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Culture and State Boredom: A Comparison between European Canadians and Chinese

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Abstract

The primary goal of the present research was to examine cross-cultural validity of the Multidimensional State Boredom Scale (MSBS) by comparing a European Canadian sample and a Chinese sample. The secondary goal was to explore cross-cultural differences in the actual experience of boredom between European Canadian and Chinese participants when they completed a psychological survey. After establishing cross-cultural validity of the MSBS by eliminating items that functioned differentially across the two cultural groups, we found that European Canadians scored higher on the MSBS than did Chinese. Results are consistent with the literature on cultural differences in ideal affect, such that European North Americans (vs. East Asians) tend to value high-arousal positive affects (e.g., excitement) more, and low-arousal positive affect less (Tsai et al., 2006).

Word Count: 124

KEYWORDS: boredom; Multidimensional State Boredom Scale (MSBS); cross-cultural differences; Chinese

Culture and State Boredom: A Comparison between European Canadians and Chinese

1. Introduction

Boredom, “the aversive experience of having an unfulfilled desire to be engaged in satisfying activity” (Fahlman, Mercer-Lynn, Flora, & Eastwood, 2013, p. 69), has been associated with a wide range of negative consequences, such as low academic achievement (Jarvis & Seifert, 2002), life dissatisfaction (Farmer & Sundberg, 1986), and physical complaints (Sommers & Vodanovich, 2000). Continuous research in elucidating psychological mechanisms underlying the experience of boredom may help ameliorate its negative consequences.

1.1. Measurement of boredom

A number of self-report scales have been devised to assess boredom. The Job Boredom Scale (JBS; Lee, 1986) and Leisure Boredom Scale (LBS; Iso-Ahola & Weissinger, 1990) are examples of measures limited to a specific domain. On the other hand, two measures have been developed to assess boredom more generally – the Boredom Proneness Scale (BPS; Farmer & Sundberg, 1986) and Boredom Susceptibility Scale (ZBS; Zuckerman, Eysenck, & Eysenck, 1978). These two scales assess the propensity to become bored, so they are considered measures of trait boredom.

To fully understand the psychological phenomenon of boredom, it is important to differentiate between chronic propensity to experience boredom (i.e., trait boredom) and the actual experience of boredom (i.e., state boredom) (Todman, 2003; Vodanovich, 2003). While reflecting a psychological characteristic of a *person*, trait boredom is definitely one potential cause of state boredom. Yet, state boredom is also highly determined by the *situation*. Further, state boredom is typically thought of as mediating the effect of trait boredom. Thus, having a valid measure of state boredom is crucial for boredom research. With these concerns in mind,

Fahlman and colleagues (2013) recently developed the Multidimensional State Boredom Scale (MSBS). Initial validation of the MSBS was conducted in Canada (Fahlman et al., 2013). In the Canadian context, it was demonstrated that state boredom is a multidimensional construct, with five first-order factors (i.e., Disengagement, High Arousal, Low Arousal, Inattention, Time Perception) subsumed under a single second-order factor (i.e., General Boredom).

1.2. Culture and boredom

Culture exerts profound influences on a wide array of basic psychological processes, including emotional experiences (e.g., Mesquita & Karasawa, 2002). Cultural investigations in boredom, however, remain sporadic, and extant results appear inconsistent. Of relevance to our current cultural comparison, Wang and colleagues (2000) found that Chinese participants (vs. existing Western data) were less susceptible to boredom. Sundberg, Latkin, Farmer, and Saoud (1991), on the other hand, found that Hong Kong Chinese and Lebanese (vs. American and Australian) participants were more boredom prone.

One issue regarding the above-mentioned findings is that researchers have used different scales to measure (trait) boredom, and therefore these seemingly contradictory results are not directly comparable. Supporting this possibility, Mercer-Lyn, Flora, Fahlman and Eastwood (2013) provided evidence that the BPS (Farmer & Sundberg, 1986) and the ZBS (Zuckerman et al., 1978) measure somewhat different constructs that are associated with different outcomes. Another issue is that past cross-cultural studies in boredom, to the best of our knowledge, did not address measurement invariance. This issue is critical because group differences cannot be meaningfully interpreted without first ensuring that items are free of cultural bias (Chen, 2008).

