



## A reduced Temperament and Character Inventory (TCI-56). Psychometric properties in a non-clinical sample

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### ARTICLE INFO

#### Article history:

Received 22 April 2008

Received in revised form 13 January 2009

Accepted 14 January 2009

Available online 15 February 2009

#### Keywords:

Personality  
Temperament  
Character  
Cloninger  
TCI-R  
Gender

### ABSTRACT

The aim of this study is to present a short version with 56 items (TCI-56), based on the Temperament and Character Inventory revised version (TCI-R). The psychometric properties of the TCI-56 were studied in a sample of 822 university students (526 women). The factorial structure of the inventory was explored using parallel analysis with normalized promax rotation, considering jointly the items of the Temperament dimensions (HA: Harm avoidance, NS: novelty seeking, RD: Reward dependence and PS: Persistence) and the Character dimensions (SD: Self-directedness, C: Cooperativeness and ST: Self-transcendence). The reliability coefficients were adequate, ranging from .69 for NS to .85 for ST, and the factorial matrices showed a dimensional clustering with satisfactory item saturation in the total sample and both genders. Women presented higher values for HA, RD, PS, SD and C, while men had higher values for NS. The TCI-56 could be a useful instrument to assess Cloninger's model of the 7 dimensions of personality in non-clinical samples, whenever there is an interest to reduce the time needed to respond. Further studies, however, should explore its adequacy in clinical samples, its test-retest reliability, and the convergent or discriminant validity with other measures of personality.

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### 1. Introduction

Cloninger has developed a model which understands personality as the interaction between Temperament and Character (Cloninger, 1987, 1999a; Cloninger, Svrakic, & Przybeck, 1993). This model tries to integrate the biological basis of personality with the development produced by experience and socio-cultural learning. Temperament is considered as a biological predisposition which remains stable throughout development, mostly inherited, and which is not modified by learning processes. Character is a set of characteristics that gets structured during development through learnt socio-cultural mechanisms resulting from experience, introspective learning or the reorganisation of self-concepts. Cloninger's model is also known as the 7 factor model because it considers four dimensions of Temperament and three of Character.

The four dimensions of Temperament are: Harm avoidance (HA), which reflects the activity of the system of behavioural inhibition or punishment, Novelty seeking (NS), related with the system of behavioural activation or reward, Reward dependence (RD), related to social reinforcement and sensitivity to social stimuli, and Persistence (PS), which implies the tendency to maintain

behaviour in extinction conditions. The three dimensions of Character are: Self-directedness (SD), the capacity to regulate behaviour in order to adjust it to one's principles, goals and personal beliefs, Cooperativeness (C), which involves the subject's prosocial behaviour as a measure of social adaptation, and Self-transcendence (ST), related to the identification with what is conceived as essential and consequential parts of a unified whole. The union of the dimensions of Temperament and Character makes it possible to combine different paradigms and to develop what Cloninger called the "unified biosocial theory of personality". Cloninger's model and his instrument of measurement have proven useful both for normal personality description and for clinical purposes in different psychopathological disorders (Cloninger, 1987, 1999a; Cloninger, Svrakic, & Przybeck, 2006; Jylhä & Isometsä, 2006; Svrakic et al., 2002).

The first questionnaire based on the 7 factor personality model was the "Temperament and Character Inventory" (TCI), composed of 240 items of dichotomous answer (yes/no) (Cloninger et al., 1993; Svrakic et al., 2002). Later the revised version was developed (TCI-R), with the same number of items although 51 of them were modified, improving substantially the psychometric properties of the TCI. In addition, the TCI-R changed the answer format to a 5-point Likert scale, currently the most used. There are several versions of the TCI in different languages and normative data for different countries are available, together with cross-cultural

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**Table 1**  
Factor structure for the dimensions of the TCI-56 in total sample ( $N = 822$ ). The items are grouped according to the corresponding dimension of the TCI-R, and the item number in TCI-56 and TCI-R is indicated. Loadings with absolute values of  $\pm .40$  or more are shown in bold.

