Preliminary Validation of a Chinese Version of the Comprehensive Assessment of Acceptance and Commitment Therapy Processes

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Abstract

Civil servants are bridges that connect the general public and the government in China. Because their mental health may influence the rise and fall of the country, it is important to study their mental health and living conditions. The Comprehensive Assessment of Acceptance and Commitment Therapy Processes (CompACT) is a general measure of ACT processes and reflects individual psychological flexibility. We investigated the psychometric properties of CompACT in a non-clinical sample of civil servants. The Chinese CompACT demonstrated acceptable internal consistency (Cronbach $\alpha = 0.87$) and reliability (Guttman split-half coefficient = 0.69). Confirmatory factor analysis provided support for the three-factor model. Our findings suggest that the Chinese version of the CompACT has acceptable psychometric properties and is a valid instrument for the assessment of psychological flexibility.

Keywords：Civil servants, psychological flexibility, CompACT, assessment

Introduction

Process-Based Therapy

Steven Hayes argued that cognitive-behavioural therapy (CBT) could be roughly categorized into three historical waves. The first wave was behavior therapy, which was designed to change overt behavior based on stimulus-response learning theory. The second was the era of classic CBT, which focused on maladaptive thinking patterns in emotions and behaviors, and was in favor of computer metaphors (Hayes, 2004; Hayes & Hofmann, 2017). These two generations of methods and concepts focused on alleviating symptoms of psychological disorders, which led to the development of evidence-based treatments. However, comorbidity and client heterogeneity were common within syndromal groups, which made it difficult to diagnosis of diseases through a single application of a CBT protocol to a single disorder. A new generation of evidence-based care called Process-based Therapies (PBT; Hofmann & Hayes, 2019) emerged to study core mediators and moderators based on testable theories. Process-based interventions emphasize the process of change. They could alleviate diverse symptoms and promote well-being by influencing core psychological processes, which can have broad effects on well-being (Dindo, Van Liew, & Arch, 2017; Hayes, Pistorello, & Levin, 2012). The methods used by the current third wave of CBT are often more experiential and underlying philosophies are more contextualistic (Hayes, 2004). This set of approaches includes Acceptance and Commitment Therapy (ACT), Dialectical Behavior Therapy (DBT),

Mindfulness-based Cognitive Therapy (MBCT), Functional Analytic Psychotherapy (FAP), and others. These approaches focus more on the relationship between individuals and their thoughts as well as emotions, instead of the content. As a result, they emphasize concepts such as mindfulness, emotions, acceptance, the relationship, values, goals, and meta-cognition (Hayes & Hofmann, 2017).

Acceptance and Commitment Therapy

As a representative treatment of the third-wave CBT, Acceptance and Commitment Therapy (ACT) is a trans-diagnostic therapeutic approach that conceptualizes psychological suffering as primarily a function of attempts to avoid unwanted private experiences (experiential avoidance) as well as a resultant or contingent reduction in personally-meaningful pursuits (Francis, Dawson, & Golijani-Moghaddam, 2016). Therefore, ACT encourages clients to change the relationship between their thoughts and physical sensations through mechanisms of acceptance, mindfulness, and value-based action (Hayes, 2004). The ultimate goal of ACT is not to change diverse symptoms or conditions, but to increase psychological flexibility, which is the ability to behave consistently with ones' values, even if their thoughts and feelings oppose taking valued action, while being mindful of experiences in the present moment in a nonjudgmental and accepting way (Livheim et al., 2015). Psychological flexibility can be conceptualized as a product of six interrelated but overlapping sub-processes: acceptance, diffusion, self as context, present moment awareness, values, and committed action (Hayes, Luoma, Bond, Masuda, & Lillis,

2006). According to the hexaflex model, ACT is more focused on testing cognitive processes than other psychometric methods. Further, higher levels of psychological flexibility have been found to be associated with lower levels of psychological distress and improved quality of life (Hayes, Levin, Plumb-Vilardaga, Villatte, & Pistorello, 2013). Psychological flexibility has been shown to be associated with effective treatment of trichotillomania (Lee et al., 2018), depression (Bai, Luo, Zhang, Wu, & Chi, 2019), and trauma-related problems (McLean & Follette, 2016). Psychological flexibility can reflect the mental health of individuals by relating to whether or not they can effectively deal with their negative emotions and feelings.

Although the most commonly used measure of psychological flexibility is the Acceptance and Action Questionnaire (AAQ-II, Bond et al., 2011), it only focuses on the process of acceptance and diffusion. It has been proved to overlap with general distress measures (Wolgast, 2014). Other measures, such as the Brief Experiential Avoidance Questionnaire (Gámez et al., 2014), the Cognitive Fusion Questionnaire (CFQ, Gillanders et al., 2014), and the Valued Living Questionnaire (Wilson, Sandoz, Kitchens, & Roberts, 2010), examine the single process of psychological flexibility. To address the gap, Francis et al. compiled the Comprehensive Assessment of Acceptance and Commitment Therapy Processes (CompACT) in 2015 (Francis et al., 2016) to develop a general measure of ACT processes. The CompACT is a 23-item scale that includes three factors: openness to experience, behavioral awareness, and valued action. The three-factor structure is concordant with recent accounts of psychological flexibility in terms of three dyadic processes (Hayes, Villatte, Levin, &

Hildebrandt, 2011). The CompACT has shown the potential to be a good general

measure of ACT processes (Francis et al., 2016). However, a Chinese version of the

CompACT is needed to measure psychological flexibility in a Chinese cultural

context.

