were, not feeling tired or strained.... All right, just relax.

2. *Moving Hands Together.*

Now extend your arms ahead of you, with palms facing each other, hands about a foot apart. Hold your hands about a foot apart, palms facing each other. I want you to think about a force acting on your hands to pull them together, as though one hand were attracting the other. You are thinking of your hands being pulled together, and they begin to move together... coming together... coming together... moving together... closer together... more and more towards each other... more and more...

(Allow ten seconds.)

That's fine. You notice how closely thought and movement are related. Now place your hands back in their resting position and relax.... your hands back in their resting position and relax.

3. *Mosquito Hallucination.*

You have been listening to me very carefully, paying close attention. You may not have noticed a mosquito that has been buzzing, singing, as mosquitoes do ... Listen to it now ... hear its high pitched buzzing as it flies around your right hand... It is landing on your hand ... perhaps it tickles a little bit ... There, it flies away again ... you hear its high pitched buzz ... It's back on your hand tickling ... it might bite you ... you don't like this mosquito ... you'd like to get rid of it ... Go ahead, brush it off ... get rid of it if it bothers you...

(Allow ten seconds.)

It's gone ... That's a relief ... you are no longer bothered ... the mosquito has disappeared. No more mosquito. Now relax, relax completely.

4. *Taste Hallucination.*

I want you to think of something sweet in your mouth. Imagine that you have something sweet-tasting in your mouth, like a little sugar ... and as you think about this sweet taste you can actually begin to experience the sweet taste ... It may at first be faint, but it will grow ... and grow ... Now you begin to notice a sweet taste in your mouth... The sweet taste is increasing... sweeter... and sweeter... It will get stronger. It often takes a few moments for such a taste to reach its full strength... It is now getting stronger... stronger...

(Allow ten seconds.)

All right. Now notice that something is happening to that taste. It is changing. You are now beginning to notice a sour taste in your mouth... an acid taste, as if you had some lemon in your mouth, or a little vinegar... the taste in your mouth is getting more and more sour... more

acid... more and more sour...

(Allow ten seconds.)

All right. Now the sour taste is going away, and your mouth feels just as it did before I mentioned any taste at all. Your mouth is normal now. There, it's quite normal now, and you just continue to relax... more and more relaxed.

5. *Arm Rigidity.*

Please hold your right arm straight out in front of you, and fingers straight out, too... That's right... Right arm, straight out. Think of your arm becoming stiffer and stiffer ... stiff ... very stiff ... as you think of its becoming stiff you will feel it become stiff ... more stiff and rigid, as though your arm were in a splint so the elbow cannot bend ... stiff ... held stiff, so that it cannot bend. A tightly splinted arm cannot bend ... Your arm feels stiff as if tightly splinted ... Test how stiff and rigid it is ... Try to bend it ... try ...

(Allow ten seconds.)

That's fine. You will have an opportunity to experience many things. You probably noticed how your arm became stiffer as you thought of it as stiff, and how much effort it took to bend it. Your arm is no longer at all stiff. Place it back in position, and relax.

6. *Dream.*

We are very much interested in finding out what hypnosis and being hypnotized means to people. One of the best ways of finding out is through the dreams people have while they are hypnotized ... Now neither you nor I know what sort of a dream you're going to have, but I'm going to allow you to rest for a little while and you are going to have a pleasant dream ... a real dream ... just the kind you have when you are asleep at night. When I stop talking to you very shortly, you will begin to dream. You will have a pleasant dream about hypnosis. You will dream about what hypnosis means ... Now you are falling asleep ... deeper and deeper asleep ... very much like when you fall asleep at night ... Soon you will be deep asleep, soundly asleep. As soon as I stop talking to you you will begin to dream. When I speak to you again you will stop dreaming, if you still happen to be dreaming, and you will listen to me just as you have been doing. If you stop dreaming before I speak to you again, you will remain pleasantly and deeply relaxed ... Now sleep and dream ... Deep asleep!

(Allow one minute.)

The dream is over; if you had a dream you can remember every detail of it clearly, very clearly. You do not feel particularly sleepy or different from the way you felt before I told you to fall asleep and to dream, and you continue to remain deeply hypnotized. Whatever you dreamed you can remember quite clearly, and I want you to review it in your mind from the beginning so you could tell it to someone if asked to.

(Allow twenty seconds.)

All right. That's all for the dream.

7. *Arm Immobilization (Left Hand).*

Now your left hand and arm should be in your lap. You are very relaxed and comfortable, with a feeling of heaviness throughout your body. I want you now to think about your left arm and hand. Pay close attention to them. They feel numb and heavy, very heavy. How heavy your left hand feels ... Even as you think about how heavy your left hand is, it grows heavier and heavier ... Your hand is getting heavier ... heavier and heavier ... Your hand is getting heavier, very heavy, as though it were being pressed against your lap. You might like to find out a little later how heavy your hand is ... it seems much too heavy to move ... but in spite of being so heavy, maybe you can move it a little; but maybe it is too heavy even for that ... Why don't you see how heavy it is ... Just try to lift your hand up, just try.

(Allow ten seconds.)

That's fine. You see how it was harder to lift than usual because of the relaxed state you are in. Now place your hand back in its resting position and relax. Your hand and arm now feel normal again. They are no longer heavy. Just relax, relax all over.

8. Age Regression.

Continue to go deeper and deeper into the hypnotic state. I am now going to give each of you a clipboard with some paper on it and a pencil. When I do, hold the clipboard on your lap and hold out your writing hand ... and I will give you a pencil to write with. Keep your eyes closed for all of this.

PAUSE (Give each subject their clipboard and pencil. Remember to turn over the response booklet so they will write on the back of it.)

You have a clipboard and a pencil with you, and now I would like you to write your name on the paper while keeping your eyes closed. Keep your eyes closed through all of this. While you are writing your name, why don't you also write your age and the date. That's fine. Keep the clipboard and the pencil in your hands and listen closely to me. I would like you to think about a pleasant time when you were in the fifth grade of school; and in a little while you will find yourself once again a little child pleasantly enjoying a nice day, sitting in class in the fifth grade, comfortably writing or drawing on some paper ... I shall now count to five and at the count of five you will be back on a pleasant day in the fifth grade ... But no matter what you experience you will continue to hear my voice, and you will continue to do what I tell you to do.

One, you are going back into the past. It is no longer (state present year), nor (state an earlier year) or (state a still earlier year), but much earlier. Two, you are becoming increasingly younger and smaller ... Three, presently you will be back having a pleasant time in the fifth grade, and you will feel an experience exactly as you did once before on a nice day when you were sitting in class, writing or drawing. Four, very soon you will be there ... Once again a little child having a pleasant time in a fifth grade class. You are nearly there now ... In a few moments you will be right back there. Five! You are now a small child in a classroom sitting happily in school.

(Allow thirty seconds.)

You are sitting happily in school. You have a pad of paper and are holding a pencil. I would like you to write your name on the pad with this pencil ... That's fine, and now please write down your age ... (pause until almost all are through writing) ... and now the date, if you can ... (pause until almost all are through writing) ... and the day of the week.

Presently you will no longer be in the fifth grade, but you will be still younger, back at a happy day in the second grade. I shall count to "two", and then you will be in the second grade on a very happy day. One, you are becoming smaller still, and going back to a nice day when you were in the second grade, sitting happily in school with some paper and a pencil ... Two ... You are in the second grade ...

(Allow thirty seconds.)

You are sitting happily at school. Would you please write your name on the paper ... That's good ... And now can you write how old you are? ... Now I would like you to write down who I am, or if you are not sure who I am, write down who you think I might be ...

(Allow thirty seconds.)

That's fine And now you can grow up again and come right back to (state current day and date) in (name of locale of testing). You are no longer a little child but a grown-up person, sitting in a chair deeply hypnotized.

Fine, everything is back as it was. You won't need the pencil and clipboard for a while. Continue to hold the pencil in your hand. Turn the clipboard over and put it on your lap. Just

place the clipboard face down on your lap. Your hand should be back in its resting position, resting comfortably in your lap. Just keep your eyes closed and relax ... deeply and comfortably. That's right, just relax completely.

9. *Music Hallucination.*

In a few moments, a recording of Jingle Bells will be played for you. When the recording starts the volume will be turned way down and you will probably not be able to hear it, or you will hear it very faintly. Then the volume will increase and I want you to let me know when you can hear it satisfactorily by holding up your right hand. When you can hear the music satisfactorily, hold up your right hand. Okay? Here we go ... The recording of Jingle Bells has been turned on. This is Level One. (wait five seconds.) Now it is being turned up a little. This is Level Two. Hold your hand up if you can hear it now. (wait five seconds.) And now louder. This is Level Three. (wait five seconds.) And now the loudest setting. This is Level Four. Hold your hand up if you can hear the music now. (wait five seconds.) Now the music has been turned off. There now, there is no longer any music. You can return your hand to its resting position and relax. Now ... just sit back and enjoy being hypnotized.

10. *Negative Visual Hallucination.*

Just relax and become even more deeply hypnotized as you continue to breathe comfortably and effortlessly. As you sit comfortably in your chair with your eyes closed, I am going to place two squares in the board in the middle of the room. I am going to place two colored squares right in the board so that you will be able to see them clearly. In a moment I am going to ask you to open your eyes. You will see just two squares in the center of the floor on a piece of wood ... just two squares ...

(Put three squares in the middle of the floor in a triangular configuration.)

Okay, now is the time to open your eyes, and to look in the center of the floor in front of you. See the two balls that I have placed there. Please make a mental note of the color of the balls that you see. Remember the color of the balls that you see so that you can report them later. Okay, now close your eyes and continue to relax ... Now I would like you to turn over the clipboard that is on your lap and write down the color of the balls that you saw. Just write down the color of the balls ... When you have written down the color of the balls, I want you to hold the pencil you've been writing with in the air ... keep the pencil in the air until it is collected along with the clipboard ... When your pencil has been collected you may let your arm go back to its original resting position and relax completely.