1.3. The Present Research

The primary purpose of the present research was to examine cross-cultural validity of the MSBS by comparing a European Canadian sample and a Chinese sample. The secondary purpose of the present research was to explore cross-cultural differences in the actual experience of boredom between European Canadian and Chinese participants when they engaged in the same task (i.e., completing a psychological survey).

2. Method

2.1. Participants, materials, and procedure

Seven hundred and seventy-five Chinese participants (466 female) were recruited from a university in Heilongjiang province in China to participate in this study. The MSBS was translated into simplified Chinese¹ using the back-translation method and discrepancies were resolved by the first and the third authors who are bilingual in Chinese and English (see Appendix A for the English version and Appendix B for the final Chinese version²). Consenting participants completed a demographics questionnaire and the Chinese MSBS. All items were rated on a 7-point scale (1 = strongly disagree; 7 = strongly agree).

Our comparison group of European Canadian participants was obtained from archival data ($n = 572$; 376 female). We controlled the potential effect of age by creating age-matched samples for the present study. For each age category, we randomly removed participants from the cultural group with the larger number of participants within that age category until achieving age-matched samples. The final data set consisted of 383 European Canadian (255 female) participants and 383 Chinese (235 female) participants. For both cultural groups, the age range was from 17 to 28 years and the median age was 19 years.

3. Results

3.1. Measurement invariance

Multiple-group Confirmatory Factor Analysis (CFA) using AMOS 20.0 was used to perform measurement invariance tests.

3.1.1 Configural invariance

To examine whether the same items load onto the same latent factor across the two cultural groups, configural invariance tests were conducted by constraining the factorial structure to be equal. The MSBS was designed to measure state boredom as a multidimensional construct (Fahlman et al., 2013) with five primary factors subsumed under a secondary factor. Accordingly, we first used CFA to test this second-order model for each cultural group.

For the European Canadian sample, this model fit the data reasonably well, $\chi^2 (372) = 886.07$ ($\chi^2/df = 2.38$), Tucker-Lewis Index (TLI) = .901, Comparative Fit Index (CFI) = .909, root mean square error of approximation (RMSEA) (and 90% CI) = .060 (.055, .065). For the Chinese sample, however, this model provided somewhat unsatisfactory fit to the data, $\chi^2 (372) = 1081.45$ ($\chi^2/df = 2.91$), TLI = .824, CFI = .839, RMSEA (and 90% CI) = .071 (.066, .076). Standardized regression weights revealed that the factor loading of item 19 (“I wish I was doing something more exciting”) was low (.26). Furthermore, modification indices suggested that the following items loaded onto multiple factors: item 1 (“Time is passing by slower than usual” ← Time Perception and Low Arousal), item 14 (“I feel agitated” ← High Arousal and Inattention), item 21 (“I am impatient right now” ← High Arousal and Inattention), and item 27 (“I am annoyed with the people around me” ← High Arousal and Inattention). These five items were eliminated thus modifying items within the original second-order model. This revised 24-item model provided reasonable fit to the Chinese data, $\chi^2 (247) = 637.84$ ($\chi^2/df = 2.58$), TLI = .868, CFI = .881, RMSEA (and 90% CI) = .064 (.058, .071), as well as the European Canadian data,

χ^2 (247) = 578.38 (χ^2 /df = 2.34), TLI = .914, CFI = .923, RMSEA (and 90% CI) = .059 (.053, .066).

These individual CFAs suggest configural invariance using the revised 24-item version of the MSBS; that is, the pattern of loadings for the second-order model was comparable across the two cultural groups. Hence, this revised model was used as the baseline model for subsequent measurement invariance tests.