Mental Health of Chinese Civil Servants

In China, civil servants are a special group that acts as a bridge between the

general public and the government (Zhu, Chen, Ou, Geng, & Jiang, 2014) and plays a

relatively important role in influencing the rise and fall of a country (Lu & Liang,

2016). Civil servants work in the governmental bureaucracy, manage social and

public affairs, exercise state power, and perform national administrations. At the same

time, they are responsible for delivering public service, and state finance are

responsible for providing wages and benefits (Li, 2014). Thus, the efficiency of

servants directly affects the level of efficiency of the administration and the

impartiality of social management; it further affects society and economic

development (Liu & Liu, 2006). However, given the nature of their work in local

governments, Chinese civil servants lack decision-making power, and their working

arrangements lack flexibility (Jia et al., 2014).

Meanwhile, as society evolves and reforms deepen, the government's

management of civil servants has become more standardized and stringent (Hao,

Hong, Xu, Zhou, & Xie, 2015a), which causes stresses to the group. Compared with

people in other occupations, Chinese civil servants have been shown to be at a higher

risk of suffering as a result of several psychosocial stressors, such as traditional

bureaucratic culture, the heavy workload and responsibilities, infrastructural problems

and conflicts, and intense competition (Chen, 2005; Nian, 2004; Y. Wang, 2008).

Burn-out and other negative moods also worsen the psychological health of Chinese

civil servants (Hao et al., 2015a). Therefore, studying their mental health is essential.

Aims and objectives

Many questionnaires have been used to measure mental health symptoms of

Chinese civil servants, such as the Hamilton Depression Rating Scale (HAMD;

Huang, Cao, Liu, Yao, & Rui, 2018), the twelve-item Short Form Health Survey (SF-

12; Lu & Liang, 2016), the General Health Questionnaire (GHQ-12; Liang, Wang, &

Yin, 2016), the Symptom Checklist 90 (SCL-90, Zhu et al., 2014), and the Civil

Servants Stress Scale (CSSS, Hao et al., 2015a). However, no studies have measured

the psychological flexibility of them. The present study examined the psychometric

properties and performance of a Chinese version of the CompACT (Ch-CompACT)

for a sample of Chinese civil servants. The present study can be a

comprehensive instrument to evaluate the psychological flexibility of Chinese adults.

This study aimed to apply the Ch-CompACT to Chinese civil servants and a control

group, test its psychometric properties (including factor analysis and reliability), and

compare the instrument with measures of depression, anxiety, stress level, and life

satisfaction.

Method

Procedure

    Preparation of the initial Chinese Version of the CompACT . First, we translated the items from the CompACT into Chinese and then back-translated them into English. The procedures were as follows: Two postgraduate students translated the English version into Chinese independently. Then experts in psychology and the ACT reviewed and revised it until they reached a consensus. Then, another postgraduate student translated it back to English and compared it with the original English version to ensure conceptual equivalence.

    Revision of the initial Chinese Version of the CompACT . Considering the cultural differences, some items were deleted or modified to fit the Chinese context and facilitate participant understanding. Based on expert criteria, we removed item 1 ("I tell myself that I shouldn't have certain thoughts"), item 2 ("I try to stay busy to keep thoughts or feelings from coming"), Item 7 ("I can take thoughts and feelings as they come, without attempting to control or avoid them"), Item 8 ("I am willing to fully experience whatever thoughts, feelings and sensations come up for me, without trying to change or defend against them "), item 19 ("I can keep going with something when it's important to me"), and item 23 ("I can identify the things that really matter to me in life and pursue them"). These items may be hard to understand for Chinese people. Some items were selected from the AAQ-Ⅱ, CFQ, and VQ and added to the scale. The items from AAQ-II included: "I worry about not being able to control my

worries and feelings", "My painful experiences and memories make it difficult for me to live a life that I would value", and "I'm afraid of my feelings". Items from the CFQ-II included: "I get upset with myself for having certain thoughts" and "I spent a lot of time thinking about the past or future, rather than being engaged in activities that mattered to me." (Valuing Questionnaire, VQ; Smout, Davies, Burns, & Christie, 2013). The initial items are shown in Table 1.

Items 1 to 13 are reverse-scored. Differing from the English version of the scale in which items were scored on a seven-point Likert-like scale, the items in this revised version were scored on a standard Likert scale (5 points), ranging from 1 ("strongly disagree") to 5 ("strongly agree"), with higher scores indicating better conditions.

Table 1

The initial items of the Ch-CompACT

	Behavioral awareness	**Valued action**
1. One of my big goals is to be free from painful emotions.	8. It seems I am "running on automatic" without much awareness of what I'm doing.	14. I make choices based on what is important to me, even if it is stressful.
2. I go out of my way to avoid situations that might bring difficult	9. Even when doing the things that matter to me, I	15. My values are really reflected in my behavior.

thoughts, feelings, or sensations.

find myself doing them without paying attention.

3. I worry about not being able to control my worries and feelings.

10. I rush through meaningful activities without being really attentive to them.

16. I am able to follow my long terms plans including times when progress is slow.

4. I work hard to keep out upsetting feelings.

11. I do jobs or tasks automatically, without being aware of what I'm doing.

17. When something is important to me, I'll do it even if there is a chance it will upset me.

5. My painful experiences and memories make it difficult for me to live a life that I would value.

12. I find it difficult to stay focused on what's happening in the present.

18. I behave in line with my personal values.

6. I get upset with myself for having certain thoughts.

13. I spent a lot of time thinking about the past or future, rather than being engaged in activities that mattered to me.

