

## International Journal of Clinical and Experimental Hypnosis

Publication details, including instructions for authors and subscription information:

<http://www.tandfonline.com/loi/nhyp20>

### Portuguese Norms for the Waterloo-Stanford Group C (WSGC) Scale of Hypnotic Susceptibility

Claudia Carvalho<sup>a</sup>, Irving Kirsch<sup>b</sup>, Giuliana Mazzoni<sup>b</sup> & Isabel Leal<sup>a</sup>

<sup>a</sup> Higher Institute of Applied Psychology, Lisbon, Portugal

<sup>b</sup> University of Hull, United Kingdom

Published online: 27 Oct 2010.

To cite this article: Claudia Carvalho, Irving Kirsch, Giuliana Mazzoni & Isabel Leal (2008) Portuguese Norms for the Waterloo-Stanford Group C (WSGC) Scale of Hypnotic Susceptibility, *International Journal of Clinical and Experimental Hypnosis*, 56:3, 295-305, DOI: [10.1080/00207140802041850](https://doi.org/10.1080/00207140802041850)

To link to this article: <http://dx.doi.org/10.1080/00207140802041850>

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## PORTUGUESE NORMS FOR THE WATERLOO-STANFORD GROUP C (WSGC) SCALE OF HYPNOTIC SUSCEPTIBILITY

CLAUDIA CARVALHO<sup>1,2,3</sup>

*Higher Institute of Applied Psychology, Lisbon, Portugal*

IRVING KIRSCH AND GIULIANA MAZZONI

*University of Hull, United Kingdom*

ISABEL LEAL

*Higher Institute of Applied Psychology, Lisbon, Portugal*

**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 normative 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.

Initial screening of participants' hypnotic suggestibility as a part of hypnosis research has become routine. Among the instruments used to

Manuscript submitted November 27, 2006; final revision accepted March 19, 2007.

<sup>1</sup>Funded by Fundação para a Ciência e Tecnologia (Foundation for Science and Technology), Portuguese Office for Science, Technology and Superior Education, Grant #SFRH/BD/13028/2003.

<sup>2</sup>The authors would like to thank SHU undergrad student Kara Kaminsky and ISPA graduate student Filipa Pimenta for their assistance on data collection. We are also grateful to the head of Seton Hall University's undergraduate psychology department, Professor Jeff Levy as well as Instituto Superior de Psicologia Aplicada's director Professor Frederico Pereira, for permitting data collection and the colleagues from Instituto Superior de Psicologia Aplicada, Cristina Quelhas, Ph.D., Marta Guerreiro, M.S., Olívia Ribeiro, M.S., Csongor Juhos, M.S., Miguel Tecedeiro, M.S., Susana Algarvio, M.S., José Abreu Afonso, M.S., Rui Bártolo, M.S., Maria João Gouveia, M.S., Pedro Almeida, M.S., Ana Ramirez, M.S. and from the Instituto Superior Técnico, Beatriz Condessa, Ph.D. and Isabel Ramos, M.S. All of them allowed direct access to their students making possible this study.

<sup>3</sup>Address correspondence to Claudia Carvalho, Instituto Superior de Psicologia Aplicada, Rua Jardim do Tabaco, 34, 1149-041, Lisbon, Portugal. E-mail: claudia.carvalho@ispa.pt

assess hypnotic suggestibility, the Stanford Hypnotic Susceptibility Scale, Form C (SHSS:C; Weitzenhoffer & Hilgard, 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, de Valle-Inclán, & Diaz, 1996), Italy (De Pascalis, Bellusci, & Russo, 2000), Germany (Bongartz, 1985), Netherlands (Näring, Roelofs, & Hoogduin, 2001), and Mexico (Sánchez-Armáss & Barabasz, 2005). However, the SHSS:C is an individually administered scale that takes more than an 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 12 hypnotic suggestions are presented via audiotape. Participants then rate their responses by indicating whether or not they responded behaviorally to the 12 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 (Shor & Orne, 1962) ( $r = .77$ ).

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 artifactual 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 1 year earlier at a North American university by the same experimenter, following the same protocol for administration and score rating. Data are 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 comprised 625 participants (479 female) ranging in age from 17 to 49 years ( $M = 21.97$ ,  $SD = 4.32$ ). In this sample, 90% were under 26 years of age; 84% were college students in the undergraduate psychology course at the Higher Institute of Applied Psychology (ISPA). The remaining participants were undergraduate students enrolled in courses on 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. 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  $20 \times 20$  cm colored squares on a  $60 \times 90$  cm 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 possible responses. 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 audiotape. 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 comprised 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 SHU. The procedure was identical to that described above for the Portuguese sample.