3.1.2. First-order metric invariance

Using multiple-group CFA, we first tested the unconstrained baseline model (Model 0) which, not surprisingly, provided reasonably good fit to the data, χ^2 (494) = 1216.22, (χ^2 /df = 2.46) TLI = .894, CFI = .905, RMSEA (and 90% CI) = .044 (.041, .047). To examine whether all first-order factor loadings were equivalent across cultures, we then tested a model with all first-order factor loadings constrained to be equal (Model 1) and obtained the following indexes: χ^2 (513) = 1270.67, (χ^2 /df = 2.48) TLI = .893, CFI = .900, RMSEA (and 90% CI) = .044 (.041, .047). Model 1 was then compared to Model 0 using Δ CFI: CFI (Model 0) – CFI (Model 1) = .905 - .900 = .005. This Δ CFI is less than .01, and thus this measurement model is invariant at the first-order metric level (Cheung & Rensvold, 2002), suggesting that all first-order factor loadings were equivalent across the two cultures.

3.1.3. Scalar invariance

To examine whether observed scores could be compared across cultures, scalar invariance tests were conducted. We first tested a model with all first-order factor loadings and all item intercepts constrained to be equal across the two cultural groups (Model 2a) and obtained the following indexes: χ^2 (537) = 1870.67, (χ^2 /df = 3.48) TLI = .819, CFI = .824, RMSEA (and 90% CI) = .057 (.054, .060). Model 2a was then compared to Model 1 using Δ CFI:

CFI (Model 1) – CFI (Model 2a) = .900 - .824 = .076. This Δ CFI is greater than .01, and thus this measurement model is not invariant at the scalar level (Cheung & Rensvold, 2002), suggesting that some items functioned differentially across cultures.

3.1.4. Testing individual items for differential intercepts

In order to isolate the differentially functioning items, we conducted a series of tests. For each test, a model with all first-order factor loadings and one item intercept constrained to be equal across cultures. This constrained model was then compared to Model 1 using Δ CFI. A Δ CFI of .01 or more would suggest differential item functioning (DIF) for that particular item. The following five items were found to exhibit DIF: item 5 (Δ CFI = .025), item 7 (Δ CFI = .037), item 12 (Δ CFI = .015), item 23 (Δ CFI = .016), and item 29 (Δ CFI = .013). An examination of the intercept differences revealed that for all of these items, participants who had the same latent state boredom level obtained higher scores on these observed variables if they belonged to the European Canadian (vs. Chinese) cultural group. These five DIF items were therefore eliminated, leaving 19 non-DIF items in the scale. Observed scores using this revised scale should be amenable to direct comparison across the two cultures.

3.1.5. Second-order metric invariance

To examine whether all second-order factor loadings were equivalent across the two cultural groups, we first tested the revised 19-item model with all first-order factor loadings and all item intercepts constrained to be equal across the two cultural groups (Model 2b) and obtained the following indexes: χ^2 (330) = 976.74 (χ^2 /df = 2.96), TLI = .881, CFI = .885, RMSEA (and 90% CI) = .051 (.047, .054). We then tested a model with all first-order factor loadings, all second-order factor loadings, and all item intercepts constrained to be equal across the two cultural groups (Model 3) and obtained the following indexes: χ^2 (333) = 979.57 (χ^2 /df =

2.94), TLI = .882, CFI = .885, RMSEA (and 90% CI) = .050 (.047, .054). Model 3 was then compared to Model 2b using Δ CFI: CFI (Model 2b) – CFI (Model 3) = .885 - .885 = 0. As there is no change in CFI, this measurement model is considered invariant at the second-order metric level (Cheung & Rensvold, 2002), indicating that all second-order factor loadings were equivalent across the two cultures. Finally, it was confirmed that this revised 19-item model (see Figure 1) provided reasonably good fit to the Chinese data, χ^2 (148) = 373.63, TLI = .890, CFI = .905, RMSEA (and 90% CI) = .063 (.055, .071), as well as the European Canadian data, χ^2 (148) = 339.81, TLI = .932, CFI = .941, RMSEA (and 90% CI) = .058 (.050, .066).

Taken together, this revised 19-item model demonstrated metric invariance for both first- and second-order factor loadings, as well as scalar invariance, across the two cultural groups.