19. I undertake things that are meaningful to me, even when I find it hard to do so.

7. I'm afraid of my feelings.

20. I act in ways that are consistent with how I wish to live my life.

Participants

The study was designed as a cross-sectional survey. The participants were public security workers from all across the country. In cooperation with the Ministry of Public Security, we sent the scales through an online platform. Participants were invited to complete a self-report questionnaire on psychological flexibility, mental health, and life satisfaction on the internet. A total of 10,061 civil servants completed the questionnaire, while 7,842 of them were excluded from analysis due to missing values on the relevant items or lying on the questionnaire. The effective response rate was 56.19%. We randomly divided the sample into two groups: Group 1 and Group 2. We used Group 1 in this study. Group 2 was used in another study to determine subgroups based on the psychological flexibility, source of pressure, and life satisfaction in Chinese civil servants (in prep). The purpose of the research was explained to the respondents before the research began and the questionnaire was anonymous.

Instruments

Psychological flexibility is related to decreased negative affect and enhanced well-being, therefore, in order to investigate the relationships between CompACT outcomes and negative emotions and well-being, all participants in our study completed the and the Depression, Anxiety, and Stress Scale (DASS-21; Lovibond & Lovibond, 1996)) in addition to providing their basic demographic information.

Depression Anxiety Stress Scales-21.The DASS-21 is used to evaluate an

individual's level of negative emotion within the past week. The higher the score, the

more serious the level of negative emotion. This is a self-report questionnaire that

consists of 21 items, 7 items per subscale: Depression, Anxiety, and Stress. The

Chinese version of the DASS-21 used in the present study has been validated. The

Cronbach's alpha values were 0.83, 0.80, 0.82, and 0.92 for the Depression, Anxiety,

and Stress subscales, and the total scale, respectively (Wang et al., 2016). Unlike the

original Chinese version of the DASS-21, in this study, participants were asked to

score every item on a scale from 1 (did not apply to me at all) to 5 (applied to me very

much).

Satisfaction With Life Scale. The SWLS is a five-item scale that assesses

individual satisfaction with life. In the present study, we used the Chinese version

translated by Xiong et al. The Cronbach's alpha was 0.78 (Xiong & Xu, 2009). The

SWLS is rated using a Likert-7 scoring system from 1 ("absolutely incorrect") to 7

("totally correct"). The higher the score, the more satisfied the individual is with their

life. We used a standard 1–5 Likert rating criteria in the present study.

Statistical analyses

We calculated Cronbach's α and conducted a Guttmann split-half test to assess

the internal consistency and used Pearson's correlation to examine the correlations of

all variables and items. In order to evaluate invariance of the scale and model-data fit,

we randomly divided the Group 1 participants into two approximate halves and

conducted exploratory factor analysis (EFA) on one and confirmatory factor analysis (CFA) on the other. We used SPSS 25.0 software (IBM Corp., Armonk, NY) to calculate the reliability, correlations, and CFA, and used SPSS AMOS Version 21 to conduct the CFA.

Results

Participant characteristics

Group1 consisted of 4, 999 civil servants. Their characteristics are shown in Table 1. Of the 4,999 respondents, 73.5% were male, and 26.5% were female. The average age was 36.6 ± 8.26 years. In terms of education level, the majority of the participants attended undergraduate programs (71.3%). Additionally, most respondents were married (79.5%). The total sample was randomly split into the EFA sample ($n = 2,509$) and the CFA sample ($n = 2,490$) by SPSS 25.0 during the factor-analysis process.

Table 2

Participant demographics

Demographics	Total sample (N = 4,999)	EFA sample (N = 2,509)	CFA sample (N = 2,490)

		N	%	N	%	N	%
Sex	Female	1,327	26.5%	686	27.3%	641	25.7%
	Male	3,672	73.5%	1,823	72.7%	1,849	74.3%
Age	(18.25)	328	6.6%	157	6.3%	171	6.9%
	(25, 30)	1,068	21.4%	562	22.4%	506	20.3%
	(30, 35)	1,109	22.2%	568	22.6%	541	21.7%
	(35, 40)	902	18.0%	440	17.5%	462	18.6%
	(40, 45)	751	15.0%	377	15.0%	374	15.0%
	(45, 50)	534	10.7%	248	9.9%	286	11.5%
	(50, +∞)	307	6.1%	157	6.3%	150	6.0%
Marital status	Married	3,974	79.5%	1,988	79.2%	1.986	79.8%
	Divorced	209	4.2%	111	4.4%	98	3.9%
	Widowed	15	0.3%	6	0.2%	9	0.4%
	Unmarried	801	16.0%	404	16.1%	397	15.9%
Education level	MD/PhD	9	0.2%	4	0.2%	5	0.2%
	MA/MS	241	4.8%	117	4.7%	124	5.0%
	Undergraduate	3,566	71.3%	1,802	71.8%	1,764	70.8%
	Junior College	1,183	23.7%	586	23.4%	597	24%

Factor analysis

Exploratory Factor Analysis. Cronbach's α was between 0.81 and 0.87 when each item was deleted, indicating that each item was necessary and of equal importance. In the factor analysis process, the total sample ($n = 4,999$) was randomly split into the EFA sample ($n = 2,509$) and the CFA sample ($n = 2,490$) by SPSS 25.0. Using the data from the EFA sample, the calculated EFA was used to identify possible latent variables of the Ch-CompACT. The items with factor loading less than .45 or communality less than .40 were deleted. Item 6 and Item 14 were deleted because communality was less than .40. Thus, 18 items remained. Table 2 shows the results of the EFA using the principal axis extraction method with varimax rotation. The Kaiser–Meyer–Olkin Index (KMO = 0.91) and Bartlett sphericity test (χ^2 =16,092.237, df = 153, $p < .001$) show that the data could be used to conduct a factor analysis. We extracted three factors. Factor 1: openness to experience; Factor 2: behavioral awareness; Factor 3: valued action. The eigenvalue of each factor was greater than 1, and the load factor was greater than .45 for each item. Factor 1 included six items and explained 19.4% of the variance. Factor 2 included six items and explained 17.4% of the variance. Factor 3 included six items and explained 17.5% of the variance. The three factors together explained 54.3% of the total variance. Table 3 shows good commonalities and loadings on the main factor ranging from .527 (Item 8) to .803 (Item 11).