## RESULTS

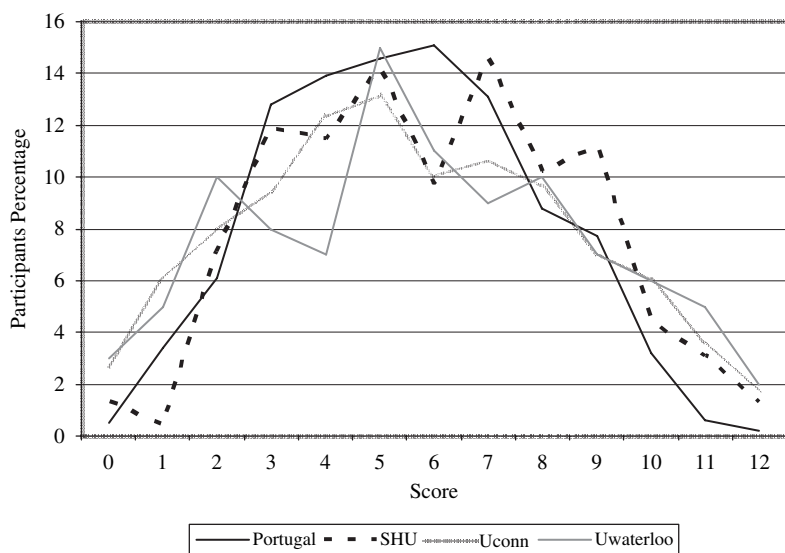
### *Score Distribution*

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). 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.

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 in the high range (9–12) of hypnotic suggestibility than in the North American (SHU) sample ( $z = 2.69$ ,  $p < .01$ ).

Table 1  
*Sample Size, Mean, and Standard Deviation for the Portuguese, North American, and two Reference Samples*

	<i>N</i>	Mean	<i>SD</i>
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



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

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 samples,  $r_s = .94$ ,  $p < .001$ ,

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	20	3.4	10	4.4	56	6.0	16	6
9	48	7.7	23	11.2	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



Table 3

*Item Difficulty for the Portuguese, North American, and Reference Samples (Percentage Passing)*

Items <sup>a</sup>	Portugal (N = 625)	U.S. (SHU) (N = 226)	U. of Connecticut (N = 926)	U. 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 <sup>b</sup>	19	32	30	25

<sup>a</sup>Items are listed by order of administration.

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

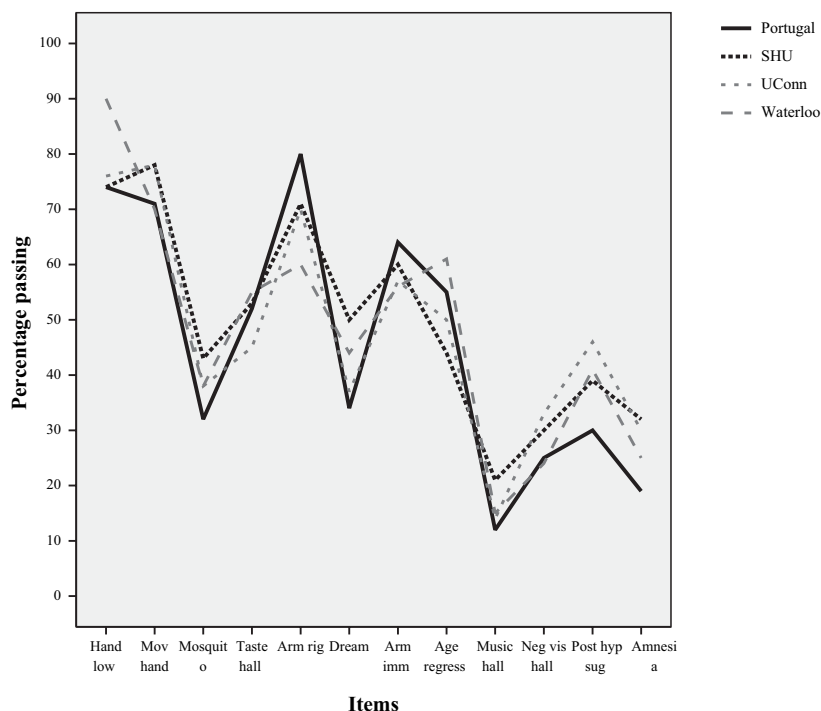
UConn samples,  $r_s = .92$ ,  $p < .001$ , and UWaterloo samples,  $r_s = .93$ ,  $p < .001$ , indicating that the relative difficulty of suggestions are comparable across the Portuguese, North American, and reference samples.