3.2. Cross-cultural differences in state boredom

In order to make unbiased cross-cultural comparisons, we had to reduce the original 29-item MSBS to 19 items. Notably, all five items in the High Arousal subscale had to be eliminated, suggesting that the meaning of these “high arousal” items and/or their relationship to state boredom may differ across the two cultural contexts. For the remaining four subscales, however, measurement invariance results suggest that most items (79%) are suitable for comparing state boredom level between Chinese and European Canadians. Accordingly, MANCOVAs were conducted using this revised 19-item version of the MSBS with culture as the independent variable and the four subscales as the dependent variables. Results indicated that culture had a significant effect on the combined DVs, Wilk’s $\lambda = 0.90$, $F(4, 761) = 21.53$, $p < .001$, partial- $\eta^2 = .10$. Univariate analyses revealed that Chinese participants scored lower on all four dimensions of state boredom than did European Canadian participants, $F_s > 21.30$, $p_s < .001$, partial- $\eta^2_s > .02$ (see Table 1 for details).

4. Discussion

In the present study we adapted the MSBS to Chinese and validated it by establishing cross-cultural measurement invariance at the metric and the scalar levels, and examined differences in state boredom between Chinese and European Canadians. Our findings demonstrate that the revised four-factor 19-item version of the MSBS is culturally equivalent in that the factor structure, the factor loadings, and the individual items are invariant across the two cultural groups. As assessed using this revised version of the MSBS, Chinese people experience state boredom to a lesser degree than do European Canadians when completing a psychological survey.

4.1. Implications for Scale Development

Through measurement invariance tests, we find that some items of the original MSBS may not be suitable for measuring state boredom among Chinese individuals. First, item 19 (“I wish I was doing something more exciting”) has a low factor loading, suggesting that having the desire to engage in something “exciting” may not be a central feature of the experience of boredom in the Chinese context. Second, four items loaded quite substantially onto another factor in addition to the intended factor, undermining the specificity of these items. Items 14, 21, and 27 in particular loaded onto the factor Inattention (.70, .72, and .53 respectively) almost as strongly as the intended factor High Arousal (.73, .68, and .68 respectively), suggesting that these three items cannot help discriminating between the Inattention and the High Arousal dimensions of state boredom. Another possibility is that experiencing high arousal negative emotion may not be a distinct enough cluster of manifestations of the experience of boredom among the Chinese. We will return to this issue momentarily. Finally, five items exhibit differential functioning across the two cultural groups. All five items are biased toward European

Canadians, such that individuals who have the same latent level of state boredom tend to score higher on these observed variables if they come from a European Canadian (vs. Chinese) cultural background. This can be explained by the possibility that these five items tap into manifestations of boredom that are more common in the European Canadian (vs. Chinese) cultural context. However, this may also be explained by the possibility that the interpretation may not be entirely equivalent between the English version and the Chinese version of these five items. In retrospect, we believe that this may be the case for items 5 and 7. For item 5 (“Everything seems to be irritating me right now”; “现在，似乎所有的事情都能激怒我”), the English word “irritating” has been translated by the Chinese word “激怒”. Although we still believe that this Chinese word is similar in meaning to, and thus a reasonable translation of, “irritating”, this Chinese word may be somewhat stronger than “irritating”. For item 7 (“Everything seems repetitive and routine to me”; “对我来说，所有的事情都是重复的和乏味的”), the meaning of the English word “seems” is lost in the Chinese version and the word “routine” has been translated by a more general Chinese term “乏味” which is more similar in meaning to the English word “boring” than the original word “routine”. Taken together, the Chinese version of this item may imply a stronger level of boredom than the original English version. From a linguistic standpoint, it is not surprising that individuals would agree to the English (vs. Chinese) version of these two items to a greater extent, given the same latent state boredom level. A re-examination of the other three items (“I am more moody than usual”; “My mind is wandering”; “It seems like there’s no one around for me to talk to”), however, did not reveal any translation issues that could explain differential functioning between the two cultural groups. Thus, we believe that these three statements may describe the boredom experience more readily in the European Canadian (vs. Chinese) context.