Table 3

Items and factor loadings for the CompACT

Source of item and	Factor loading			Communalities
content	1	2	3	
1. One of my big goals is to be free from painful emotions.	.699	.157	.109	.525
2. I go out of my way to avoid situations that might bring difficult thoughts, feelings, or sensations.	.772	.111	.015	.608
3. I worry about not being able to control my worries and feelings.	.762	.219	.164	.655
4. I work hard to keep out upsetting feelings.	.703	.152	.004	.518
5. My painful experiences and memories make it difficult for me to live	.700	.227	.135	.561

a life that I would value.				
7. I'm afraid of my feelings.	**.628**	.213	.091	.448
8. It seems I am "running on automatic" without much awareness of what I'm doing.	.348	**.527**	.119	.413
9. Even when doing the things that matter to me, I find myself doing them without paying attention.	.085	**.784**	.103	.632
10. I rush through meaningful activities without being really attentive to them.	.115	**.791**	.100	.649
11. I do jobs or tasks automatically, without being aware of what I'm doing.	.198	**.803**	.164	.711

12. I find it difficult to stay focused on what's happening in the present.	.258	**.624**	.117	.470
13. I spend a lot of time thinking about the past or future, rather than being engaged in activities that matter to me.	.330	**.543**	.152	.427
15. My values are really reflected in my behavior.	.069	.100	**.650**	.437
16. I am able to follow my long terms plans even when progress is slow.	.070	.120	**.751**	.584
17. When something is important to me, I'll do it even if there is a chance it will upset me.	-.038	.051	**.721**	.524

18. I behave in line with my personal values.	.147	.135	**.748**	.600
19. I undertake things that are meaningful to me, even when I find it hard to do so.	.034	.140	**.759**	.597
20. I act in ways that are consistent with how I wish to live my life.	.255	.111	**.581**	.415
% of variance	19.4%	17.4%	17.5%	
Cumulative % of variance	19.4%	36.8%	54.3%	

Confirmatory Factor Analysis (CFA).Having obtained the factor structure for the EFA, we used the other half of Group 1 (n = 2,490) to perform a CFA of the factor model revealed by exploratory analysis. We performed maximum-likelihood confirmatory factor analyses using AMOS 21 to examine the proposed three-factor structure of the CompACT. The model contained the following fit indices (Table 5): the ratio of the minimum fit chi-square function to the degrees of freedom (χ^2/df), the Bentler–Bonett normed fit index (NFI), the incremental fit index (IFI), the Tucker–Lewis index (TLI), the comparative fit index (CFI), the parsimony-adjusted

comparative fit index (PCFI), and the root mean square error of approximation

(RMSEA). According to previous studies, a good model fit is indicated by a χ^2/df

value smaller than 3.0, NFI, IFI, TLI, and CFI indices above 0.90, and a PCFI above

0.50. For the RMSEA, values below 0.05 indicate a good fit, values between 0.05 and

0.08 indicate an acceptable fit, and values greater than 0.10 indicate a poor fit

(Medsker, Williams, & Holahan, 1994). The statistical results indicated that the

models were fitted to the actual data: χ^2/df = 6.923, NFI = .946, IFI = .934, TLI

= .943, CFI = .954, PCFI = .779, RMSEA = .049. This model is shown as Fig1.

Table 4

Goodness-of-fit indices for the Ch-CompACT

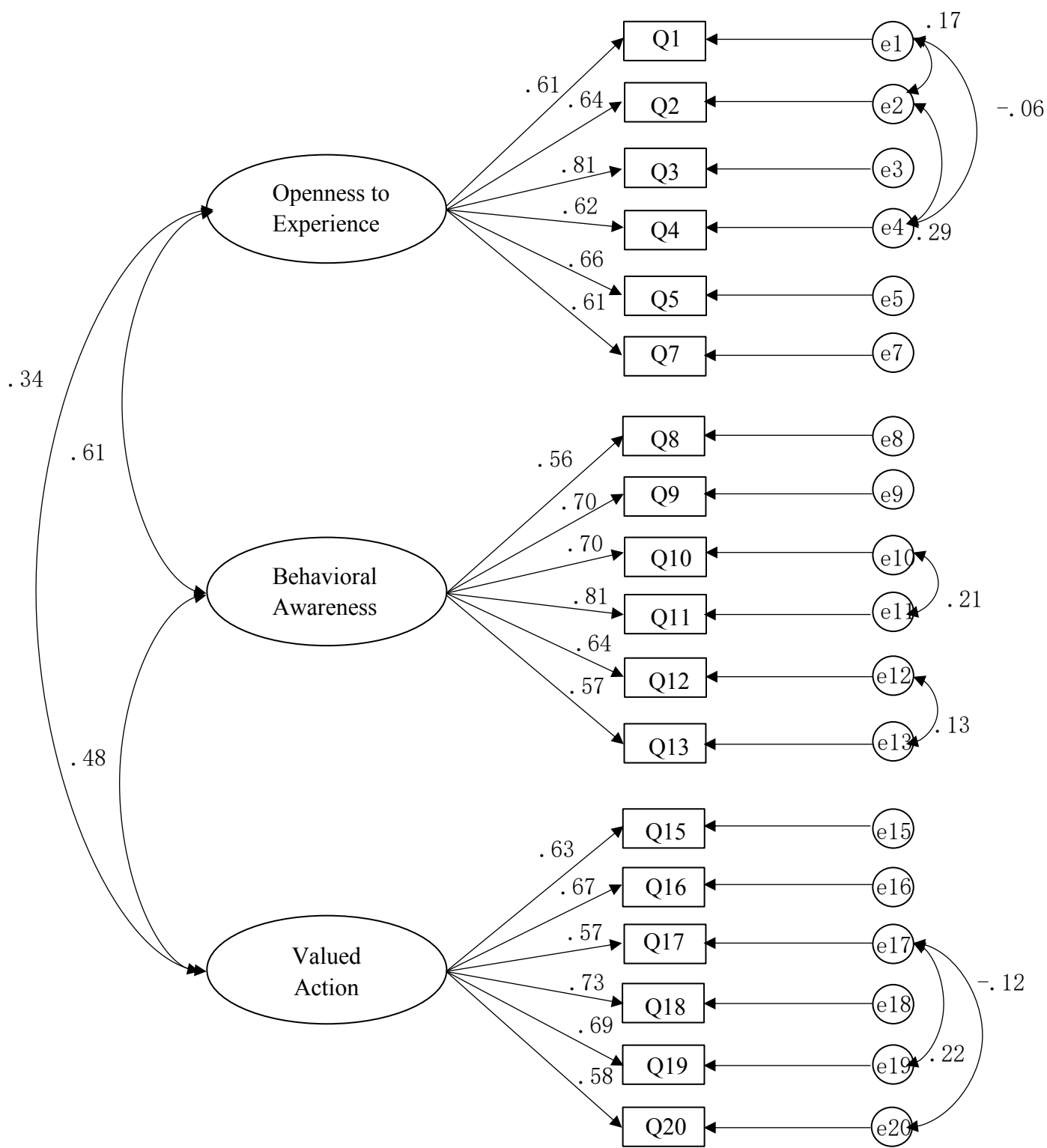| χ^2/df	NFI	IFI	TLI	CFI	PCFI	RMSEA
865.392/125 = 6.923	.946	.954	.943	.954	.779	.049

