

# Study of item text in the Chinese Symptom Checklist-90

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## Abstract

Symptom Checklist-90 (SCL-90) is the popular and widely used instrument, whether in mental health screening, psychological consultation, or the diagnosis and estimate of mental illness. In 1984, it was translated from the English version into Chinese and then SCL-90 has been widely used in China. It is a pity that the item text of Chinese version has not been revised since the birth of it until today. We analyzed the Chinese version of the 90-item text from 3 new perspectives: translation, semantic, and cross-cultural, and thought that 18 items should be revised. This study's results have taken one step forward on the basis of previous studies, which will play an important role in improving the quality of Chinese version SCL-90 and improving the mental health level of Chinese people.

**Abbreviations:** ANX = anxiety, DEP = depression, GSI = Global Severity Index, HOS = hostility, INT = interpersonal sensitivity, OBS = obsessive-compulsive, PAR = paranoid ideation, PHOB = phobic anxiety, PSDI = Positive Symptom Distress Index, PST = positive symptom total, PSY = psychoticism, SCL-90 = symptom checklist-90, SCL-90-R = symptom checklist-90 revised, SOM = somatization, WHO = World Health Organization.

**Keywords:** item text, psychological measurement, symptom checklist -90-Revised(SCL-90-R), symptom checklist-90, theoretical studies

## 1. Introduction

Today, in the 2020s, the 7 billion people living on earth can almost be said to be all pursuing a happy life. Unfortunately, however, many people have failed to achieve that goal. The data show that 450 million people worldwide have mental or behavioral disorders.<sup>[1]</sup> More than 300 million people suffer from depression, which contributes 7.5% to global disability.

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Depression is also the major contributor to suicide deaths, which numbers close to 800,000 per year.<sup>[2]</sup> Symptom Checklist-90 (SCL-90) is the popular and widely used instrument, whether in mental health screening, psychological consultation, or the diagnosis and estimate of mental illness.<sup>[3–9]</sup>

SCL-90 was compiled by American psychologist Derogatis et al in 1973,<sup>[10]</sup> thereafter SCL-90 was subsequently revised as Symptom Checklist-90-Revised (SCL-90-R), which was published in 1975.<sup>[11]</sup> SCL-90-R historical sources are roughly like this: shortly after Adolph Meyer of Johns Hopkins University developed the first clinician-observer psychiatric rating scale at the turn of the 20th century, Robert Woodworth introduced a self-rating scale of psychiatric symptoms. For the next few decades, self-rating measures began to develop rapidly.<sup>[12]</sup> The Hopkins Symptom Checklist,<sup>[13]</sup> the precursor of the Symptom Checklist, emanated from this tradition. In the early 1970s, SCL-90 and SCL-90-R appeared one after another. The intended target group for SCL-90-R is people 13 years or older. It contains 90 items. Each item identifies a symptom such as a feeling, thought pattern, or behavior expressed as a word or phrase. Examinees rate each of 90 items on a 5-point scale from 0 (Not at All) to 4 (Extremely) specifying how much each has bothered them during the past 7 days.<sup>[14]</sup> Derogatis<sup>[15]</sup> point out that the principal symptom dimensions of SCL-90-R are labeled somatization (SOM), obsessive-compulsive (OBS), interpersonal sensitivity (INT), depression (DEP), anxiety (ANX), hostility (HOS), phobic anxiety (PHOB), paranoid ideation (PAR), and psychoticism (PSY). The global measures are referred to as the Global Severity Index (GSI), the Positive Symptom Distress Index (PSDI), and the Positive Symptom Total (PST). For half a century, SCL-90-R has been welcomed by many psychologists and clinicians. They have achieved gratifying results on the application and research of SCL-90-R. The studies indicate that the psychometric properties of the SCL-90-R are well. It is also a valid tool for a measurement of psychological distress and the measurement of change following treatment. The SCL-90-R had

been translated into 26 languages, has been utilized in >1000 studies worldwide, and is validated for a range of diverse populations.<sup>[16]</sup>

At the beginning of the 1980s, Wang translated the English version of the SCL-90 into Chinese (in the following to refer as Wang Version<sup>[17,18]</sup>) and introduced it in detail. He also explained the scope of application and matters needing attention of the instrument. From then on, SCL-90 has been widely used in China. After testing 1338 Chinese normal adults, Jin, Wu and Zhang (1986) found that the average of SCL-90 factors of Chinese normal adults were between 1.23 and 1.65, and proposed the earliest norm of SCL-90 of Chinese normal adults.<sup>[19]</sup> After that, many others took SCL-90 tests and they include middle school student, university student, soldier, pilot, nurse, teacher, worker, peasant, sportsman, gravida, druggist, sexworker, and so on.<sup>[20]</sup> The researchers collected the survey data of 12160 from Chinese normal adults, and found the average of SCL-90 factors were between 1.23 and 1.66.<sup>[21]</sup> Clinical scientists used SCL-90 to assess in 355 Chinese college students with androgenetic alopecia, found that these students showed higher levels of SOM, OBS, INT, DEP, PHOB, PSY, and Global Severity Index (GSI) compared with the control group.<sup>[22]</sup> SCL-90 applications in China include: application in the general population, application in stress events (such as earthquake, traffic accident, medical examination or surgery, and so on), test of psychosomatic illness, application in evaluation of curative effect, application in neuropsychiatric disorders, and comparative study with other scales.<sup>[23]</sup> From this we can see that the application of SCL-90 in China is very extensive.