It is important to note that all items for the High Arousal dimension are problematic one way or the other and have to be eliminated before making cross-cultural comparisons. Our preliminary stance on this issue is that the high arousal affective component of boredom needs to be more thoroughly investigated in the Chinese context. It may be the case that boredom is not as likely to be experienced along with high arousal negative emotion (e.g., agitated, moody) in the Chinese culture. Our current recommendation is to use the revised 19-item version of the Chinese MSBS to assess state boredom among Chinese people.

4.2. Implications for Theory Development in Culture and Boredom

Culture can shape the experience of boredom in two ways. First, people from certain cultural contexts may be more likely to be stuck in boring situations, compared with people from other cultural contexts. This view of cultural influences focuses on chronic situational differences across socio-cultural contexts. In line with this view, Sundberg and colleagues (1991) proposed that people in traditional Asian (vs. Western) cultures may have fewer opportunities to engage in interesting and challenging activities, and thus experience chronic boredom to a higher degree, reflecting culture-contingent *external* factors of boredom. Indeed, using the BPS (e.g., “I am often trapped in situations where I have to do meaningless things”), a trait boredom measure that might have captured some of these culture-contingent *external* factors, Asians (vs. Westerners) were found to be more prone to boredom.

Second, people with certain cultural backgrounds may experience a higher level of boredom than people with other cultural backgrounds because of internalized cultural values. One relevant framework is ideal affect – “the affective states that people value and would ideally like to feel” (Tsai, Knutson, & Fung, 2006, p. 289). North American culture promotes the idea of having a fun and exciting life (Wolfenstein, 1951). In line with this observation, it has been

found that European Americans value high-arousal positive affects (e.g., excitement) more, and low-arousal positive affect (e.g., calm) less, compared with East Asians (Tsai et al., 2006).

According to arousal theories of boredom, when an individual's need for arousal is not met by the availability of stimulation provided by the environment, the aversive state of boredom would arise (Eastwood, Frischen, Fenske, & Smilek, 2012). Hence, cultural differences in the ideal level of arousal that people tend to strive for might have an impact on the level of boredom subjectively experienced in response to a particular situation, reflecting culture-contingent *internal* factors of boredom.

The present results show that the Chinese (vs. European Canadians) are less likely to experience the four dimensions of state boredom, and thus are consistent with current theorizing on culture and ideal affect. Taken together with the previous finding that Chinese participants reported higher levels of chronic boredom, than did Americans and Australians (Sundberg et al., 1991), our findings contribute to the culture and boredom literature by showing that when situational influences are minimized by the use of a state boredom measure to assess the actual experience of boredom in a comparable situation, Chinese individuals are actually less likely to feel bored. This underscores the importance of separating culture-contingent internal and external factors when analyzing cultural differences in boredom.

4.3. Limitations and future directions

There are limitations of the present study that are worth addressing in future research. First, the sample size of the current study is not large enough to assess measurement invariance across both genders and cultures. Thus, future research should employ a larger sample that could afford simultaneous examination of gender and culture. Second, although our statistical analyses point to non-equivalence of a number of MSBS items, the exact reason for this should be

explored further, and potentially points to the need for a theoretical reconsideration of state boredom within non-European cultural contexts. Non-equivalent items revealed by the measurement invariance tests may be due to substantive cultural difference in how people conceptualize and experience “boredom”. However, they may also be due to language or translation issues. One avenue for future research would be to step back and adopt a qualitative approach to investigate how Chinese people define and conceptualize “boredom”, and generate additional items that tap into the affective, cognitive, and behavioral manifestations of boredom in the Chinese context. This will ensure a culture-specific instrument that fully represents the domain when used within the Chinese cultural context. Third, it would be ideal for future research to validate the Chinese MSBS by investigating its relationships with other variables. Fourth, there is evidence that the personality trait of sensation seeking is heritable (Stoel, De Geus, & Boomsma, 2006). Although we adopted a cultural value perspective to interpret the current findings, it remains possible that genetic factors may also contribute to the observed group differences in boredom. Finally, it is important to keep in mind that our results that the Chinese (vs. European Canadians) tend to experience state boredom to a lesser degree when engaging in the same task may be specific to completing a survey. Thus, it remains desirable to examine the generalizability of the current results by using multiple activities in future research.