Fig.1 .Measurement model for Ch-CompACT

Q1

   Consistency and Reliability. Cronbach's alpha for the Ch-CompACT was 0.87

(>0.8), which was obtained using the Spearman-Brown formula. This value indicates

that the scale has a good reliability. We then calculated Cronbach's α for each

subscale of the Ch-CompACT, with acceptable results (Table 5). We then conducted

Guttmann split-half tests, which indicated reliabilities ranging from 0.69 to 0.84 for

the total scale and for the individual subscales.

Table 5

Cronbach's α and the Guttmann split-half coefficient for each subscale of the Ch-

CompACT and for the Ch-CompACT as a whole

	Cronbach's α	Guttman split-half coefficient
Openness to Experience	. 83	. 84
Behavioral Awareness	. 83	. 84
Valued Action	. 81	. 79
CompACT Total Score	. 87	. 69

Correlations Between the Ch-CompACT and other Measures

We evaluated the Pearson's correlation coefficients between the scores for each subscale of the Ch-CompACT and those on the DASS, SWLS, and SCL-90 in order to explore the relationships between Ch-CompACT scores and psychological symptoms and well-being variables. Table 6 shows that all factors of the Ch-CompACT correlated significantly with the SWLS (positively) and with the DASS (negatively).

Table 6

Correlations Between the CompACT and Other Variables

Measure	Correlation (r)			
	CompACT Total Score	CompACT Openness to experience	CompACT Behavioral Awareness	CompACT Valued Action
SWLS[a]	.55**	.44**	.35**	.48**
DASS-21				
Depression	−.71**	−.61**	−.58**	−.44**
Anxiety	−.64**	−.61**	−.51**	−.33**
Stress	−.66**	−.66**	−.51**	−.31**

Note. SWLS, Satisfaction With Life Scale; DASS-21, Depression Anxiety and Stress Scales, 21-item version

**$p < .01$

Discussion

Recent intervention studies have emphasized the importance of examining the mechanisms underlying the changes in outcomes (Gu, Strauss, Bond, & Cavanagh, 2015). Past empirical studies have suggested that psychological flexibility mediates changes in overall well-being and psychological symptoms (Puolakanaho, Tolvanen, Kinnunen, & Lappalainen, 2020; Bardeen, Fergus, & Orcutt, 2013). However, reliable and valid instruments are needed to comprehensively explore psychological flexibility. The current study analyzed the reliability and validity of the Chinese version of the CompACT using a sample of Chinese civil servants working in the public security system. Even though several items and scoring criteria in the Ch-CompACT differ from the original, the results indicate that the Ch-CompACT has a relatively reasonable 18-item, 3-factor structure of psychological flexibility, which is comparable to the English version (Francis et al., 2016).

In terms of reliability, Cronbach's alpha for the Ch-CompACT was 0.87, and the split-half coefficients was 0.69. The alpha values for the subscales ranged from 0.81 to 0.83, and split-half coefficients ranged from 0.79 to 0.84. These results indicated satisfactory reliability and internal consistency of the Ch-CompACT. The EFA extracted three factors from the Ch-CompACT, which could collectively explain 54.3% of the overall variance. Factor loadings ranged from .527 to .803, and each factor contained 6 items.

Unlike the original version of the CompACT, which contains no items originating from the AAQ-II, we used three items from the AAQ-II in the Ch-CompACT. During the initial revision of the CompACT, we removed some items because we felt they would be difficult to understand in the Chinese cultural context. Therefore, it was necessary to add several items to expand the Openness to Experience subscale. The AAQ-II did not load on other domains of psychological flexibility except for acceptance/experiential avoidance and diffusion/fusion processes. The Chinese version of the AAQ-II was translated by Cao et al.(2013), and has shown good reliability and validity (Cao, Ji, & Zhu, 2013). Considering that the purpose of the CompACT is to comprehensively measure psychological flexibility, and that the AAQ-II has been proved useful as a tool to measure individual experiential avoidance, we accepted the expert suggestion and selected 3 items from the Chinese version of AAQ-II that reflect the individual's acceptance of their experience, and added them to the Openness to Experience subscale. The results show that these items are consistent with the subscale and the total score of the scale.