PAUSE (Collect pencils, turn over the response booklets, and place each booklet and pencil on the floor in front of the subjects. Remove the three balls from the floor and place them out of sight.)

Okay, you've done very well. Just keep your eyes closed and relax ... deeply and comfortably. That's right, just relax completely.

11. & 12. *Posthypnotic Suggestion (Doodle) and Amnesia.*

Stay completely relaxed and pay close attention to what I'm going to tell you next. In a moment I shall begin counting backwards from twenty to one. You will awaken gradually, but for most of the count you will remain in the pleasant, relaxed state that you are now in. By the time I reach "five" you will open your eyes, but you will not be fully aroused. When I get to "one", you will be fully alert, in your normal state of wakefulness. You probably will have the impression that you have slept, because you will have difficulty in remembering all the things I have told you and all the things you did or felt, since you started looking at the target. In fact, you will find it so much of an effort to recall any of these things that you will have no wish to do so. It will be much easier simply to forget everything until I tell you that you can remember.

You will remember nothing of what you did or felt from the time that you started looking at the target, until I say to you: "Now you can remember everything!" You will not remember anything you did until then. After you open your eyes you will feel fine. I shall now count backwards from twenty, and at "five", not sooner, you will open your eyes but not be fully aroused until I say "one". At "one" you will be awake ... A little later I will tell you to turn to page two of your response booklet. When you turn to page two, you will draw a small tree in the upper right hand corner. You will draw a small tree but forget that I told you to do so, just as you will forget the other things, until I tell you, "Now you can remember everything". Ready, now: 20... 19... 18... 17... 16... 15... 14... 13... 12... 11... 10, halfway... 9... 8... 7... 6... five... 4... 3... 2... 1. Wake up! Wide awake! Any remaining drowsiness which you may feel will quickly pass.

Testing.

Now turn to page two of your response booklet (wait ten seconds.) Please write down now, briefly, in your own words, a list of the things that happened since you began looking at the target. Do not go into detail. Spend three minutes, no longer, in writing your reply. I will let you know when time is up.

(Wait three minutes. (ON TAPE))

Listen carefully to my words. Now you can remember everything. Please turn now to the next page of the response booklet. On this page write down a list of anything else that you now remember that you did not remember previously. Please do not go into detail. Spend two minutes, no longer, on this section. Again, I will let you know when time is up.

(Wait two minutes. TAPE ENDS)

Now please turn to the next page of your response booklet. Please do not turn back to earlier pages. You will find listed on page 4, and the following pages, the specific events that were suggested to you during the hypnosis session. Please read the instructions and then answer the questions in the remainder of the booklet. Work right through to the end and let me know if you have any questions.

PAUSE (When all subjects have completed the response booklet, make sure you have their attention before continuing.)

Debriefing

You may recall that during the session today, you were asked to hold up your hand when you heard a recording of Jingle Bells. In fact, no recording was played -- there was no music in the room. Also, near the end of the session, you were told that when you opened your eyes, you would see two balls in the middle of the floor. Actually, there were three balls there.

The purpose of these two items was not to deceive you. We know from past research that the perception of persons who are highly responsive to hypnosis will sometimes be altered to coincide with suggestions that do not accurately reflect the stimuli presented. Our intention with respect to the two suggestions just mentioned was to assess your responsiveness to suggestions that involve such perceptual alterations.

Scoring Booklet

(The scoring booklet should be prepared with sufficient space for participants to record responses to questions. Only the text, with page breaks indicated, is reproduced here.)

DO NOT OPEN THIS BOOKLET UNTIL THE EXAMINER SPECIFICALLY INSTRUCTS YOU TO DO SO.

Please supply the information requested below:

This information is for research purposes only and will be kept confidential

Name: _____

Age: _____

Gender: M F

Phone: _____

E-mail: _____

Code: (first two letters of your first name followed by the last two digits of your phone number) _____

Thank You

Date: ____/____/____

Signature

DO NOT OPEN THIS BOOKLET UNTIL YOU ARE SPECIFICALLY INSTRUCTED TO DO SO

(page break)

Please write down now, briefly, in your own words, a list of the things that happened since you began looking at the target. Do not go into detail. Spend three minutes, no longer, in writing your reply.

Please DO NOT TURN THIS PAGE until the examiner specifically instructs you to do so.

(Page break.)

PLEASE DO NOT RETURN TO PAGE 2

On this page write down a list of anything else that you now remember that you did not remember previously. Please do not go into detail. Spend two minutes, no longer, in writing out your reply.

Please DO NOT TURN THIS PAGE until the examiner specifically instructs you to do so.

(Page break.)

PLEASE DO NOT RETURN TO EARLIER PAGES

ITEM SCORING SECTION

Listed below in chronological order are the twelve specific happenings which were suggested to you during the standard hypnotic procedure. We wish you to estimate whether or not you objectively responses to these twelve suggestions, that is, whether an onlooker would have observed that you did or did not make certain definite responses by certain specific criteria.

It is understood that your estimates may in some cases not be as accurate as you might wish them to be and that you might even have to guess. But we want you to make whatever you feel to be your best estimate regardless.

Beneath a description of most of the suggestions are two sets of responses, labeled A and B. Please circle either A or B for these questions, whichever you judge to be the more accurate. Please answer every question. Failure to give a definite answer to every question may lead to disqualification of your record. For a few of the suggestions, a special scale has been devised. Select the response that is the best estimate of your experience.

1. HAND LOWERING (RIGHT HAND)

You were next told to extend your right arm straight out and feel it becoming heavy as though a weight were pulling the hand and arm down. Would you estimate that an onlooker would have observed that your hand lowered at least six inches (before the time you were told to let your hand down deliberately)?

- Circle one: A. My hand had lowered at least six inches by then.
 B. My hand had lowered less than six inches by then.

2. MOVING HANDS TOGETHER

You were next told to hold your hands out in front of you about a foot apart and then told to imagine a force pulling your hands together. Would you estimate that an onlooker would have observed that your hands were not over six inches apart (before you were told to return your hands to their resting position)?

- Circle one: A. My hands were less than six inches apart by then.
 B. My hands were more than six inches apart by then.

3. EXPERIENCING OF MOSQUITO

You were next told to become aware of the buzzing of a mosquito which was said to become annoying, and then you were told to brush it off. Would you estimate that an onlooker would have observed you make any grimacing, any movement, any outward acknowledgement of an effect (regardless of what it was like subjectively)?

- Circle one: A. I did make some outward acknowledgement.
 B. I did not make any outward acknowledgement.

4. TASTE EXPERIENCE

You were next told that you would have a sweet taste in your mouth, and then you were told that you would have a sour taste in your mouth.

How strong was the sweet taste in your mouth?

- Circle one: none vague weak strong

Did you make any facial movements, such as lip movements or grimacing, that an onlooker would have observed?

- Circle one: YES NO

How strong was the sour taste in your mouth?

- Circle one: none vague weak strong

Did you make any facial movements, such as lip movements or grimacing that an onlooker would have observed?

- Circle one: YES NO

5. ARM RIGIDITY (RIGHT)

You were next told to extend your right arm straight out, then to notice it becoming stiff, and then told to try to bend it. Would you estimate that an onlooker would have observed that there was less than two inches of arm bending (before you were told to stop trying)?

- Circle one: A. My arm was bent less than two inches by then.
 B. My arm was bent at least two inches by then.

6. DREAM

You were next told to have a dream. In the following space describe your dream in detail.

We have found that people have various sorts of experiences in response to this.

How real would you say your dream was?

not real/or no dream 1 2 3 4 5 very real

Which of the following categories do you think best describes your experience?

Circle one letter:

- A. Nothing went through my mind.
- B. Passing thoughts, no dreamlike imagery.
- C. Fleeting, vague, dreamlike imagery, play of colors, etc.
- D. Dreamlike imagery, but no clear theme or sequence of events.
- E. Dreamlike imagery, plus sequence of events.
- F. Something other than these. (Describe.)

7. ARM IMMOBILIZATION (LEFT ARM)

You were next told how heavy your left hand and arm felt and then told to try to lift your hand up. Would you estimate that an onlooker would have observed that you did not lift your hand and arm up at least one inch (before you were told to stop trying)?

- Circle one:
- A. I did not lift my hand and arm one inch by then.
 - B. I did lift my hand and arm at least one inch by then.

9. MUSIC HALLUCINATION

Next you were asked to hold your right hand up when you could satisfactorily hear the recording of Jingle Bells.

- Circle one:
- A. I raised my right hand.
 - B. I did not raise my right hand.

10. NEGATIVE VISUAL HALLUCINATION

You were next asked to open your eyes and to see two squares that had been placed on the floor.

I saw all three 1 2 3 4 5 I saw only two squares.
squares clearly.

11. POSTHYPNOTIC AUTOMATIC WRITING

Next you were given the suggestion to draw a tree on Page 2, but to forget that you were told to do so.

- is judged to be like "D" or "E".
7. Arm Immobilization Circles "A" indicating arm raised less than 1 inch in 10 seconds.
 8. Age Regression Shows clear change in handwriting on back of form between present and at least one regressed age.
 9. Music Hallucination Circles "A" indicating right hand raised in response to hearing music.
 10. Negative Visual Hallucination Records colors of exactly two balls at the time of the suggestion (on back of form).
 11. Posthypnotic Drawing Actually draws tree on Page 2 of response booklet.
 12. Posthypnotic Amnesia Recalls three or fewer items before suggestion is removed (Page 2 of response booklet) and recalls three or more new items after suggestion is removed (Page 3 of response booklet).

References

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.

