

PSYCHOMETRIC PROPERTIES OF THE PADUA INVENTORY
IN CHINESE COLLEGE SAMPLES^{1,2}

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Summary.—The aim of the present study was to investigate the psychometric

properties (N = 1,000) of the Padua Inventory in Chinese college samples. Exploratory factor analyses yielded a four-factor structure which was similar to that found in previous studies. Further, present results showed good internal consistency as well as convergent and divergent validity with the subscales of the Symptom

the results and directions for research are discussed.

sessive compulsive symptoms which has been adapted for various clinical

the extent and severity of symptoms, each item is rated on a 5-point scale for severity of disturbance, with anchors of 0: Not at all disturbing and 4:

The four-factor structure has been replicated in nonclinical samples from

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ed in some clinical samples (Van Oppen, 1992; Van Oppen, Hoekstra, &

Generally, the inventory has good psychometric properties. Sanavio α at .90 and .94, respectively, for men and women. Several studies also found that the total score and the α s were greater than .80, with the exception of the Urges and worries subscale, which has varied considerably in internal consistency reliability (Sanavio, 1988;

Obsessive compulsive subscale score of the Symptom Checklist-90 (Dero- *et al.*,

the Maudsley Obsessive Compulsive Inventory and the Leyton Obses- *et al*

extraversion nor psychoticism was highly correlated with Padua Invento- *et al.*

tom Checklist-90 Depression subscale (r r) and the Eysenck Personality Questionnaire Neuroticism scale (r

tween all Padua Inventory subscales and Extraversion, Social Desirability, and Psychoticism (Van Oppen, *et al.*

sive disorder is an independent diagnosis in the spectrum of anxiety dis- only a rather moderate correlation with measures of neuroticism, depression, dysphoria, and anxiety (Sanavio, 1988; Hafner & Miller, 1990; Stern-

Few studies have been conducted using clinical samples with obses- ua Inventory discriminated OCD patients from nonobsessional neurotic patients matched for sex and age. However, in a study of three Iranian

but not from groups of anxious and depressed patients. This is consistent with studies showing that those with high scores on the Padua Invento-

has indicated that Padua Inventory scores, especially on the two obses- *et*

al.

but less well from anxious and depressed groups.

al.

et al

et

factor Urges and worries of losing control over motor behaviors (Stern-

et al.

studies have provided psychometric information from nonclinical or clin-
 ity and validity are available in China. Therefore, it is necessary and valu-
 able to study the inventory within the Chinese culture.

The present study is based on data from nonclinical samples of col-
 lege students in mainland China. The data form part of a larger series of

gent and divergent validity by investigating correlations between scores
 on the Padua Inventory and other measures related to symptoms of OCD.

Participants

Three samples of university students were recruited for the present
 study. The participants were volunteers and all the data were collected
 through a group test.

range of 15 to 39 yr., of whom 18- to 24-yr.-old students made up 94% (*M*
SD

an age range of 16 to 30 yr., of which 18- to 24-yr.-old students made up
 96% (*M* *SD*

To test the invento
other questionnaires such as the State-Trait Anxiety Inventory (Spielberg-
the Penn State Worry Questionnaire

et al

Sample 3 at the Wuhan University of Technology comprised 298 stu-

PADUA INVENTORY: CHINESE VERSION

Worry.—The Penn State Worry Questionnaire (Meyer, *et al.*, 1990; Sha, *et al.*

α in Chinese college

Depression *et al.*, 1961;
Wang, *et al.*

α

Psychopathology.—The Symptom Checklist-90 (SCL-90; Derogatis, on a 5-point scale with anchors 0: Not at all and 4: Extremely. Chen and Li use in the Chinese population.

Personality.—The Eysenck Personality Questionnaire-Revised Short Scale for Chinese (Eysenck & Eysenck, 1996; Qian, *et al.*

α

(Qian, *et al.*,

Procedure

The participants in Samples 1, 2, and 3 all were given the Chinese Ver- self-report questionnaires within a 1-hr. period. The anxiety and worry symptoms were assessed using the State-Trait Anxiety Inventory, Penn tom Checklist-90 was used to measure self-estimated mental health status. In Sample 3, personality also was assessed with the Eysenck Personality Questionnaire-Revised Short Scale. This sample was retested with the

Statistical Analyses

Data analyses were conducted in several stages. First, using the data from Samples 1 and 2, a principal component analysis with varimax ro-

α was calculated for the total score. Second, convergent and divergent validity were measured separately using data from Samples 2 and 3. The test-retest reliability was also estimated using data from Sample 3.