In ACT interventions, positive changes are thought to be derived from changes in processes related to psychological flexibility (Hayes et al., 2006; Hayes et al., 2012). At the same time, psychological flexibility has been shown to be an important determinant of mental health (Bai et al., 2019; Coto-Lesmes, Fernández-Rodríguez, & González-Fernández, 2020). Thus, studying the detailed relationship between psychological flexibility and mental health is important. The results of this study were consistent with former researches. The three subscales and the total score were

correlated to the SWLS, and as in the English version, were negatively correlated with

the DASS-21. Individuals with higher levels of psychological flexibility are more able

to be aware of their present activities, and are more nonjudgmental of their emotions,

feelings, and thoughts. Thus, they can take more effective actions and are less likely

to experience negative emotions and complain about their lives. These results implied

that scores on the Ch-CompACT can predict how much psychological flexibility

facilitates emotional regulation and well-being outcomes.

This is the first study of CompACT factor structure on Chinese civil servants.

Participants came from provinces and cities with different levels of economic

development across the country. A large number of studies have shown that civil

servants in various regions of China have different levels of anxiety, depression,

burnout, and other psychological problems due to particular aspects of their work and

environment (Li et al., 2013; Xu, Zhao, Wang, & Sun, 2010; Hao et al., 2014; Hao,

Hong, Xu, Zhou, & Xie, 2015b). Ethnicity, resilience, and demographic

characteristics are all considered to be factors affecting the mental health of civil

servants (Fu et al., 2017; Hao et al., 2015b; Hong, Xie, Zhou, Hao, & Xu, 2015;

Huang et al., 2018). Poor psychological flexibility is an important cause of many

psychological and behavioral problems (Zhang, Wang, & Zhu, 2012). Research has

been lacking on the psychological flexibility of civil servants and its relationship with

demographic characteristics. This Chinese revised version of the scale will provide an

effective tool for this type of research.

This study has some limitations. First, participants were all civil servants, who face special professional circumstances and work environments. Therefore, the results may not be applicable to the general population or other occupational groups. Furthermore, more studies need to be conducted to confirm the scale's psychometric properties and performance among a more diverse population. Additionally, participants in this study came from all over the country, which made the results consistent with the characteristics of Chinese context. However, the large sample size and the regional diversity may result in poor fitting index results ($\chi^2/df > 3$). Future studies can verify this questionnaire in populations with smaller sample sizes and more uniform regions.

Conclusions

In summary, the current study found that the Ch-CompACT has acceptable psychometric properties. It is a valid instrument for evaluating different aspects of psychological flexibility.

Acknowledgements

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Appendices

A.Tables

Table A.1

The initial items of the Ch-CompACT

	Behavioral awareness	**Valued action**
1. One of my big goals is to be free from painful emotions.	8. It seems I am "running on automatic" without much awareness of what I'm doing.	14. I make choices based on what is important to me, even if it is stressful.
2. I go out of my way to avoid situations that might bring difficult thoughts, feelings, or sensations.	9. Even when doing the things that matter to me, I find myself doing them without paying attention.	15. My values are really reflected in my behavior.
3. I worry about not being able to control my worries and feelings.	10. I rush through meaningful activities without being really attentive to them.	16. I am able to follow my long terms plans including times when progress is slow.
4. I work hard to keep out upsetting feelings.	11. I do jobs or tasks automatically, without	17. When something is important to me, I'll do it

	being aware of what I'm doing.	even if there is a chance it will upset me.
5. My painful experiences and memories make it difficult for me to live a life that I would value.	12. I find it difficult to stay focused on what's happening in the present.	18. I behave in line with my personal values.
6. I get upset with myself for having certain thoughts.	13. I spent a lot of time thinking about the past or future, rather than being engaged in activities that mattered to me.	19. I undertake things that are meaningful to me, even when I find it hard to do so.
7. I'm afraid of my feelings.		20. I act in ways that are consistent with how I wish to live my life.

Table A. 2

Participant demographics

Demographics	Total sample	EFA sample	CFA sample

		(N = 4,999)		(N = 2,509)		(N = 2,490)	
		N	%	N	%	N	%
Sex	Female	1,327	26.5%	686	27.3%	641	25.7%
	Male	3,672	73.5%	1,823	72.7%	1,849	74.3%
Age	(18.25)	328	6.6%	157	6.3%	171	6.9%
	(25, 30)	1,068	21.4%	562	22.4%	506	20.3%
	(30, 35)	1,109	22.2%	568	22.6%	541	21.7%
	(35, 40)	902	18.0%	440	17.5%	462	18.6%
	(40, 45)	751	15.0%	377	15.0%	374	15.0%
	(45, 50)	534	10.7%	248	9.9%	286	11.5%
	(50, +∞)	307	6.1%	157	6.3%	150	6.0%
Marital status	Married	3,974	79.5%	1,988	79.2%	1.986	79.8%
	Divorced	209	4.2%	111	4.4%	98	3.9%
	Widowed	15	0.3%	6	0.2%	9	0.4%
	Unmarried	801	16.0%	404	16.1%	397	15.9%
Education level	MD/PhD	9	0.2%	4	0.2%	5	0.2%
	MA/MS	241	4.8%	117	4.7%	124	5.0%
	Undergraduate	3,566	71.3%	1,802	71.8%	1,764	70.8%
	Junior College	1,183	23.7%	586	23.4%	597	24%