Chinese researchers are also enthusiastic about SCL-90 research. In China Knowledge Network Database, to enter “SCL-90” query for documentary record from 1984 to 2020, and 5275 records obtained.<sup>[24]</sup> In other words, over the past 36 years, an average of 145 articles on SCL-90 have been published each year. Although SCL-90 has been widely used and recognized in China, some researchers also discussed the problems relating to the item text of Chinese Symptom Checklist-90.

First, researchers analyzed the SCL-90 item load and found that the load coefficient of some items in these 90 items decreased, that is, the specificity of these items was insufficient. The 10 items including (9), (6), (73), (5), (14), (71), (80), (16), (84), and (85) (this number is original item numbering from SCL-90, similarly hereinafter).<sup>[25]</sup> After checking, 8 of these 10 items (except 9 and 85) were deleted in brief symptom inventory (BSI).<sup>[26]</sup> Nevertheless, the author’s study does not concern questions on the accuracy of Translation and Chinese expressions of the items text of SCL-90.

Second, according to Li,<sup>[27]</sup> the SCL-90 belongs to the rank scale, and the answer options are presented in hierarchical natural language (ie, semantic quantifiers). Generally speaking, semantic quantifiers are composed of words such as pole, very, equivalent, approximate, large, small, many, less, light and heavy, so their linguistic assignment is also vague. This means that for SCL-90 item text, the direction of its semantics, the weight of the mood, and the size of the measure should be strictly determined. At the same time, let the subjects to accurate identification in the symptoms of whether there is confirmation? If yes, and then yet need of confirmation the level of symptoms. However, there are few studies on this in China.

Third, SCL-90 some items text content is easy to produce ambiguity, the subjects often difficult to answer correctly. For example, “unwanted thoughts or ideas that won’t leave your

head (3)” and “feeling blocked in getting things done (28).”<sup>[28]</sup> The article discusses this issue only from the perspective of the subjects and do not involve the translation and accurate presentation of SCL-90 item texts.

Fourthly, Xie and Dai<sup>[20]</sup> noted that as for the translation and revision of SCL-90, only 3 of them were revised by Chinese researchers. The 3 items include “loss of sexual interest or pleasure”(5), “worried about sloppiness or carelessness,” (10) and “feeling that people will take advantage of you if you let them”(83). They also pointed out that cannot rule out that the translation differences of these items may have a certain impact on the answers of the subjects. Although the author has discussed the translation and revision of the SCL-90, the discussion of the remaining item texts cannot be seen except for the above 3 item texts.

All in all, the above-mentioned author’s research on SCL-90 not only shows its advantages, but also points out some problems. These studies have played a role in improving the application of SCL-90. At the same time, their research also points out the direction for the follow-up study.

In addition, we made a detailed comparison of Wang Version SCL-90 with the SCL-90 text applied in recent years<sup>[29]</sup> and found that its item texts were identical. To put it another way, the item text has not been revised since the birth of the Wang Version SCL-90 (ie, the Chinese version SCL-90) until today, 2020.

In this study, we will make a comprehensive revision of Wang Version SCL-90 based on English original text of SCL-90, SCL-90-R and the text of Wang Version SCL-90 from the perspective of translation, semantics, and cross-cultural. Our aim is to improve the quality of Chinese version SCL-90 and to support the application of SCL-90 in China, and finally achieve the purpose of promoting Chinese mental health.

## 2. Methods

The methods and procedures of this study are as follows: Search the English version of the SCL-90, and select a newer version for comparative and confirmation. Search the English version of the SCL-90-R, and select a newer version for comparative and confirmation; to compare the English SCL-90 and SCL-90-R, to determine its differences; confirming the English source on which Wang Version SCL-90 translated; According to the text from Wang Version SCL-90 and the English version SCL-90 and SCL-90-R, Wang Version SCL-90 is revised from the perspective of translation, semantics, and cross-cultural.

## 3. Results

### 3.1. Confirming the English version SCL-90

When we read the paper by Derogatis et al<sup>[10]</sup>, we found that the SCL-90 text in the English version (hereinafter referred to as Derogatis Version SCL-90) has been included in this article, and we compared it with the SCL-90 reprinted in 2011 by the University Hospital of Zurich<sup>[30]</sup>, and the results are consistent.