ESCALA DE SUSCEPTIBILIDADE HIPNÓTICA DE WATERLOO-STANFORD

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Resumo

Apresenta-se o manual e o caderno de respostas para a escala de avaliação de grupo de susceptibilidade hipnótica de Waterloo-Stanford - formulário C (WSGC). O WSGC é uma adaptação do grupo da escala individual de susceptibilidade hipnótica de Stanford, formulário C (SHSS:C; Weitzenhoffer & Hilgard, 1962).

Escala de avaliação grupal da susceptibilidade hipnótica de Waterloo-Stanford, Forma C

Manual e caderno de respostas

A escala de avaliação de grupo de susceptibilidade hipnótica de Waterloo-Stanford, forma C é uma adaptação do grupo da escala individual de susceptibilidade hipnótica de Stanford, forma C (SHSS:C; Weitzenhoffer & Hilgard, 1962). Os dados normativos para a escala estão relatados noutra parte (Bowers, 1993). O presente artigo apresenta instruções para a administração e cotação, bem como dados normativos adicionais.

Preparação

Nota aos investigadores acerca da sugestão de regressão de idade

A cada sujeito deve ser dado um lápis e uma prancheta com papel antes da apresentação desta sugestão. Em grupos pequenos de oito a doze sujeitos é possível que o experimentador entregue os materiais. Em grupos maiores no entanto, será necessário um assistente. Vire o caderno de respostas com o rosto para baixo de forma a que os sujeitos possam usar as costas da última página para escrever. Os sujeitos manter-se-ão com as pranchetas no colo até ao fim da sugestão de alucinação visual. No final é importante tornar a virar o caderno de respostas enquanto se recolhe os lápis, caso contrário a escrita do sujeito poderá funcionar como uma pista para a memória da sugestão antes que a sugestão final de amnésia seja removida. Assegure-se que o sujeito retorna completamente ao presente no final da sugestão de regressão de idade.

Materiais Necessários

Caderno de Respostas e lápis para cada sujeito

Prancheta

Cronómetro

Indução e sugestões

Instruções Preliminares

Dentro de alguns minutos irei aplicar um procedimento padronizado para medir a sua

capacidade hipnótica. No final deste procedimento padronizado ser-lhe-á pedido para relatar a sua experiência no caderno de respostas que lhe foi dado. Coloque a prancheta e o seu lápis no chão à sua frente ou na superfície mais próxima de si, (mesa ou cadeira).

Se algum de vocês estiver a usar lentes de contacto, poderá querer tirá-las neste momento

Agora penso que podemos começar.

O. Indução por fechamento dos olhos

(1). Por favor sente-se confortavelmente e descanse as mãos no seu colo. Muito bem. Descanse as suas mãos no seu colo. Agora olhe para as suas mãos e encontre um ponto numa das mãos e concentre-se nesse ponto. Não interessa que ponto é que escolhe; seleccione apenas um ponto para se concentrar. Eu vou chamar ao ponto que você escolheu “o alvo”. Muito bem... mão relaxadas... olhe directamente para o alvo...

Eu estou prestes a ajudá-lo a relaxar, e entretanto vou dar-lhe algumas instruções que irão ajudá-lo a entrar gradualmente num estado de hipnose. Por favor olhe fixamente para o alvo e enquanto o fixa continue a ouvir as minhas palavras. Pode ficar hipnotizado se estiver disposto a fazer o que eu lhe disser, e se concentrar no alvo e no que eu digo. Já mostrou o seu voluntarismo estando aqui hoje, e assim eu estou a presumir que a sua presença aqui significa que você quer experienciar tudo que puder. Faça apenas o seu melhor para se concentrar no alvo – preste muita atenção às minhas palavras e deixe que aconteça o que quer que sente que vai acontecer. Deixe-se apenas ir. Preste muita atenção ao que eu lhe digo para pensar; e se sua mente vaguear, não há problema, é só trazer os seus pensamentos de volta ao alvo e às minhas palavras, e pode facilmente experimentar mais como é que é estar hipnotizado.

A hipnose é perfeitamente normal e natural, e decorre dos estados de atenção e sugestão que nós nos estamos a usar em conjunto. É essencialmente uma questão de se concentrar intensamente numa coisa em particular. Às vezes você experiencia algo muito parecido com a hipnose quando conduz sempre em frente numa auto-estrada e se abstrai da paisagem ao longo da estrada. O relaxamento na hipnose é muito parecido com os primeiros estádios do adormecer, mas não estará realmente adormecido no sentido vulgar do termo, porque você continuará a ouvir minha voz e poderá direccionar os seus pensamentos aos tópicos que eu sugiro. O que é importante hoje aqui é a sua vontade de se deixar ir com as ideias que eu sugiro e deixar acontecer o que quer que seja que está prestes a acontecer. Nada será feito que o embarace

(2) Agora deixe-se apenas relaxar. Mantenha o olhar no alvo tão concentrado como puder, pensando somente nele e nas minhas palavras. Se seus olhos se desviarem não deixe que isso o incomode... concentre-se apenas outra vez no alvo. Preste atenção a como o alvo muda, como as sombras brincam em torno dele, como às vezes está desfocado, às vezes está nítido. O que quer que veja está bem. Permita-se a si próprio experienciar o que quer que aconteça e mantenha o olhar fixamente no alvo um pouco mais. Ao fim de algum tempo, contudo, já terá olhado fixamente o suficiente, e seus olhos sentir-se-ão muito cansados e desejará fortemente que já estivessem fechados. Então fechar-se-ão, por si mesmos. Quando isto acontecer, deixe apenas acontecer.

(3) À medida que eu continuo a falar irá reparar que vai começar a sentir-se sonolento, mas nem toda as pessoas respondem ao mesmo ritmo ao que eu estou a dizer. Os olhos de algumas pessoas fechar-se-ão antes dos olhos de outras pessoas. Quando chegar a altura em que os seus olhos se terão fechado deixe apenas que permaneçam fechados. Poderá

notar que eu ainda estou a dar sugestões para os olhos se fecharem. Estas sugestões não o incomodarão. Elas serão para outras pessoas. Dar estas sugestões às outras pessoas não o perturbará, mas irão permitir simplesmente que relaxe mais e mais.

Írá verificar que pode relaxar completamente, e ao mesmo tempo sentar-se confortavelmente na sua cadeira com pouco esforço. Poderá mudar a sua posição para se sentir mais confortável, se necessitar, sem que isso o perturbe. Por agora, relaxe apenas mais e mais. À medida que pensa em relaxar, os seus músculos começarão de facto a relaxar. Começando com o seu pé direito, relaxe os músculos da sua perna direita..... Agora os músculos da sua perna esquerda..... Relaxe as pernas. Relaxe sua mão direita... o seu braço.... E ombro.... Muito bem.... Agora sua mão esquerda.... braço.... E ombro.... Relaxe o seu pescoço e peito.... Mais e mais relaxado.... Completamente relaxado.... Completamente relaxado.

(4) À medida que vai ficando mais relaxado, o seu corpo sentir-se-á profundamente à vontade.... Confortavelmente pesado. Começará a ter esta sensação agradável de peso e conforto nas suas pernas e pés... nas suas mãos e braços.... Por todo seu corpo.... Como se estivesse a acomodar-se profundamente na cadeira. O seu corpo sente-se confortável e pesado.... As suas pálpebras também estão pesadas, pesadas e cansadas. Está a começar a sentir-se muito relaxado e confortável. Está a respirar livremente e profundamente, livremente e profundamente. Está a ficar mais e mais profundamente e confortavelmente relaxado. As suas pálpebras estão a tornar-se mais pesadas, mais e mais pesadas e é difícil mantê-las abertas

(5) Olhar fixamente para o alvo durante este tempo fez com que os seus olhos ficassem muito cansados. Os seus olhos poderão doer devido a estar a olhar fixamente e as suas pálpebras estão muito pesadas. Brevemente já não conseguirá manter mais os seus olhos abertos. Brevemente já terá suportado o desconforto por tempo suficiente, os seus olhos estão cansados de estar a olhar fixamente e as suas pálpebras estarão demasiado cansadas para permanecer abertas. Talvez os seus olhos estejam a ficar húmidos devido à tensão. Está a ficar mais e mais relaxado e confortável. Os seus olhos estão a ficar cada vez mais e mais em esforço. Seria um alívio deixar os seus olhos fecharem-se e relaxar completamente, relaxe completamente. Os seus olhos acabarão por ficar tão esforçados que ficarão aliviados por eles se fecharem a eles mesmos, a eles mesmos.

(6) Os seus olhos estão cansados e as suas pálpebras estão muito pesadas. Todo o seu corpo se sente pesado e relaxado. Sente um adormecimento morno e agradável em todo o seu corpo à medida que se torna mais e mais profundamente relaxado... profundamente... mais relaxado... completamente relaxado e a afundar-se num estado de relaxamento morno e agradável. Mantenha os seus pensamentos no que eu digo, escute minha voz. Os seus olhos estão a começar a ver o alvo desfocado, mal o consegue ver, o esforço nos seus olhos é tão grande. O esforço está a tornar-se maior, maior e maior, maior e maior. As suas pálpebras estão pesadas. Muito pesadas. Tornam-se cada vez mais pesadas e mais pesadas, mais pesadas e mais pesadas. Elas puxam para baixo, para baixo, para baixo. As suas pálpebras parecem tão pesadas, o peso empurra-as para baixo... tão pesadas... os seus olhos pestanejando, pestanejando.... fechando-se... fechando-se...

Por esta altura os seus olhos podem ter-se já fechado, e se não se fecharam, fechar-se-ão muito em breve por si mesmos. Mas não há necessidade de esforçá-los mais. Concentrou-se bem no alvo, e ficou muito relaxado. Agora chegamos ao momento em que pode apenas deixar que os seus olhos se fechem. Muito bem, olhos fechados agora.