Factor Analysis

Participants in Sample 1 (n n included in a factor analysis. The principal components analysis was itera-

<i>n</i>			
Item	Loading	Item- factor Correla- tion	<i>h</i> ²
Component 1: Impaired control over mental activities			
11. When doubts and worries come to my mind, I cannot rest until I have talked them over with a reassuring person.	.42	.53	.29
12. When I talk I tend to repeat the same things and the same sentences several times.	.43	.58	.34
18. I have to do things several times before I think they are properly done.	.42	.60	
		.63	.39
I know I have done.	.53	.62	.38
28. I have the impression that I will never be able to explain things clearly, especially when talking about important matters that involve me.	.61	.65	.43
	.69		.56
31. I invent doubts and problems about most of the things I do.	.66		.52
32. When I start thinking of certain things, I become obsessed with them.	.68	.69	.51
33. Unpleasant thoughts come into my mind against my will and I cannot get rid of them.			.56
34. Obscene or dirty words come into my mind and I cannot get rid of them.	.48	.61	.40
	.62	.68	
36. I imagine catastrophic consequences as a result of absent-mindedness or minor errors which I make.	.66		.51
without knowing it.	.68		.52
38. When I hear about a disaster, I think it is somehow my fault.	.58	.64	.41
39. I sometimes worry at length for no reason that I have hurt myself or have some disease.	.50	.62	.41
42. When I read I have the impression I have missed something important and must go back and reread the passage at least two or three times.	.54	.62	.38
43. I worry about remembering completely unimportant	.45	.61	.41
44. When a thought or doubt comes into my mind, I have to examine it from all points of view and cannot stop until I have done so.		.64	.41
45. In certain situations I am afraid of losing my self-control and doing embarrassing things.	.62		.46
52. I sometimes feel something inside me which makes me do things which are really senseless and which I do not want to do.	.54	.66	.49

<i>n</i>			
Item	Loading	Item-factor Correlation	<i>f</i> ²
58. In certain situations I feel an impulse to eat too much, even if I am then ill.	.46	.53	.30
Component 2: Urges and worries of losing control over motor behaviors	.43		.33
46. When I look down from a bridge or a very high window, I feel an impulse to throw myself into space.	.46	.63	.32
throw myself under its wheels.			.53
public.		.68	.55
49. While driving, I sometimes feel an impulse to drive the car into someone or something.	.66		.48
50. Seeing weapons excites me and makes me think violent thoughts.	.54		.34
53. I sometimes feel the need to break or damage things for no reason.	.49		.42
longings, even if they are of no use to me.	.68		.50
55. I am sometimes almost irresistibly tempted to steal something from the supermarket.	.69	.63	.50
56. I sometimes have an impulse to hurt defenseless children or animals.	.64	.65	.45
	.48	.61	.38
Component 3: Contamination			
1. I feel my hands are dirty when I touch money.	.59	.60	.36
2. I think even slight contact with bodily secretions (perspiration) somehow harm me.	.68		.50
touched by strangers or by certain people.	.62		
	.64	.68	.45
5. I avoid using public toilets because I am afraid of disease and contamination.	.64	.65	.44
6. I avoid using public telephones because I am afraid of contagion and disease.	.65	.66	
	.61	.66	
8. I sometimes have to wash or clean myself simply because I think I may be dirty or "contaminated."	.59	.68	.46
9. If I touch something I think is "contaminated," I immediately have to wash or clean myself.	.62	.69	
10. If an animal touches me, I feel dirty and immediately have to wash myself or change my clothing.	.56	.65	.42

n

Item	Loading	Item-Factor Correlation	<i>h</i> ²
Component 4: Checking			
18. I have to do things several times before I think they are properly done.	.52		
	.63		
20. I check and recheck gas and water taps and light switches		.80	.63
21. I return home to check doors, windows, drawers, etc., to make sure they are properly shut.	.69		
22. I keep on checking forms, documents, checks, etc., in de-	.65		.59
are properly extinguished.	.64	.69	.51
24. When I handle money, I count and recount it several times.	.58	.66	
	.62		.49

tively tested, followed by varimax rotation to investigate the four-factor -
 sult was .96, suggesting the factor analysis of the variables is appropri- -

items which loaded on more than one factor or had a loading of less than .40 were deleted, resulting in 11 items being deleted. Items 13, 14, 15, 16, -
 ed on more than one factor. The remaining 49 items accounted for 43% of

rotation, and the Pearson correlations between each factor and the includ-
 ed items are also shown along with communalities. These correlations

p

of the variance and was termed “Impaired control over mental activities.” -

factor did not meet the .40 criterion (Item 59: “When I hear about a suicide
 about it”; Item 30: “I am sometimes late because I keep on doing things

variance, and was named “Urges and worries of losing control over motor behaviors.” The items which loaded on this factor showed it to be similar

et al.

nonclinical samples.

variance, and was named “Contamination.” The items loading on this fac-

ance, and was named “Checking.” The items that loaded on this factor

Internal Consistency Reliability

α was calculated for each factor by sex and the total score

	α		n		
	Cronbach α	Factor 1	Factor 2	Factor 3	Factor 4
Total	.94	.85	.86	.88	
Men	.93	.85	.86	.88	
Women	.93	.83	.85		

p

ing the internal consistency reliability of this Chinese version among stu-

.82, and .83 for the four factors, respectively, once again supporting internal consistency for these samples.