Table A.3

Items and factor loadings for the CompACT

Source of item and content	Factor loading			Communalities
	1	2	3	
1. One of my big goals is to be free from painful emotions.	.699	.157	.109	.525
2. I go out of my way to avoid situations that might bring difficult thoughts, feelings, or sensations.	.772	.111	.015	.608
3. I worry about not being able to control my worries and feelings.	.762	.219	.164	.655
4. I work hard to keep out upsetting feelings.	.703	.152	.004	.518

5. My painful experiences and memories make it difficult for me to live a life that I would value.	**.700**	.227	.135	.561
7. I'm afraid of my feelings.	**.628**	.213	.091	.448
8. It seems I am "running on automatic" without much awareness of what I'm doing.	.348	**.527**	.119	.413
9. Even when doing the things that matter to me, I find myself doing them without paying attention.	.085	**.784**	.103	.632
10. I rush through meaningful activities without being really attentive to them.	.115	**.791**	.100	.649

11. I do jobs or tasks automatically, without being aware of what I'm doing.	.198	**.803**	.164	.711
12. I find it difficult to stay focused on what's happening in the present.	.258	**.624**	.117	.470
13. I spend a lot of time thinking about the past or future, rather than being engaged in activities that matter to me.	.330	**.543**	.152	.427
15. My values are really reflected in my behavior.	.069	.100	**.650**	.437
16. I am able to follow my long terms plans even when progress is slow.	.070	.120	**.751**	.584

17. When something is important to me, I'll do it even if there is a chance it will upset me.	-.038	.051	**.721**	.524
18. I behave in line with my personal values.	.147	.135	**.748**	.600
19. I undertake things that are meaningful to me, even when I find it hard to do so.	.034	.140	**.759**	.597
20. I act in ways that are consistent with how I wish to live my life.	.255	.111	**.581**	.415
% of variance	19.4%	17.4%	17.5%	
Cumulative % of variance	19.4%	36.8%	54.3%	

Table A.4

Goodness-of-fit indices for the Ch-CompACT

χ²/*df*	NFI	IFI	TLI	CFI	PCFI	RMSEA
865.392/125 = 6.923	.946	.934	.943	.954	.779	.049

Note: χ²/:chi-square discrepancy, *df*: degrees of freedom, NFI：Normed Fit Index;
IFI: Incremental Fit Index,TLI: Tucker–Lewis index, CFI: Comparative Fit Index ,
PCFI: Parsimony-adjusted Comparative Fit Index, RMSEA: Root Mean Square Error
of Approximation.

Table A.5

Cronbach's α and the Guttmann split-half coefficient for each subscale of the Ch-CompACT and for the Ch-CompACT as a whole

	Cronbach's α	Guttman split-half coefficient
Openness to Experience	. 83	. 84
Behavioral Awareness	. 83	. 84
Valued Action	. 81	. 79
CompACT Total Score	. 87	. 69

Table A.6

Correlations Between the CompACT and Other Variables

Measure	Correlation (r)			
	CompACT Total Score	CompACT Openness to experience	CompACT Behavioral Awareness	CompACT Valued Action
SWLS[a]	.55**	.44**	.35**	.48**
DASS-21				
Depression	−.71**	−.61**	−.58**	−.44**
Anxiety	−.64**	−.61**	−.51**	−.33**
Stress	−.66**	−.66**	−.51**	−.31**

Note. the Satisfaction With Life Scale(SWLS) is from Xiong et al.(2009); DASS-21,

the Depression Anxiety and Stress Scales 21-item version (DASS-21) is from Wang

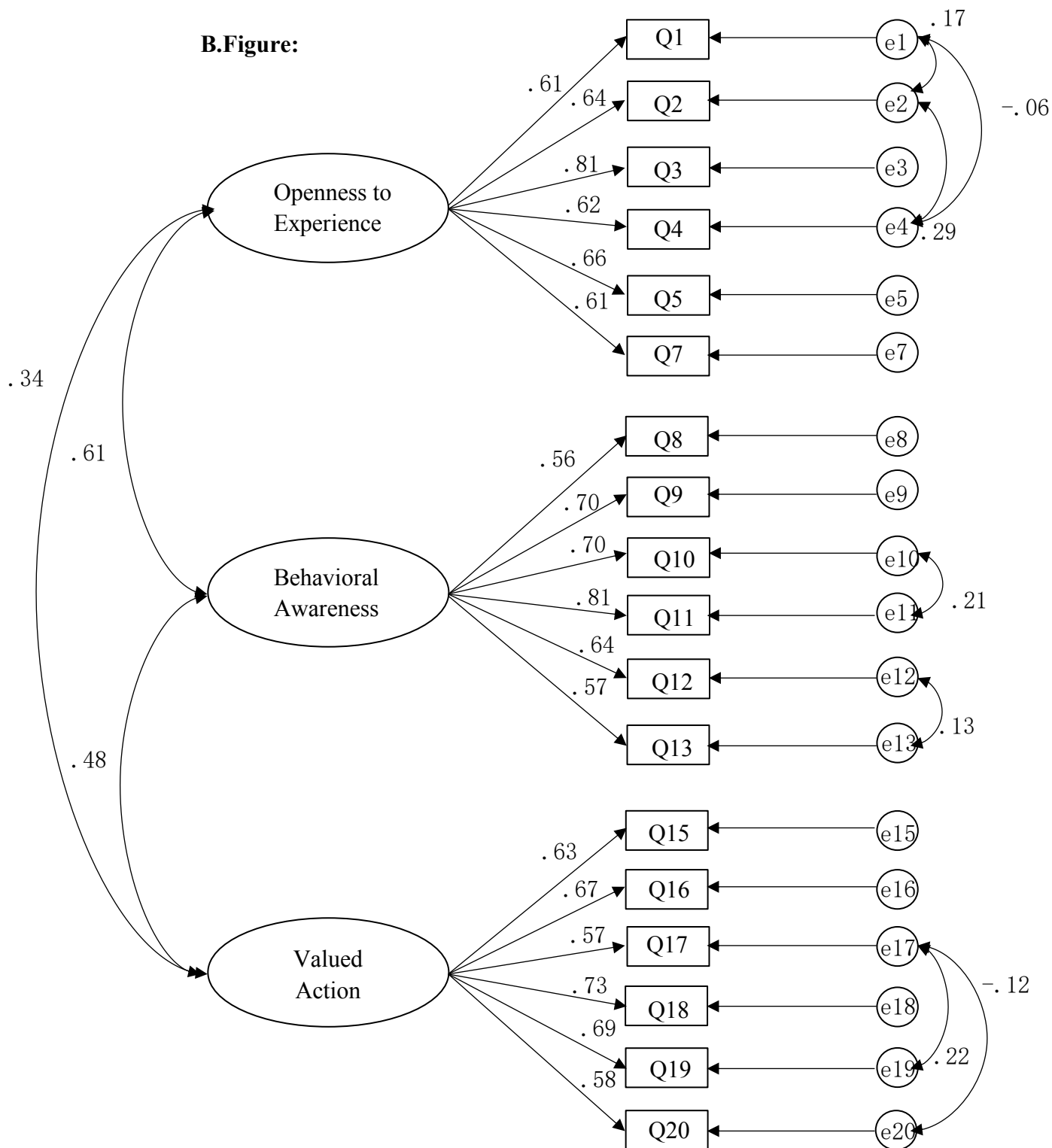et al.(2016).