(7) Agora sente-se muito relaxado, mas vai ficar ainda mais relaxado. É mais fácil relaxar completamente agora que os seus olhos estão fechados. Vai mantê-los fechados até eu dizer para os abrir ou até eu dizer para se tornar alerta... Sente-se agradavelmente, profundamente relaxado e muito confortável enquanto continua a ouvir minha voz. Deixe que

os seus pensamentos permaneçam no que eu estou a dizer. Vai ficar ainda mais relaxado e confortável. Em breve estará profundamente hipnotizado, mas não terá dificuldades em ouvir-me. Permanecerá profundamente hipnotizado até que eu lhe dizer para acordar. Em breve começarei a contar de um a vinte. À medida que eu conto, sentir-se-á a entrar mais e mais num estado de profundo relaxamento, um estado profundo de hipnose... mas poderá fazer todas as coisas que eu lhe pedir que faça sem acordar... Um... vai ficar mais profundamente relaxado e hipnotizado.... Dois... para baixo, para baixo, mais e mais profundo... Três... Quatro... mais e mais profundamente hipnotizado.... Cinco... Seis... Sete... está a afundar-se mais e mais profundamente na hipnose ... Nada o perturbará... Deixe apenas que o seu pensamento se concentre na minha voz e nas coisas que eu lhe digo para pensar. Está a descobrir como é fácil escutar apenas as coisas que eu digo. Apesar de hipnotizado consegue ouvir-me claramente... Oito... Nove, Dez... estamos a meio caminho... Sempre mais profundo... Onze... Doze... Treze... Catorze... Quinze... embora profundamente hipnotizado consegue ouvir-me claramente. Ouvir-me-á sempre claramente não importa o quão profundamente hipnotizado estiver. Dezassex... Dezasete... Dezoito... profundamente hipnotizado. Nada o perturbará. Vai experienciar muitas coisas que eu direi para experimentar... Dezanove... Vinte. Profundamente hipnotizado agora! Não acordará até que eu lho diga. Desejará permanecer relaxado e hipnotizado e ter as experiências que eu lhe descrevo

Apesar de estar profundamente relaxado e hipnotizado, quero que saiba que poderá escrever, mover-se, e até abrir os seus olhos se eu lhe pedir que o faça, e mesmo assim permanecer tão hipnotizado e confortável como está agora. Abrir os olhos, escrever coisas, mover-se não o perturbará em nada. Permanecerá hipnotizado até que eu lhe diga o contrário... Muito bem....

1. Baixar a Mão

Agora estenda a sua mão direita para a frente ao nível do ombro com a palma da mão virada para cima. A sua mão direita está esticada para a frente, com a palma da mão para cima. Muito bem.... Repare com cuidado nesta mão, como ela se sente, o que se está a passar nela. Repare se sente uma ligeira dormência ou formigueiro, o ligeiro esforço que faz para impedir que o seu pulso se dobre, alguma brisa que sopra nela. Preste muita atenção à sua mão agora. Imagine que está a segurar algo pesado na sua mão... talvez uma pequena bola pesada, ou uma bola de bilhar... algo pesado. Molde os seus dedos como se estivesse a segurar este objecto pesado que imagina que está na sua mão. Muito bem.... Agora a mão e o braço sentem-se pesados, como se o peso pressionasse para baixo... E à medida que estão mais e mais pesados a mão e o braço começam a mover-se para baixo... como se estivessem a ser forçados para baixo..... baixando... baixando... para baixo para baixo... mais para baixo... mais e mais para baixo... mais pesado... mais pesado... o braço começa a ficar mais cansado e cansado ... para baixo... lentamente mas inevitavelmente... para baixo, para baixo... mais e mais para baixo, o peso é tão grande, a mão é tão pesada... sente o peso mais e mais... o braço é demasiado pesado para o poder suportar... vai mais para baixo, para baixo... mais e mais para baixo...

(espere dez segundos.)

Muito bem... deixe agora sua mão ir para a sua posição de descanso inicial e relaxe. Provavelmente experienciou muito mais peso e cansaço no seu braço do que se não se concentrasse nele e não imaginasse algo a tentar forçá-lo para baixo. Agora relaxe apenas... As suas mãos e braços estão agora como estavam antes, sem se sentirem cansados ou em esforço.... Muito bem, relaxe apenas.

2. Movimentar as mãos em conjunto.

Estenda agora seus dois braços à sua frente, com as palmas das mãos viradas uma para a outra, distantes aproximadamente 20cm. Mantenha as suas mãos cerca de 20cm de distância, palmas das mãos viradas uma para a outra. Eu quero que pense numa força que age sobre suas mãos e que as puxa contra a outra, como se uma mão atraísse a outra. Pense nas suas mãos que estão a ser puxadas uma contra a outra, e se começam a aproximar... aproximam-se... aproximam-se... aproximam-se... cada vez mais próximas... mais e mais de encontro uma à outra... mais e mais...

(pausa dez segundos.)

Muito bem. Repare o quão intimamente relacionados estão o pensamento e o movimento. Agora pouse as mãos na sua posição de descanso e relaxe... as suas mãos voltam à sua posição de descanso e relaxam.

3. Alucinação do Mosquito

Tem estado a ouvir-me atentamente, prestando toda a atenção. Talvez não se tenha apercebido de um mosquito que tem estado a cirandar, a zumbir, como os mosquitos fazem... Escute-o agora... ouça seu zumbido agudo à medida que ele voa em torno de sua mão direita... Está a pousar na sua mão... talvez faça uma pequena comichão... Lá vai ele, voa outra vez... Ouve o seu zumbido agudo... Está de volta à sua mão, fazendo comichão..... pôde picar-lhe... não gosta deste mosquito... gostaria de se ver livre dele... Vá força, enxote-o... livre-se dele se ele o incomoda...

(pausa dez segundos.)

Foi-se embora... Que alívio... já não está a ser incomodado... o mosquito desapareceu. Não há mais mosquito. Agora relaxe, relaxe completamente.

4. Alucinação de sabor

Quero que pense agora num sabor doce na sua boca. Imagine que tem um sabor doce na sua boca, como um pouco de açúcar... e à medida que pensa neste sabor doce pode realmente começar a sentir o sabor doce... No início poderá ser subtil, mas tornar-se-á mais acentuado...mais acentuado... Agora começa a reparar num sabor doce na sua boca... o sabor doce está a aumentar... mais doce... e mais doce... tornar-se-á cada vez mais forte. Demora alguns momentos para que tal sabor alcance a sua plena força... Está a ficar mais forte... mais forte...

(pausa dez segundos.)

Muito bem. Agora repare que algo está a acontecer a esse sabor. Está a mudar. Começa agora a aperceber-se de um sabor amargo na sua boca... um sabor amargo, como se tivesse colocado limão na sua boca, ou um pouco de vinagre... o sabor na sua boca está a começar a ficar mais e mais amargo... mais amargo... mais e mais amargo...

(pausa dez segundos.)

Muito bem. Agora o sabor a amargo está a desaparecer, e a sua boca sente-se como estava antes de eu mencionar qualquer sabor. Pronto, completamente normal agora, e continua a relaxar... mais e mais relaxado.

5. Rigidez Do Braço

Por favor estenda o seu braço direito à sua frente, os dedos esticados também... Muito bem... braço direito estendido para a frente. Pense no seu braço a tornar-se mais e mais rígido... rígido... muito rígido... à medida que pensa que ele fica mais rígido, sentirá o braço a

ficar mais rígido... mais duro e rígido, como se seu braço estivesse numa tala e o cotovelo não se pudesse dobrar... rígido... mantenha-o rígido, de modo a que não se possa dobrar. Um braço firmemente preso numa tala não se pode dobrar... o seu braço sente-se rígido como se estivesse firmemente preso numa tala... Verifique como ele está duro e rígido... tente dobrá-lo... tente...

(pausa dez segundos.)

Muito bem. Você terá oportunidade de experimentar muitas coisas. Provavelmente reparou como o seu braço se tornou mais rígido quando pensou dele como rígido, no esforço que foi necessário fazer para o dobrar. O seu braço não está mais rígido. Coloque-o de novo na posição de descanso, e relaxe.

6. *Sonho*

Nós estamos muito interessados em saber o que é que a hipnose e estar hipnotizado significa para as pessoas. Uma das melhores maneiras de descobrir é através dos sonhos que as pessoas têm quando estão hipnotizadas... Agora nem você nem eu sabemos que tipo de sonho é que vai ter, mas eu vou permitir-lhe que descanse um pouco e irá ter um sonho agradável... um sonho real... apenas o tipo de sonho que tem quando está a dormir à noite. Quando eu parar de falar muito em breve, começará a sonhar. Terá um sonho agradável sobre a hipnose. Sonhará com o que a hipnose significa... Agora está a adormecer... mais profundamente e mais profundamente a adormecer, tal como quando adormece de noite... Muito em breve estará profundamente adormecido, sadiamente adormecido. Assim que eu parar de falar começará a sonhar. Quando eu falar outra vez consigo parará de sonhar, e caso ainda estiver a sonhar, escutar-me-á da mesma forma como tem feito até agora. Se parar de sonhar antes de eu falar consigo outra vez, permanecerá agradável e profundamente relaxado... Agora durma e sonhe... profundamente adormecido!

(pausa um minuto.)

O sonho acabou, se teve um sonho pode recordar cada detalhe claramente, muito claramente. Não se sente particularmente ensonado ou diferente da maneira como se sentia antes de eu lhe dizer para adormecer e continua a permanecer profundamente hipnotizado. O que quer que tenha sonhado pode recordar claramente, e eu quero que o reveja na sua mente desde o início de uma forma que poderia dizê-lo a alguém se lhe fosse perguntado

(pausa vinte segundos.)

Muito bem. É tudo por agora relativamente ao sonho.