Test-retest	n							
	Factor 1		Factor 2		Factor 3		Factor 4	
	<i>r</i>	95%CI	<i>r</i>	95%CI	<i>r</i>	95%CI	<i>r</i>	95%CI
Total	.86*	.83, .89			.63*	.56, .69	.69*	
Men	.86*	.83, .89			.64*		.61*	.54, .68
Women	.85*	.82, .88			.68*		.64*	

**p*

cients between .6 and .9 are considered appropriate values for longitudinal stability, all subscales displayed good stability over the interval for both men and women in college.

Inter-factor Correlations

To examine the inter-factor correlations in the Chinese samples, correlations were calculated among factors and total score for Samples 1 and 2. The results are shown in Table 4.

	<i>n</i>							
	Total Score		Factor 1		Factor 2		Factor 3	
	<i>r</i>	95% <i>CI</i>	<i>r</i>	95% <i>CI</i>	<i>r</i>	95% <i>CI</i>	<i>r</i>	95% <i>CI</i>
Factor 1	.94*	.93, .95						
Factor 2			.61*	.59, .63				
Factor 3	.69*		.49*	.46, .52	.38*	.35, .41		
Factor 4	.81*	.80, .82				.44, .50	.49*	.46, .52

**p*

Convergent and Divergent Validity

calculated among the Padua Inventory scores and those on the State-Trait and Penn State Worry Questionnaire. The correlations between the Padua Inventory total scores and the Eysenck Personality Questionnaire scores were calculated using the data from Sample 3.

Table 5 indicates that the Padua Inventory total score correlated statis-

Depression Inventory, although Padua Inventory subscale scores did not

Personality Questionnaire.

compulsive subscale of Symptom Checklist-90, and a negative correlation with the Eysenck Personality Questionnaire Extraversion scale. Fur-

the Padua Inventory total scores with the scores of Symptom Checklist-90 Depression subscale, Anxiety subscale, and Eysenck Personality Questionnaire Neuroticism. Symptom Checklist-90 Anxiety generally correlated more strongly with obsessional Factors 1 and 2 of the Padua Inventory

	<i>n</i>	Factor 1	Factor 2	Factor 3	Factor 4	PI Total Score
State Trait Anxiety Inventory						
State <i>r</i>	1,341	.43	.34	.21	.28	.42
95% <i>CI</i>			.29, .39	.16, .26	.23, .33	
Trait <i>r</i>	1,341	.54	.33		.31	.50
95% <i>CI</i>		.50, .58	.28, .38	.22, .32	.26, .36	.46, .54
EPQ						
Neuroticism <i>r</i>	298	.63	.38	.31	.42	.58
95% <i>CI</i>		.56, .69		.20, .41	.32, .51	.50, .65
Extraversion <i>r</i>						
95% <i>CI</i>						
Psychoticism <i>r</i>		.19	.20	.12	.10	.19
95% <i>CI</i>		.08, .30	.09, .31	.01, .23		.08, .30
Lie <i>r</i>						
95% <i>CI</i>						
SCL-90						
Obsessive compulsive <i>r</i>	1,341	.69	.48	.35	.50	
95% <i>CI</i>			.44, .52	.30, .40	.46, .54	
Depression <i>r</i>		.65	.48	.28	.38	.60
95% <i>CI</i>		.62, .68	.44, .52	.23, .33	.33, .43	.56, .63
Anxiety <i>r</i>		.66	.53	.32	.44	.64
95% <i>CI</i>		.63, .69			.40, .48	
Interpersonal sensitivity <i>r</i>		.65		.32	.44	.63
95% <i>CI</i>		.62, .68	.43, .51		.40, .48	.60, .66
Hostility <i>r</i>		.54	.61	.29	.39	
95% <i>CI</i>		.50, .58	.58, .64	.24, .34	.34, .43	.53, .60
<i>r</i>	1,341	.51	.50	.26	.31	.50
95% <i>CI</i>		.46, .54	.46, .54	.21, .31	.26, .36	.46, .54
PSWQ score <i>r</i>	1,341	.16	.10	.03	.11	.14
95% <i>CI</i>		.11, .21	.05, .15		.06, .16	.08, .19

Note.—For all correlations above .11, *p*

EPQ: Eysenck Personality Questionnaire; PSWQ: Penn State Worry Questionnaire.

the correlations between the Padua Inventory total scores with those on the Interpersonal Sensitivity and Hostility subscales of Symptom Check-

lations with the Padua Inventory obsession factors than with compulsion factors; Factor 1 correlated most strongly with both the Symptom Checklist-90 subscales and other measures. The other Padua Inventory factors

Finally, lower correlations were found among all Padua Inventory

scales and Extraversion, Social Desirability, and Psychoticism. The corre-

for Padua Inventory factors with other measures were variable, indicating heterogeneity in obsessionality.