**$p < .01$

B.Figure:

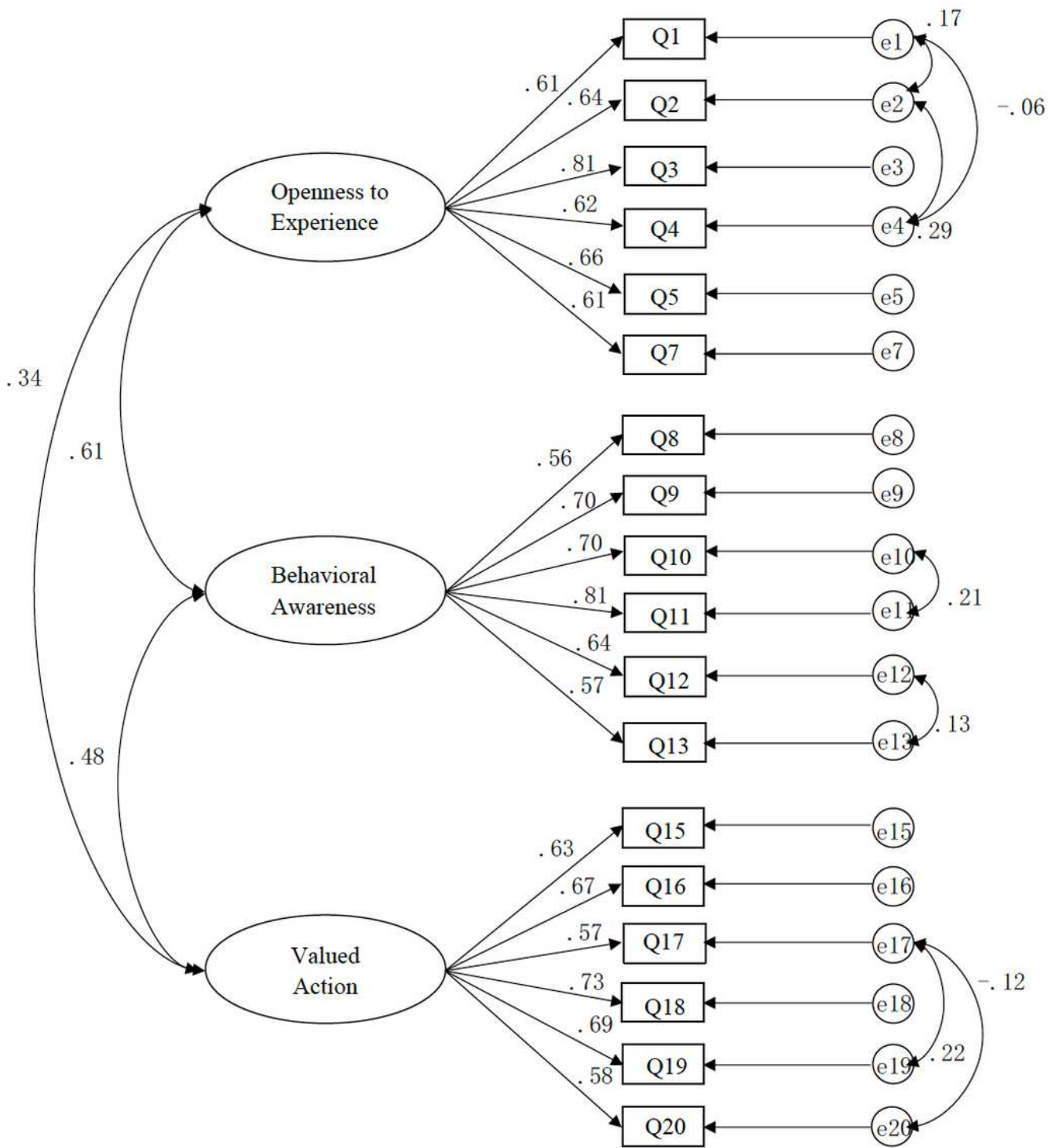Fig.B.1 .Measurement model for Ch-CompACT

Figures

Figure 1

Measurement model for Ch-CompACT

Supplementary Files

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- Tables.pdf