Footnotes

1. There are two standard character sets for the Chinese written language. Simplified Chinese characters are commonly used in mainland China and Singapore whereas traditional Chinese characters are commonly used in Hong Kong and Taiwan. The meanings of the words are not affected by the character set used.

2. Basic psychometric properties of the Chinese MSBS were reported in Liu and colleagues (2013).

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	Mean (SD)		<i>F</i> (1, 764)	<i>p</i>	partial- η^2
	European Canadian	Chinese			
Disengagement	3.88 (1.15)	3.13 (1.11)	83.31	< .001	.10
Low Arousal	3.18 (1.39)	2.52 (1.20)	49.56	< .001	.06
Inattention	4.36 (1.35)	3.75 (1.41)	37.61	< .001	.05
Time Perception	3.05 (1.42)	2.61 (1.22)	21.30	< .001	.03

Table 1. Cultural Differences in the Four Components of State Boredom

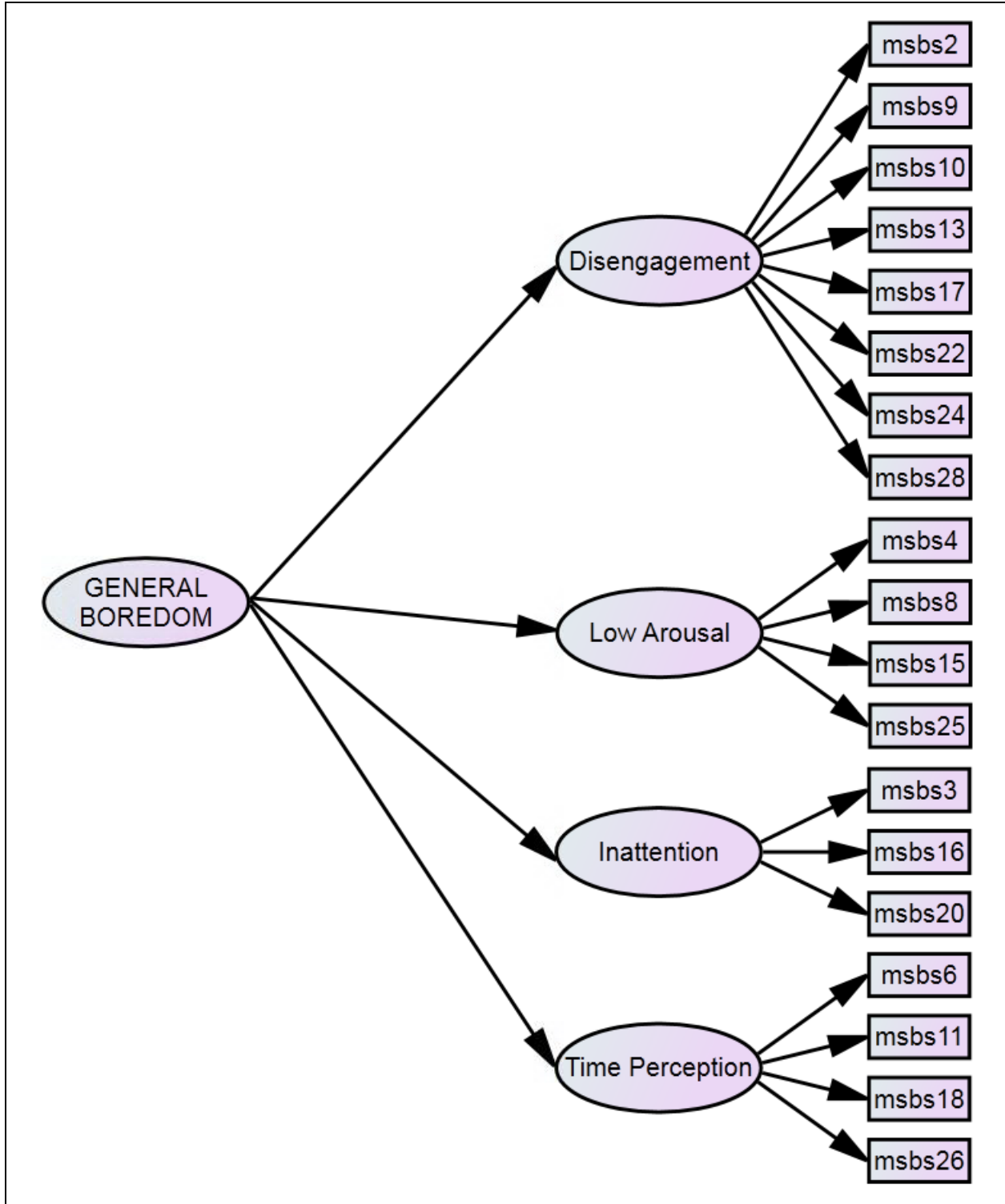


Figure 1. The final model of revised 19-item Multidimensional State Boredom Scale (MSBS)

Appendix A. English Version of the Multidimensional State Boredom Scale (MSBS)

1. Time is passing by slower than usual.
2. I am stuck in a situation that I feel is irrelevant. *
3. I am easily distracted. *
4. I am lonely. *
5. Everything seems to be irritating me right now.
6. I wish time would go by faster. *
7. Everything seems repetitive and routine to me.
8. I feel down. *
9. I seem to be forced to do things that have no value to me. *
10. I feel bored. *
11. Time is dragging on. *
12. I am more moody than usual.