Sex Differences

Means and standard deviations for the Padua Inventory total score are given in Table 6, using data from participants in Samples 1 and 2 who had

analysis, scores were summed for each of the four factors. While mean

cantly higher for women on Factor 2 (t p d)
 Factor 4 (t p d)
 on Factor 3 (t p d)
 women on Checking and Worries of losing control over motor behavior.

Padua Inventory	Total (n)		Men (n)		Women (n)	
	M	SD	M	SD	M	SD
Factor 1	16.29	12.89	15.59	12.02	15.95	12.48
Factor 2	2.96	4.55	2.16		2.58	4.21
Factor 3		5.39		5.68		5.55
Factor 4	5.29		4.43	4.45	4.88	
Total		26.48	32.60	24.24	33.46	25.44

The four-factor structure of the Padua Inventory previously repeated was reproduced in these Chinese samples of college students, and the general content of the four factors was similar to that obtained from other

et al

motor behaviors was treated as the second factor, but it was viewed as the third or fourth factor in studies by Sanavio and others (Sternberger &

obsession category, containing a total of 33 items, relatively more than

nese population, Urges and worries represents a larger proportion of obsessive compulsive symptoms than Contamination and Checking. How-
more prevalent than compulsive phenomena in Chinese patients with obsessive-compulsive disorder. An alternative explanation might be that these samples of university undergraduates are less representative of the

The Padua Inventory can be divided into two subscales, with Factors 1 and 2 making up an Obsession scale and Factors 3 and 4 making up a

et al.

with the Compulsion score, which is not surprising given that obsessions and compulsions generally coexist in people with obsessive compulsive symptoms.

As expected, the Padua Inventory total score generally exhibited moderate correlations with the Obsessive Compulsive subscale of Symptom Checklist-90, and somewhat lower correlations with measures of depression and anxiety, which are commonly associated with Obsessive Compulsive Disorder. The Urges and worries factor is an important component of the inventory as it was originally designed to assess obsessive compulsive phenomena which were not adequately measured by other

pressed or agitated and suicidal behavior (e.g., “When I see a train ap-

Hence, one might expect a correlation with measures of depression or depression and anxiety, an expectation that was borne out in the present study of students.

An argument could be made that depression and anxiety measures correlate higher with measures of obsessive rather than with compulsive symptoms. This would call into question the construct validity of the Padua Inventory, and whether items purportedly assessing intrusive thoughts are distinguishable from items assessing other forms of negative thinking like depression or worry. Moreover, some studies (Freston, *et al.*

loaded onto a “worry” factor consisting of items from the Penn State Worry Questionnaire. This result suggests that some of the Padua Inventory

Obsession items may, in fact, measure worry rather than obsessions. Two publications have noted the correlation of the scores on the Padua Inventory with a measure of worry (Freeston, *et al.* *et al.*

has some overlapping features with Factor 1 of the Padua Inventory and, by extrapolation, obsessive compulsive disorder. The correlations of the

Personality Questionnaire Neuroticism and the Depression/Anxiety sub-

in the present study, the correlations between the scores on Padua Inventory subscales and the Penn State Worry Questionnaire were separately calculated. The data of Table 5 show correlations were not very high, even

With regard to cross-national variation, the aim of the present re-
on the Padua Inventory, as this needs to be studied in more detail with a

is necessary to caution against the use of the Padua Inventory where appropriate normative data are not available. What the results of the present study suggest is that for a sample of Chinese college students, a 49-item inventory with 4-factor structure may be more suitable than the original 60 items.

higher than men on the factors Urges and worries and Checking. Given
students, more data and evidence are needed to draw clear conclusions.

In sum, it appears that the main structure of obsessive-compulsive symptoms is adequately assessed by the Padua Inventory. Present study results for samples of Chinese students support the Padua Inventory as reliable, based on evidence of adequate convergent validity, internal consistency reliability, and test-retest reliability. However, some caveats should be mentioned. Divergent validity requests further investigation, and the

lidity. All of these would require representative samples, which in China would be a massive undertaking, given the many distinct people groups and cultural traditions.

PADUA INVENTORY: CHINESE VERSION

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