7. *Imobilização do braço (mão esquerda)*

Agora a sua mão e braço esquerdos deverão estar no seu colo. Está muito relaxado e confortável, com uma sensação de peso em todo o seu corpo. Eu quero que pense no seu braço e mão esquerdos. Preste-lhes muita atenção. Eles sentem-se dormentes e pesados, muito pesados. Tão pesada que a sua mão esquerda está ... à medida que pensa o quão pesada a sua mão esquerda está, ela torna-se mais e mais pesada..... A sua mão está a tornar-se mais pesada... mais pesada e mais pesada... a sua mão está a tornar-se mais pesada, muito pesada, como se estivesse a ser pressionada de encontro ao seu colo. Poderá querer explorar daqui a pouco quão pesada a sua mão está... parece demasiado pesada para se mover... mas apesar de estar assim tão pesada, talvez a consiga mover um pouco; ou talvez ela esteja mesmo demasiado pesada para se mover... porque é que não experimenta ver o quão pesada ela está... tente apenas levantar a sua mão... tente apenas....

(pausa dez segundos.)

Muito bem. Repare como foi mais difícil do que habitualmente levantar a mão devido ao estado de relaxamento em que se encontra. Coloque a sua mão novamente na posição de descanso e relaxe. A sua mão e braço estão normais outra vez. Já não estão pesados. Relaxe apenas, relaxe totalmente.

8. Regressão de Idade

Continue a entrar mais e mais profundamente no estado de hipnose. Eu vou agora dar a cada um de vocês a prancheta com papel e um lápis. Quando eu lhe der a prancheta segure-a no seu colo e levante a mão com que escreve habitualmente para que eu lhe dê um lápis para escrever... Mantenha os seus olhos fechados durante todo este processo.

(dê a cada sujeito a sua prancha e lápis. Recorde que os cadernos de resposta deverão estar virados para baixo para que o sujeito possa escrever no verso da última página)

Tem uma prancheta com papel e um lápis consigo, e agora eu gostaria que escrevesse o seu nome no papel enquanto mantém os seus olhos fechados. Mantenha os seus olhos fechados durante todo este processo. Enquanto escreve o seu nome, porque não escreve também a sua idade e a data de hoje? Muito bem. Mantenha a prancheta e o lápis nas suas mãos e ouça com atenção. Eu gostaria que pensasse numa época agradável em que andava no 5º ano de escolaridade; e dentro de alguns momentos irá ver-se a si próprio outra vez como uma criança pequena, apreciando agradavelmente um dia na escola, sentada na aula no 5º ano, escrevendo ou desenhando confortavelmente no papel... agora vou contar até 5 e quando eu chegar ao 5 vai voltar a um dia agradável no 5º ano... Mas independentemente do que experienciar, continuará a ouvir a minha voz e continuará a fazer o que eu lhe disser para fazer.

Um, está andar para trás no tempo em direcção ao passado. Já não estamos no presente, mas muito antes. Dois, está a tornar-se progressivamente mais e mais novo e mais pequeno... Três, recuará no tempo até um dia agradável no 5º ano e sentirá a experiência exactamente como a sentiu antes, num dia agradável quando estava sentado na aula a escrever ou a desenhá-lo. Quatro, brevemente estará lá... É outra vez uma criança pequena que está a ter um dia agradável na aula do 5º ano. Agora está quase lá... Dentro de alguns momentos estará lá. Cinco! É agora uma criança pequena sentada na sala de aula, sentada feliz na escola.

(pausa trinta segundos.)

Está sentado, feliz, na escola. Tem um bloco com papel e está a segurar um lápis. Eu gostaria que escrevesse o seu nome no bloco com esse lápis... muito bem, e agora por favor escreva também a sua idade... (pausa até que todos tenham escrito)... E agora a data, se conseguir... (pausa até que todos tenham escrito)..... E o dia da semana.

Agora não estará mais no 5º ano mas será ainda mais novo, vai recuar no tempo até à segunda classe, num dia feliz. Eu vou contar até dois e vai recuar até à segunda classe num dia muito feliz. Um, está a ficar ainda mais pequeno e a recuar no tempo até um dia agradável quando andava na 2ª classe, sentado feliz na escola com papel e lápis... dois... está na segunda classe...

(pausa trinta segundos.)

Está sentado na escola, feliz. Por favor escreva o seu nome no papel... muito bem... E agora pode escrever a sua idade?... Agora eu gostaria que escrevesse quem sou eu, ou se não está certo de quem eu sou, escreva quem pensa que eu possa ser...

(pausa trinta segundos.)

Muito bem.... E agora pode crescer outra vez e voltar outra vez ao presente. Já não é mais uma criança pequena mas uma pessoa crescida, sentada numa cadeira,

profundamente hipnotizada.

Muito bem, tudo está como era. Não vai precisar do lápis e da prancheta por algum tempo. Continue a segurar o lápis na sua mão. Vire a prancheta para baixo e pouse-a no seu colo. Pouse apenas a prancheta no seu colo. A sua mão deverá estar pousada na sua posição de descanso, descansando confortavelmente no seu colo. Mantenha apenas os seus olhos fechados e relaxe... profunda e confortavelmente. Muito bem, apenas relaxe completamente.

9. Alucinação musical

Dentro de alguns momentos, irá tocar uma gravação do Jingle Bells. Quando a gravação começar, o volume do som estará muito baixo e provavelmente não poderá ouvir a música, ou ouvi-la-á muito baixo. Depois o som irá aumentar e quero que me diga quando a conseguir ouvir satisfatoriamente levantando sua mão direita. Quando ouvir a música satisfatoriamente, levante sua mão direita. OK? Aqui vamos nós... A gravação do Jingle Bells começou a tocar. Este é o nível um. (espera cinco segundos.) Agora o volume está a ser levantado um bocadinho. Este é o nível dois. Levante a mão no ar se a conseguir ouvir agora. (espera cinco segundos.) E agora mais alto. Este é o nível três (espera cinco segundos.) E agora o volume mais alto de todos. Este é o nível quatro. Levante a sua mão se consegue ouvir a música agora. (espera cinco segundos.) Agora a música foi desligada. Pronto, já não se ouve nenhuma música. Pode voltar a colocar a sua mão na posição de repouso e relaxar. Agora... recoste-se e desfrute o estar a ser hipnotizado.

10. Hallucination Visual Negativo

Relaxe apenas e torne-se ainda mais profundamente hipnotizado à medida que continua a respirar confortavelmente e sem esforço. Enquanto está sentado confortavelmente na sua cadeira com os seus olhos fechados, eu vou colocar um quadro com dois quadrados à sua frente. Eu vou colocar um quadro com dois quadrados coloridos à sua frente de modo que os possa ver claramente. Dentro de uns momentos eu vou-lhe pedir que abra os seus olhos. Verá apenas dois quadrados no quadro à sua frente... apenas dois quadrados...

(colocar o quadro com os quadrados numa configuração triangular.)

OK, agora é o momento de abrir os olhos, e de olhar para a sua frente. Veja os dois quadrados que eu coloquei no quadro. Faça por favor faça uma nota mental da cor dos quadrados que vê. Recorde a cor dos quadrados que vê de modo a que os possa relatar mais tarde. OK, agora feche os seus olhos e continue a relaxar... Gostaria agora que virasse a prancheta com o seu caderno de respostas que está no seu colo e que escrevesse a cor dos quadrados que viu. Escreva apenas a cor dos quadrados... Quando acabar de escrever a cor dos quadrados, erga o lápis no ar até que este seja recolhido com a prancheta... Quando o seu lápis for recolhido pode deixar o seu braço voltar à sua posição de descanso inicial e relaxar completamente.

(recolha os lápis, vire os cadernos de resposta, e coloque cada caderno e lápis no perto dos sujeitos. Remova o quadro com os quadrados e coloque-o fora da vista.)

Ok, fez tudo muito bem. Mantenha os seus olhos fechados e relaxe... profundamente e confortavelmente. Muito bem relaxe apenas completamente.

11. & 12. Sugestão post hipnótica e amnésia

Continue completamente relaxado e preste muita atenção ao que eu lhe vou dizer de seguida. Dentro de uns momentos eu começarei a contar de trás para a frente, de vinte até um. Vai acordar gradualmente, mas durante a maior parte da contagem permanecerá no estado agradável e relaxado em que está agora. Quando eu chegar ao " cinco " abrirá os seus olhos, mas não estará completamente desperto. Quando eu chegar ao " um ", estará

completamente alerta, no seu estado normal de vigília. Provavelmente terá a impressão que dormiu, porque terá dificuldade em lembrar-se de todas as coisas que eu lhe disse o e todas as coisas que fez ou sentiu, desde que começou olhar para o alvo. De facto, irá sentir que lembrar qualquer uma destas coisas é um esforço tão grande que não terá qualquer desejo de o fazer. Será muito mais fácil simplesmente esquecer-se de tudo, até que eu lhe diga que pode lembrar-se. Não se lembrará de nada do que fez ou sentiu desde o momento em que começou olhar a olhar para o alvo, até que eu lhe diga: " agora pode lembrar-se de tudo!" Não se lembrará de nada do que fez até este momento. Depois de abrir os seus olhos sentir-se-á muito bem. Vou agora contar de trás para a frente, de 20, e ao cinco, não antes, vai abrir os seus olhos, mas não estará inteiramente acordado até eu dizer "um". Ao "um" estará perfeitamente desperto... Um pouco mais tarde eu vou-lhe dizer para virar para a página 2 do seu caderno de respostas. Quando virar para a página 2 vai desenhar uma pequena arvore no canto superior direito. Desenhará uma pequena árvore mas esquecerá que eu lhe disse para o fazer, tal como esquecerá as outras coisas até que eu lhe diga "agora pode lembrar-se de tudo". Preparado, 20...19... 18... 17... 16... 15... 14... 13... 12... 11... 10, estamos a meio caminho... 9... 8... 7... 6... cinco... 4... 3... 2... 1. Acorde! Está completamente acordado! Alguma sonolência que puder eventualmente ainda sentir passará rapidamente.