13. I am indecisive or unsure of what to do next. *
14. I feel agitated.
15. I feel empty. *
16. It is difficult to focus my attention. *
17. I want to do something fun, but nothing appeals to me. *
18. Time is moving very slowly. *
19. I wish I was doing something more exciting.
20. My attention span is shorter than usual. *
21. I am impatient right now.
22. I am wasting time that would be better spent on something else. *
23. My mind is wandering.

24. I want something to happen but I'm not sure what. *

25. I feel cut off from the rest of the world. *

26. Right now it seems like time is passing slowly. *

27. I am annoyed with the people around me.

28. I feel like I'm sitting around waiting for something to happen. *

29. It seems like there's no one around for me to talk to.

Note. Items with an asterisk are retained in the revised 19-item version.

Appendix B. Chinese Version of the Multidimensional State Boredom Scale (MSBS)

1. 时间过得比平时慢。
2. 我感觉我被困在一个与我无关的情境中。*
3. 容易分心。*
4. 我是孤独的。*
5. 现在，似乎所有的事情都能激怒我。
6. 我希望时间能过的更快。*
7. 对我来说，所有的事情都是重复的和乏味的。
8. 我感到心情低落。*
9. 我不得不做一些对我毫无价值的事情。*
10. 我觉得无聊。*
11. 对我来说，时间是漫长的。*
12. 我比平时更情绪化。
13. 我对接下来要做什么感到犹豫不决或不确定。*
14. 我感到焦躁不安。
15. 我觉得空虚。*
16. 我很难集中我的注意力。*
17. 我想做一些有趣的事情，但是什么都吸引不了我。*
18. 时间流逝的非常缓慢。*
19. 我希望我做的是令我更兴奋的事情。
20. 我集中注意的时间比平时更短。*

21. 现在我没有耐心。
22. 我正在浪费时间，如果把这些时间花在别的事情上会更好。*
23. 我在走神。
24. 我希望某件事情发生，但我不确定那是什么事。*
25. 我感到与外界相隔绝。*
26. 此刻，时间好像过的很慢。*
27. 我对周围的人感到厌烦。
28. 我觉得我正在坐等某些事情的发生。*
29. 似乎我周围没有人可以与之交谈。

Note. Items with an asterisk are retained in the revised 19-item version.