### 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).

## DISCUSSION

In general, the data reported here indicate that the Portuguese sample behaves in a very similar way to the reference samples on the WSGC. Distribution shapes and item-difficulty patterns are similar in Portuguese and



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

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 artifact 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

Table 4

*Item-Total Correlations for the Portuguese, North American, and Reference Samples*

Items <sup>a</sup>	Corrected item-total correlation <sup>b</sup>			
	Portugal	SHU	UConn	UWaterloo <sup>c</sup>
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 <sup>d</sup>	.25	.36	.41	.49

<sup>a</sup>Items are listed by order of administration.

<sup>b</sup>Calculated correlating each item with the entire scale minus the item.

<sup>c</sup>Coefficients for the Waterloo sample are biserial  $r$ 's, whereas those for the other samples are point biserial  $r$ 's.

<sup>d</sup>Amnesia criterion used is the one proposed by Bowers (1998) of remembering three or less items before cancellation of suggestion and three or more items after cancellation of suggestion.

lab artifact 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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### Portugiesische Normen der Waterloo-Stanford Group C (WSGC) Scale of Hypnotic Susceptibility

Claudia Carvalho, Irving Kirsch, Giuliana Mazzoni und Isabel Leal

**Zusammenfassung:** In diesem Artikel werden portugiesische Normen für die Waterloo-Stanford Group C (WSGC) scale of hypnotic susceptibility berichtet. Eine portugiesische Übersetzung der Skala wurde 625 portugiesischen Studenten vorgelegt. Die Verteilung der Werte, eine Itemanalyse und die Reliabilität der WSGC werden dargestellt und mit drei nordamerikanischen Stichproben verglichen. Die Befunde zeigen dass die normativen Daten aus der portugiesischen Stichprobe mit den Referenzstichproben übereinstimmen. Der einzige signifikante Unterschied bestand in einem geringeren Anteil von Teilnehmern im oberen Bereich der hypnotischen Suggestibilität (WSGC).

RALF SCHMAELZLE

University of Konstanz, Konstanz, Germany,

### Normes portugaises de l'échelle de susceptibilité hypnotique de Waterloo-Stanford, groupe C (WSG : C)

Claudia Carvalho, Irving Kirsch, Giuliana Mazzoni et Isabel Leal

**Résumé:** Cet article porte sur les normes portugaises de l'échelle de susceptibilité hypnotique de Waterloo-Stanford, groupe C (WSG : C). Une traduction portugaise de cette échelle a été administrée à 625 étudiants universitaires portugais. La distribution des résultats, l'analyse des items et la fiabilité du WSG : C y sont présentées et comparées avec celles de trois échantillons nord-américains. Les résultats montrent que les données normatives de l'échantillon portugais sont en accord avec les échantillons de

référence. La seule différence significative était la proportion plus faible de participants ayant obtenu des résultats élevés de suggestibilité hypnotique à l'échelle WSG : C.

JOHANNE REYNAULT  
*C. Tr. (STIBC)*

**Las normas portuguesas para la Escala Grupal de Susceptibilidad Hipnótica  
Waterloo-Stanford C (WSGC)**

**Claudia Carvalho, Irving Kirsch, Giuliana Mazzoni, y Isabel Leal**

**Resumen:** Presentamos las normas portuguesas para la Escala Grupal de Susceptibilidad Hipnótica Waterloo-Stanford C (WSGC). Administramos una traducción portuguesa de esta escala a 625 estudiantes universitarios portugueses. Analizamos distribución de puntuaciones, análisis de reactivos, y confiabilidad de la WSGC y los comparamos con 3 muestras estadounidenses. Los resultados muestran que los datos normativos de la muestra portuguesa son consistentes con las muestras de referencia. La única diferencia significativa fue una proporción inferior de participantes con puntuaciones altas de sugestionabilidad en el WSGC.

ETZEL CARDEÑA  
*Lund University, Lund, Sweden*