Teste

Vire agora para a página dois de seu caderno de respostas (espera dez segundos.) Por favor escreva resumidamente nas suas próprias palavras, uma lista das coisas que aconteceram desde que começou a fixar o alvo. Não entre em pormenor. Tem três minutos, não mais, para escrever sua resposta. Eu dir-lhe-ei quando o tempo acabar.

(espera três minutos.)

Escute atentamente as minhas palavras. Agora pode lembrar-se de tudo. Por favor vire para a página seguinte do seu caderno de respostas. Nesta página escreva uma lista de quaisquer outras coisas que se lembre agora e das quais não se tenha lembrado anteriormente. Por favor não entre em pormenor. Tem dois minutos, e não mais, nesta secção. Mais uma vez, eu dir-lhe-ei quando o tempo acabar.

(espera dois minutos.)

Agora vire para a página seguinte de seu caderno de respostas. Por favor não volte às páginas anteriores. Encontrará enunciados na página 4 e seguintes, os acontecimentos específicos que lhe foram sugeridos durante a sessão de hipnose. Leia por favor as instruções e responda então às perguntas nas restantes folhas do caderno de respostas. Responda a todas as questões até ao final do caderno e avise-me se surgirem quaisquer dúvidas.

(quando todos os sujeitos terminarem o caderno de respostas, certifique-se de que tem a sua atenção antes de continuar.)

Possivelmente lembrar-se-á que durante a sessão de hoje foi-lhe pedido para levantar a sua mão direita quando ouvisse uma gravação do Jingle Bells. De facto não foi passada qualquer gravação, não se ouviu qualquer música na sala. De igual modo, perto do fim da sessão foi-lhe dito que quando abrisse os seus olhos, veria dois quadrados num quadro. Contudo estavam três quadrados no quadro.

O objectivo destes dois itens não foi enganá-lo. Sabemos a partir de dados da investigação que a percepção das pessoas que são altamente responsivas à hipnose poderá por vezes ser alterada para coincidir com sugestões que não reflectem com acuidade os estímulos apresentados. A nossa intenção relativamente às duas sugestões mencionadas era apenas avaliar o seu grau de responsividade às sugestões que envolvem tais alterações perceptuais.

Caderno de Respostas

(O caderno de respostas deve ser preparado de forma a haver suficiente espaço para os participantes escreverem as suas respostas. Apenas o texto, com indicação de quebra de página é reproduzido aqui)

Por favor preencha a informação seguinte.

Estes dados destinam-se unicamente à equipa de investigação e serão mantidos confidenciais.

Nome: _____

Curso: _____ **Ano:** _____ **Turma:** _____

Idade: _____ **Sexo:** M F

Telefone: _____ **Telemóvel:** _____

E-mail: _____

Código: (o seu código é constituído pelas **duas primeiras letras** do seu primeiro nome seguidas dos **dois últimos dígitos** do seu número de telefone): _____

Caso necessitemos de o contactar novamente, indique qual o meio preferido de contacto, bem como o período do dia em que tem mais disponibilidade:

Telefone Telemóvel E-mail

Manhã (9:30h-13:30h) Tarde (13:30h-18:30h) Noite (18:30h-22:30h)

Obrigado pela sua colaboração

Data: ____ / ____ / ____

Assinatura

Não vire a página sem que o examinador lhe diga para o fazer

(quebra de página)

Por favor escreva nas suas próprias palavras uma lista das coisas que aconteceram desde que começou a olhar para o alvo. Não entre em pormenor. Tem 3 minutos e não mais para escrever a sua resposta.

Por favor não vire a página sem que o examinador lhe diga para o fazer

(quebra de página)

POR FAVOR NÃO VOLTE À PÁGINA ANTERIOR

Nesta página escreva uma lista de quaisquer outras coisas que se lembre agora e das quais não se tenha lembrado anteriormente. Não entre em pormenor. Tem dois minutos e não mais para escrever a sua resposta.

Por favor não vire a página sem que o examinador lhe diga para o fazer

(quebra de página)

POR FAVOR NÃO VOLTE ÀS PAGINAS ANTERIORES

COTAÇÃO DOS ITENS

Encontram-se apresentados de seguida, por ordem cronológica, os 12 acontecimentos específicos que lhe foram sugeridos durante o procedimento hipnótico padronizado. Queremos que avalie se respondeu objectivamente ou não a essas 12 sugestões, isto é, se um observador externo que presenciasse o procedimento hipnótico teria observado se você teve ou não determinado respostas definidas por certos critérios específicos.

É tido em conta que certas estimativas da sua parte poderão em alguns casos não ser tão precisas como gostaria que elas fossem e que talvez tenha mesmo que adivinhar. Contudo, queremos que faça aquela que sentir ser a sua melhor avaliação.

Por debaixo da descrição da maior parte das sugestões estão duas respostas identificadas como A e B. Por favor assinale com um círculo A ou B para cada questão de acordo com o que julgar ser mais fidedigno. Por favor responda a todas as questões. A não resposta a qualquer questão impedirá a cotação global do seu protocolo levando à sua desqualificação.

1. BAIXAR A MÃO (MÃO DIREITA)

Foi-lhe dito de seguida para estender o seu braço direito à sua frente e senti-lo a tornar-se pesado como se estivesse um peso a puxar o braço e a mão para baixo. Diria que um observador externo teria observado a sua mão a baixar pelo menos 15 cm (antes de lhe ter sido dito para baixar a sua mão deliberadamente) ?

Assinale com um círculo uma das alternativas seguintes (A ou B):

- A. Nessa altura, a minha mão tinha baixado 15 cm ou mais
- B. Nessa altura, a minha mão tinha baixado menos de 15 cm

A minha mão não	1	2	3	4	5	A minha mão sentiu-se
pesada se sentiu pesada						e baixou sozinha

2. APROXIMAÇÃO DAS MÃOS

De seguida foi-lhe dito para pôr as mãos à sua frente com as palmas das mãos viradas uma para a outra, distantes aproximadamente 20 cm e para imaginar que havia uma força que as puxava uma de encontro à outra. Diria que um observador externo teria visto que as suas mãos estavam a menos de 15 cm de distância uma da outra (antes de lhe ser sugerido para colocar as mãos na posição de descanso)?

Assinale com um círculo uma das alternativas seguintes (A ou B):

A. As minhas mãos estavam a menos de 15 cm de distância uma da outra

B. As minhas mãos estavam a mais de 15 cm de distância uma da outra

Não senti nada a puxar 1 2 3 4 5 Senti uma força intensa
as minhas mãos uma a puxar as minhas mãos
contra a outra uma contra a outra

3. EXPERIÊNCIA DO MOSQUITO

Foi-lhe dito em seguida para se aperceber de um zumbido de um mosquito que lhe foi referido como estando a tornar-se incomodativo e então foi-lhe dito para o afastar. Diria que um observador externo o teria visto a fazer alguma careta, algum movimento ou algo que indicasse o reconhecimento desse efeito (independentemente da sua experiência subjectiva)

Assinale com um círculo uma das alternativas seguintes (A ou B):

A. Fiz algo que indicou reconhecimento desse efeito

B. Não fiz nada que indicasse o reconhecimento desse efeito

Não ouvi ou senti 1 2 3 4 5 Ouvi e senti um mosquito
um mosquito muito vividamente como se
estivesse realmente lá

4. EXPERIÊNCIA GUSTATIVA

A seguir foi-lhe dito que teria um sabor doce na sua boca e seguidamente foi-lhe dito que teria um sabor amargo na sua boca.

Quão forte foi o sabor doce na sua boca?

Assinale uma alternativa : nada vago fraco forte

Fez alguns movimentos faciais tais como movimentos labiais ou caretas que um observador externo poderia ter visto?

Assinale uma alternativa: SIM NÃO

Quão forte era o sabor amargo na sua boca?

Assinale uma alternativa: nada vago fraco forte

Fez alguns movimentos faciais tais como movimentos labiais ou caretas que um observador externo poderia ter visto?

Assinale uma alternativa: SIM NÃO

Não experienciei nenhum sabor	1	2	3	4	5	Saboreei o doce e o amargo como se tivesse realmente coisas doces e amargas na boca
----------------------------------	---	---	---	---	---	---

5. RIGIDEZ DO BRAÇO (DIREITO)

A seguir foi-lhe dito para estender o braço direito à sua frente e aperceber-se que ele estava a tornar-se mais rígido e então foi-lhe pedido que tentasse dobrá-lo. Diria que um observador externo teria visto que havia menos de 5 cm de braço dobrado (antes de lhe ser dito para parar de tentar)?

Assinale com um círculo uma das alternativas seguintes (A ou B):

A. Nessa altura, o meu braço estava dobrado menos de 5 cm

B. Nessa altura, o meu braço estava dobrado pelo 5 cm ou mais

O meu braço não se sentiu rígido	1	2	3	4	5	O meu braço sentiu-se tão rígido que não o consegui dobrar
-------------------------------------	---	---	---	---	---	---

6. SONHO

Seguidamente foi-lhe dito para ter um sonho. No espaço que se segue descreva o seu sonho em pormenor.

Na sua opinião qual das seguintes categorias descreve melhor a sua experiência?

Assinale uma alternativa:

- A. Não me passou nada pela cabeça.
- B. Pensamentos passageiros, sem imagens de tipo sonho
- C. Imagens passageiras, vagas, tipo sonho, jogos de cores, etc.
- D. Imagens tipo sonho, mas sem uma temática clara ou uma sequência de acontecimentos
- E. Imagens tipo sonho com sequência de acontecimentos
- F. Outro (descrever)

Não tive um sonho. 1 2 3 4 5 Tive um sonho que se parecia exactamente com os sonhos.

7. IMOBILIZAÇÃO DO BRAÇO (BRAÇO ESQUERDO)

Em seguida foi-lhe dito que a sua mão e o seu braço esquerdos sentiam-se muito pesados e para tentar levantar a sua mão. Diria que um observador externo teria visto que não levantou a sua mão e o seu braço pelo menos 2,5cm (antes de lhe ser dito para parar de tentar)?