Item		F1	F2	F3	F4	F5	F6	F7
TCI-56	TCI-R							
<b>Temperament</b>								
<i>Harm avoidance (HA)</i>								
2	2	-.114	-.314	-.056	.032	.001	<b>.554</b>	-.079
6	9	.058	-.389	-.25	-.160	.116	<b>.457</b>	-.178
15	38	-.117	-.188	.213	.198	.013	<b>.625</b>	-.089
22	46	.061	-.371	-.210	.001	.216	<b>.428</b>	-.281
34	78	.006	<b>-.452</b>	-.112	-.256	-.011	<b>.403</b>	-.130
37	81	-.111	-.149	-.027	-.006	-.199	<b>.541</b>	.025
53	113	-.026	-.338	-.102	-.112	.135	<b>.458</b>	-.282
56	121	-.102	-.319	-.026	-.065	-.209	<b>.534</b>	-.013
<i>Novelty seeking (NS)</i>								
1	1	.092	-.02	.033	-.005	.001	<b>-.539</b>	.328
13	123	-.017	.169	-.026	.031	-.240	-.090	<b>.656</b>
21	44	.195	-.082	.125	.063	-.199	-.282	<b>.401</b>
23	47	.017	.105	.012	.074	-.304	-.039	<b>.772</b>
32	71	.289	-.108	-.049	.036	-.092	-.330	<b>.486</b>
33	77	.025	.037	.138	.056	<b>-.458</b>	-.023	<b>.448</b>
38	14	.120	-.087	-.107	.05	.030	-.124	<b>.469</b>
50	239	-.006	.127	.081	.087	-.285	-.039	<b>.835</b>
<i>Reward dependence (RD)</i>								
7	15	-.004	.187	.114	<b>.794</b>	-.029	-.062	.042
10	194	.180	-.046	.198	<b>.644</b>	-.022	.123	.047
16	174	-.023	.159	.108	<b>.826</b>	.011	.093	.041
17	39	-.091	.109	-.285	.345	.136	.108	-.064
35	79	-.057	.119	-.200	<b>.821</b>	-.043	.026	.090
45	96	-.227	.113	-.218	<b>.599</b>	.020	.077	.070
49	110	-.102	.209	.233	<b>.711</b>	-.051	.019	.122
52	218	.087	.128	.175	<b>.504</b>	.081	-.181	-.082
<i>Persistence (PS)</i>								
5	146	-.123	.275	.199	.153	<b>.481</b>	.101	-.073
8	55	.021	.211	.016	.028	<b>.463</b>	.316	-.115
14	76	-.046	.045	-.053	-.011	<b>.700</b>	-.094	-.179
26	119	.044	-.057	-.083	-.023	<b>.776</b>	-.116	-.251
31	129	-.002	-.033	.089	.001	<b>.494</b>	.073	-.083
39	140	-.205	.264	.265	.042	<b>.434</b>	.114	-.127
51	137	.044	-.091	-.137	-.05	<b>.680</b>	-.052	-.347
54	158	.121	-.151	-.043	-.075	<b>.564</b>	-.110	-.128
<b>Character</b>								
<i>Self-directedness (SD)</i>								
4	6	-.205	<b>.614</b>	.302	.332	.082	-.001	.056
9	23	-.035	<b>.641</b>	.127	-.015	.157	-.074	-.048
24	49	-.219	<b>.412</b>	.371	.062	.004	-.287	-.004
27	107	-.178	<b>.617</b>	.156	.248	-.042	-.108	.014
28	58	-.205	<b>.731</b>	.139	.145	.105	-.064	-.054
29	192	-.117	<b>.526</b>	.165	.155	-.093	.144	.085
40	34	-.117	<b>.467</b>	.305	.094	.173	.182	-.159
41	221	-.056	<b>.587</b>	.001	.204	.175	-.110	.106
<i>Cooperativeness (C)</i>								
3	128	-.012	.102	<b>.693</b>	.109	-.082	.061	.063
12	33	-.089	.122	<b>.765</b>	.101	-.13	.096	.078
20	40	.195	-.041	<b>.566</b>	.117	.050	-.201	-.041
30	198	.004	.154	<b>.481</b>	.054	-.018	-.136	.087
36	208	-.162	.181	<b>.523</b>	.159	.051	.026	.008
42	224	-.002	.117	<b>.487</b>	.149	.024	-.104	-.117
44	226	-.211	.157	<b>.455</b>	.161	-.029	.120	.024
55	152	-.005	.029	<b>.538</b>	.132	.056	-.040	-.062
<i>Self-transcendence (ST)</i>								
11	29	<b>.597</b>	-.065	.106	-.041	.065	-.330	-.016
18	42	<b>.628</b>	-.157	-.009	-.030	.047	-.233	.025
19	43	<b>.621</b>	-.158	.077	.062	.004	-.187	.004
25	52	<b>.793</b>	-.220	-.197	-.071	-.007	-.190	.026
43	12	<b>.788</b>	-.177	-.137	-.061	-.025	-.216	.071
46	106	<b>.872</b>	-.082	-.163	-.108	-.079	-.137	.084
47	56	<b>.587</b>	-.131	.061	.036	.060	-.305	-.034
48	99	<b>.839</b>	-.156	-.128	-.135	-.038	-.138	.053

comparisons that support their use (Miettunen, Kantojärvi, Veijola, Järvelin, & Joukamaa, 2006). For the most recent TCI-R (Cloninger,

1999b), the standardised scores are already available for Spain (Gutiérrez-Zotes et al., 2004), France (Pelissolo et al., 2005), Bel-

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