Assinale com um círculo uma das alternativas seguintes (A ou B):

A. Nessa altura, eu não levantei a minha mão e o meu braço 2,5cm

B. Nessa altura, eu levantei a minha mão e o meu braço mais de 2,5cm

Pude levantar o meu braço facilmente. 1 2 3 4 5 O meu braço sentia-se demasiado pesado para o levantar.

8. REGRESSÃO DE IDADE

Seguidamente foi-lhe pedido para voltar à sua sala de aula do seu 5º ano e da 2ª classe.

Não me senti realmente mais novo que a minha idade actual 1 2 3 4 5 Foi como se eu realmente estivesse no 5º ano e na 2ª classe outra vez

9. ALUCINAÇÃO MUSICAL

A seguir foi-lhe pedido para que levantasse a mão direita assim que pudesse ouvir satisfatoriamente uma gravação do Jingle Bells.

Assinale com um círculo uma das alternativas seguintes (A ou B):

A. Levantei a minha mão direita

B. Não levantei a minha mão direita

Não ouvi nada 1 2 3 4 5 Ouvi nitidamente o "Jingle Bells" a ser tocado alto

10. ALUCINAÇÃO VISUAL NEGATIVA

A seguir foi-lhe pedido que abrisse os olhos e visse dois quadrados que tinham sido colocados num quadro à sua frente.

Vi os três quadrados claramente. 1 2 3 4 5 Vi apenas dois quadrados.

11. ESCRITA AUTOMÁTICA POST HIPNOTICA

Seguidamente foi-lhe dada a sugestão para desenhar uma árvore na página 2, mas para esquecer que tal lhe tinha sido dito.

Fui eu que decidi se desenhava ou não a árvore	1	2	3	4	5	Fiquei surpreendido por dar comigo a desenhar a árvore
--	---	---	---	---	---	--

12. AMNESIA

Em seguida foi-lhe dito que para não se lembrar de nenhuma das sugestões até que lhe fosse dito, “Agora pode lembrar-se de tudo”. Qual foi a sua experiência quando lhe foi perguntado pela primeira vez para escrever tudo que se tinha passado (antes de lhe ser dito que se podia lembrar)?

Lembrei-me de tudo facilmente.	1	2	3	4	5	Foi impossível lembrar-me do que quer que fosse
--------------------------------	---	---	---	---	---	---

COTAÇÃO

Item	Critérios de cotação
1. Baixar o braço	Assinalar "A" indica que a mão baixou pelo menos 15 cm em 10 segundos
2. Aproximar as mãos	Assinalar "A" indica que as mãos estavam afastadas menos de 15 cm após 10 segundos.
3. Alucinação do mosquito	Assinalar "A" indica um reconhecimento do efeito
4. Alucinação gustativa	Assinalar pelo menos "vago" em ambos (doce e amargo) os sabores e assinalar "sim" para indicar movimento facial pelo menos uma vez; OU assinalar pelo menos "vago" num sabor e “forte” no outro sabor
5. Rigidez do braço	Assinalar "A" indica que o braço dobrou menos de 5cm em 10 segundos
6. Sonho	Assinalar "D" ou "E" indica clara imagieria de tipo onírico; OU assinalar "F" e oferecer descrição avaliada como "D" ou "E"
7. Imobilização do braço	Assinalar "A" indica que o braço levantou menos de 2,5 cm em 10 segundos.
8. Regressão de idade	Mostra clara mudança na letra entre o presente e uma idade do passado
9. Alucinação musical	Assinalar "A" indica que a mão direita foi erguida em resposta a ouvir a musica.

10. Alucinação visual negativa	Registou a cor exacta de dois quadrados na momento da sugestão
11. Sugestão pós hipnótica	Desenha a árvore na página 2 do caderno de respostas
12. Amnésia pós hipnótica	Recorda 3 or menos items antes da sugestão ser removida (Pagina 2 do caderno de respostas) e recorda 3 ou mais novos items após a sugestão ser removida (Pagina 3 do caderno de respostas)

Appendix D

Hypnotic Induction

(English and Portuguese)

HYPNOTIC INDUCTION

Please make yourself comfortable. Close your eyes and let yourself relax. Take a few slow deep breaths, and notice that as you exhale, you can feel yourself becoming more and more relaxed. You can continue to relax, as I speak to you...and each time you exhale, you can feel yourself becoming more and more relaxed...more and more relaxed. But no matter how relaxed you become, you will hear my voice, and you will be able to respond to my suggestions. If you become at all uncomfortable, you can readjust your body and make yourself comfortable again, and that won't get in the way of your experience of hypnosis. If you need to speak to me, you will be able to do so easily, without disrupting your hypnotic experience.

Right now, you might want to relax even more, and as you relax, you may feel a slight tingling feeling and your fingers...or in your toes...and if you do, it can comfort you, because you will know that is a feeling of relaxation that some people have as they begin to experience hypnosis. Let your body relax. Just begin to feel a spreading sense of calm...and peace...letting go all of your cares and concerns... let them drift away, like clouds in the wind...dissipating...breaking up...just relaxing more and more...feeling more and more at peace, more calm... more comfortable and secure...nothing to bother you... nothing to disturb...more and more deeply relaxed, as you enter I a pleasant comfortable state of hypnosis...becoming so deeply involved in hypnosis that you can have all the experiences you want to have...deep enough to experience whatever you want to experience...but only the experiences you want...just your own experiences.

And you can focus your attention on your toes...your right toe...and your left toe. Let your right toe relax...relax completely...and your left toe...letting your toes relax...more and more...more and more relaxed. And let the relaxation spread from your toes into your feet, and let your feet relax. Let them become more and more relaxed...as you can feel so calm and at ease. And now pay attention to your ankles and to your calves... I wonder if you can begin to let go...let go and relax as you feel perhaps a comfortable sense of warmth in your ankles or in your calves...or perhaps it is a cool and easy feeling...in your right leg or in your left leg. Just let your legs relax...more and more relaxed...more and more completely relaxed.

And the relaxation can spread into your thighs...your thighs can relax more and more...just letting go. And you can let your pelvis relax. Just let it go loose and limp... loose and limp...relaxing more and more. Relax your stomach. Let your stomach become completely relaxed. Notice how it feels, can you let it feel completely relaxed...can you notice this now or a bit later? And let the relaxation spread upward into your chest. Let all the nerves and muscles in your chest relax completely...relaxed...loose and limp...feel the peace spreading as you feel so at ease...so secure...your body and mind so relaxed and at peace. And now your back can relax, and your shoulders. Let your self feel the relaxation in your back and your shoulders...more and more relaxed...loose and limp...completely relaxed.

Let the relaxation spread through your arms, down into your hands and your fingers. Relax more and more...focus on the feelings in your arms and hands. Do your fingers feel heavier than light, or more light than heavier? Focuses in your right upper arm...right lower arm...your right hand... and fingers...relaxing completely, so relaxed...completely relaxed. And now your left arm...relaxing completely, so relaxed...completely relaxed. I wonder if you can go even deeper now. Deeper and deeper...just as you wish...just as comfortable and as deep as you would like to go.

You might like to imagine being somewhere peaceful and relaxing. I like to imagine lying on a quiet beach on a warm sunny day, with a beautiful blue sky and just a few billowy clouds floating by...I can imagine a feeling of a soft gentle breeze...smelling the salt sea air... but you can imagine being anywhere you like. It might be someplace you've been...or someplace you'd like to be. Or just a place in your imagination. It doesn't matter...all that matters is your comfort...your peace. Wherever it is, it is so peaceful and calm...someplace where you can just be you...where you can feel completely at ease and content. And you can imagine yourself actually being there...seeing, in your mind's eye, the things that you would see if you were actually there now...feeling the things you would feel...hearing the sounds that you would hear...smelling the smells.

And while you are in your perfect place, I am going to count from one to ten. And with each counted you can drift more and more deeply into hypnosis...more and more...able to experience whatever you want to experience. One...drift, drift and deeper...two...more and more centered, and balanced...three...four...deeper and deeper...five ...six...seven...even deeper than before...so deep that you can experience whatever you wish to experience...eight...nine...ten...very deep now...very deep...completely at one with your self...completely engrossed.”

From Kirsch, I., Lynn, S.J., & Rhue, J.W. (1993). Introduction to clinical hypnosis. In J.W.Rhue, S.J. Lynn, & Kirsch (Eds), *Handbook of clinical hypnosis* (pp.12-14). Washington, D. C.: American Psychological Association.

INDUÇÃO HIPNOTICA

Por favor coloque-se numa posição confortável. Feche os seus olhos e permita-se relaxar. Faça algumas respirações lentas e profundas e repare que à medida que expira, você pode sentir que fica mais e mais relaxado. Você pode continuar a relaxar, enquanto eu falo consigo... e de cada vez que expirar, pode sentir que fica mais e mais e mais relaxado... mais e mais relaxado. Mas independentemente do grau de relaxamento que atingir, vai continuar a ouvir a minha voz, e poderá responder às minhas sugestões. Se ficar desconfortável, poderá reajustar o seu corpo para ficar confortável outra vez e isso não interferirá na sua experiência de hipnose. Se necessitar falar, poderá fazê-lo facilmente, sem perturbar a sua experiência hipnótica.

Agora, poderá querer relaxar mesmo mais, e à medida que relaxa, poderá sentir uma ligeira impressão nos seus dedos... ou nos seus dedos do pé... e se sentir isso, isso dar-lhe-á conforto, porque saberá que essa é uma sensação de relaxamento que algumas pessoas têm quando começam a experimentar a hipnose. Deixe o seu corpo relaxar. Comece apenas a sentir uma sensação de calma espalhando-se ...de paz... deixando para trás todos as suas preocupações... deixe-as vaguear para longe, como nuvens dissipando-se ao vento..... desfazendo-se... relaxando apenas mais e mais... sentindo-se mais e mais em paz, mais calmo.... Mais confortável e seguro... nada que o incomode... nada que o perturbe... mais e mais profundamente relaxado... como se entrasse num confortável estado de hipnose, ficando tão profundamente envolvido na hipnose que poderá ter todas as experiências que quiser ter... tão profundamente que poderá experimentar todas as experiências que desejar... apenas as suas experiências

E agora pode concentrar a sua atenção nos seus dedos do pé... nos seus dedos do pé direito... e nos seus dedos do pé esquerdo. Deixe os seus dedos do pé direito relaxar... relaxar completamente... e os seus dedos do pé esquerdo... deixe os seus dedos do pé relaxar... mais e mais... mais e mais relaxados. E deixe o relaxamento espalhar-se dos seus dedos para os seus pés, e deixe os seus pés relaxar... deixe-os tornarem-se mais e mais relaxados... à medida que se sente tão calmo e à vontade.... E agora preste atenção aos seus tornozelos e às barrigas das pernas... será que poderá começar a deixar-se ir... deixar-se ir e relaxar à medida que sente talvez uma confortável sensação de calor nos seu tornozelos ou nas suas barrigas das pernas... ou talvez seja uma sensação de frescura e à vontade... na sua perna direita ou na sua perna esquerda. Deixe apenas as suas pernas relaxar... mais e mais relaxadas... mais e mais completamente relaxadas.

E o relaxamento pode espalhar-se até às suas ancas... as suas ancas podem relaxar mais e mais... apenas deixando que isso aconteça. E pode deixar o seu pélvis relaxar. Apenas deixe que ele fique solto e suave, solto e suave... soltos e suave...relaxando mais e mais. Relaxe o seu estômago, deixe o seu estômago tornar-se completamente relaxado. Repare como ele se sente, pode permitir que ele se torne completamente relaxado... poderá reparar nisto agora ou um pouco mais tarde? E deixe a sensação de relaxamento espalhar-se para cima para o seu peito. Deixe que todos os nervos e músculos do seu peito relaxem completamente... relaxados... soltos e suaves... sinta a paz espalhando-se à medida que se sente tão à vontade... tão seguro... o seu corpo e a sua mente tão relaxados e em paz. Agora as suas costas podem relaxar, e os seus ombros. Permita-se sentir o relaxamento nas suas costas e nos seus ombros... mais e mais relaxado... solto e suave... completamente relaxado.

Deixe que a sensação de relaxamento se espalhe pelos seus braços para baixo até às suas mãos e dedos. Relaxe mais e mais... concentre-se nas sensações dos seus braços e mãos. Os seus dedos estão mais pesados do que leves, ou mais leves do que pesados? Concentre-se na parte superior do seu braço direito... parte inferior do seu braço direito..... sua mão direita... e

dedos... relaxando completamente, tão relaxados... completamente relaxados. E agora o seu braço esquerdo... relaxando completamente, tão relaxado... completamente relaxado. Será que você pode mergulhar ainda mais profundamente agora? Mais profundo e mais profundo... apenas como você deseja... apenas tão confortável e tão profundamente como você gostaria de ir

Você poderá gostar de imaginar estar em algum lugar calmo e relaxar. Eu gosto de imaginar que estou numa praia sossegada num dia de sol morno, com um céu azul bonito e apenas algumas nuvens que flutuam no céu... eu posso imaginar uma sensação de uma brisa delicada e suave... um cheiro no ar de mar salgado... mas você pode imaginar que está em qualquer lugar você goste. Pôde ser nalgum local onde já foi... ou aonde gostava de ir. ou apenas um lugar na sua imaginação. Não importa... a única coisa que importa é o seu conforto... a sua paz. Onde quer que esse local seja... é tão calmo e cheio de paz... um local onde você pode apenas ser você ...onde você pode sentir-se completamente à vontade e satisfeito. E pode imaginar-se realmente lá... vendo com os olhos da sua mente, as coisas que veria se realmente estivesse lá agora... sentindo as coisas que sentiria... escutando os sons que ouviria... cheirando os cheiros...

E enquanto está no seu lugar perfeito, eu vou contar de um até dez. E em cada numero você vai mergulhar mais profundamente na hipnose... mais e mais... sendo capaz de experimentar o que quer que queira experimentar. **Um...** mergulhando, mergulhando mais e mais profundo... **dois** mais e mais centrado, e equilibrado... **três...** **quatro...** mais e mais profundo e... **cinco...** **seis...** **sete...** mais profundo do que antes... tão profundo que pode experimentar o que quer que deseje experimentar... **oito...** **nove...** **dez.....** muito profundo... agora muito profundo...completamente em união consigo mesmo...completamente absorvido

In Kirsch, I., Lynn, S.J., & Rhue, J.W. (1993). Introdução to clinical hypnosis. In J.W.Rhue, S.J. Lynn, & Kirsch (Eds.), *Handbook of clinical hypnosis* (pp.12-14). Washington, D. C.: American Psychological Association.

Appendix E

Valencia Scale of Attitudes and beliefs toward Hypnosis (VSABH-C)

(Portuguese version)

E.V.C.A.H.C. (Capafons et al., 2003)

Seguidamente encontrará algumas questões que nos ajudarão a conhecer a sua **opinião sobre a hipnose**. Não importa se passou ou não pela experiência acerca da qual é questionado, apenas **indique o que pensa que poderia ocorrer em tais situações**. Por favor indique o seu grau de concordância ou discordância relativamente às afirmações que lhe são apresentadas em baixo, **assinando o número que melhor reflecte a sua opinião** de acordo com a seguinte escala:

- 1. Completamente em desacordo**
- 2. Bastante em desacordo**
- 3. Em desacordo**
- 4. De acordo**
- 5. Bastante de acordo**
- 6. Completamente de acordo**

**NÃO EXISTEM RESPOSTAS CERTAS NEM ERRADAS
TRATA-SE UNICAMENTE DE CONHECER A SUA OPINIÃO**

1. A hipnose pode ser uma grande ajuda para os outros..... 1 2 3 4 5 6
2. A hipnose implica um esforço de cooperação entre o hipnotizador e o cliente...
1 2 3 4 5 6
3. É necessário estar em transe hipnótico para atingir as metas da intervenção.....
1 2 3 4 5 6
4. A hipnose mete-me medo..... 1 2 3 4 5 6
5. Sob hipnose conseguem-se coisas sem nenhum esforço por parte
da pessoa..... 1 2 3 4 5 6
6. A hipnose pode ser uma solução mágica para os problemas da pessoa
hipnotizada 1 2 3 4 5 6
7. Acredito que sob hipnose a pessoa é um autómato à mercê do hipnotizador....
1 2 3 4 5 6
8. A hipnose requer esforço por parte da pessoa hipnotizada..... 1 2 3 4 5 6
9. A hipnose é tudo o que se necessitaria para tratar da maioria dos problemas....
1 2 3 4 5 6
10. A hipnose pode ser um complemento de grande ajuda para melhorar os efeitos dos
tratamentos 1 2 3 4 5 6
11. A pessoa hipnotizada é passiva..... 1 2 3 4 5 6
12. A hipnose é um complemento ou ferramenta para ajudar nas terapias
psicológicas..... 1 2 3 4 5 6

13. Para hipnotizar alguém é necessária a sua colaboração..... 1 2 3 4 5 6
14. A pessoa hipnotizada pode “sair” da hipnose quando o desejar..... 1 2 3 4 5 6
15. Quando a pessoa está sob hipnose conserva a sua vontade para fazer
o que quiser..... 1 2 3 4 5 6
16. A hipnose é uma técnica segura, com poucos riscos..... 1 2 3 4 5 6
17. A hipnose fomenta a capacidade de auto-controlo..... 1 2 3 4 5 6
18. Tenho medo de ficar “preso” num transe hipnótico..... 1 2 3 4 5 6
19. Acredito que sob hipnose se pode chegar a perder o controlo sobre si mesmo
1 2 3 4 5 6
20. Acredito que a hipnose pode revelar-se perigosa..... 1 2 3 4 5 6
21. Tudo o que acontece sob hipnose é provocado pela pessoa hipnotizada.....
1 2 3 4 5 6
22. Uma vez sob hipnose pode-se obrigar a pessoa a fazer coisas que não deseje.....
1 2 3 4 5 6
23. A hipnose é um facilitador dos resultados terapêuticos..... 1 2 3 4 5 6
24. Se a pessoa é contra uma sugestão pode ignorá-la completamente..... 1 2 3 4 5 6
25. A pessoa hipnotizada mantém o controlo sobre si mesma.....1 2 3 4 5 6
26. Gostaria de ser hipnotizado(a)..... 1 2 3 4 5 6
27. Deixar-me-ia hipnotizar se surgisse a oportunidade..... 1 2 3 4 5 6
28. Gostaria de ser muito hipnotizável..... 1 2 3 4 5 6
29. Aprende-se mais depressa sob hipnose..... 1 2 3 4 5 6
30. O que se recorda sob hipnose é a verdade..... 1 2 3 4 5 6
31. É impossível mentir sob hipnose, ainda que a pessoa hipnotizada o deseje..
1 2 3 4 5 6
32. Uma forma de confirmar que um sucesso ocorreu é que a pessoa o recorde
sob hipnose..... 1 2 3 4 5 6
33. A hipnose é um estado de transe.....1 2 3 4 5 6
34. A hipnose desenvolve-se à margem da investigação científica..... 1 2 3 4 5 6
35. Na generalidade, algumas das características fundamentais das pessoas muito
sugestionáveis seriam: credulidade, ignorância e dependência psicológica.....
1 2 3 4 5 6
36. A pessoa hipnotizada encontra-se dissociada..... 1 2 3 4 5 6
37. A hipnose é um complemento ou uma ferramenta para ajudar nas terapias
médicas..... 1 2 3 4 5 6