### 3.2. Confirming the English version SCL-90-R

We found through web search that the appendix to a dissertation in the University of Arizona database contains SCL-90-R text<sup>[11]</sup> (hereinafter referred to as Derogatis Version SCL-90-R), and some of the text is compared with the SCL-90-R text presented in the newer article,<sup>[31]</sup> and the results are also consistent.

### 3.3. Distinction the difference between derogatis version SCL-90 and derogatis version SCL-90-R

Comparing between Derogatis Version SCL-90 and Derogatis Version SCL-90-R, finding it is difference at three items. Its include (3), (80), and (86). In the (3), Derogatis Version SCL-90 said unwanted thought or ideas, then Derogatis Version SCL-90-R said repeated unpleasant thoughts. In the (80), Derogatis Version SCL-90 said feeling that familiar things, then Derogatis Version SCL-90-R said feeling that something bad. In the (86), Derogatis Version SCL-90 said do thing is being passive, then Derogatis Version SCL-90-R said frightening thoughts and images.

### 3.4. Confirming the English source on which Wang version SCL-90 translated

Through the comparative analysis of the text from Wang Version SCL-90 and Derogatis Version SCL-90 and Derogatis Version SCL-90-R, we think that Wang version SCL-90 is mainly based on the translation from Derogatis Version SCL-90, which is consistent with the previous research results.<sup>[20]</sup>

### 3.5. Revise of the item text of Wang version SCL-90

We have made a comprehensive and in-depth comparison and analysis of the text of Derogatis Version SCL-90, Derogatis Version SCL-90-R, and Wang Version SCL-90, and combined with the application and research results of Chinese researchers in the past 30 years, and have considered the problems in the text of Wang Version SCL-90. In accordance with three perspectives, some of these texts have been revised (see New Translation in Table 1). These 3 perspectives include: first, in the process of translation from English to Chinese, not only follow the original meaning of English, but also combine the principles of psychopathology to understand the meaning of the text. Second, in the understanding of word meaning, strengthen the grasp of semantic quantifiers. Third, in the cross-cultural aspect, the influence of Chinese traditional culture on Chinese's cognition,

understanding, feeling and description of psychological problems, and mental symptoms is fully considered.

## 4. Discussion

According to WHO<sup>[32]</sup> report, 800,000 people worldwide died of suicide in 2016, including >100,000 men aged 25 to 34 years and >60,000 women aged 15 to 24 years. In line with the epidemiological survey in Chongqing, China, the prevalence of suicidal ideation among college students was 13.03%.<sup>[33]</sup> Obviously, in the face of such a situation, we study the revision of the item text in the Wang Version SCL-90 to improve the quality of the SCL-90, which is of great practical significance for the screening of Chinese psychological problems and the diagnosis and treatment evaluation of mental illness.

Unlike previous studies, our study focuses on 3 new perspectives (including translation, semantics, and cross-cultural). At the same time, >30 years of SCL-90 application and research experience of Chinese researchers have also brought us some inspiration. As a result, we are able to think about, analyze SCL-90 texts from some new viewpoint, and propose new ideas for the revision of some item texts. Our aim is to improve the quality of SCL-90 from the revise of item text and make the new Chinese version SCL-90 more suitable for Chinese.

After careful analysis and thinking, we think that the 18 items text needs to be revised out of 90 items text in Wang Version SCL-90. These 18 entries include (2), (3), (4), (5), (6), (10), (22), (28), (52), (55), (59), (65), (68), (69), (80), (83), (86), and (89). Of course, we have proposed new translations for these items text (see Table 1; hereinafter referred to as New Translations). So what is the difference between the New Translation and the items text in Wang Version SCL-90?

About (2), New Translation take the “trembling with tension” to replace the “in a flutter” from Wang Version and this is more in line with the original English meaning, but also easy for the subjects to understand. About (3), in Wang Version, “unnecessary ideas or words” is not easy for subjects to understand semantics and judge semantic weight. Hence, the New Transla-

**Table 1**  
Comparing Wang version translation and new translation.

*No	Wang version translation	New translation
2	Nervous and insecurities	Nervous, trembling with nervousness
3	There are unnecessary thoughts or words in the mind	Unpleasing thoughts hover in the mind
4	Dizziness or fainting	Dizziness or vertigo
5	Lack of interest in the opposite sex	Decreased libido or sexual pleasure
6	To blame others	Often feel the harshness of others
10	Worried about dress and oneself manners	Worried about being hasty or careless
22	Feel cheated, caught in a trap, or someone wants to catch you	Feeling trapped or in trouble
28	Foreboding is difficult to accomplish	When you do things you often feel obstacles from others
52	Body numb or tingling	To feel numbness or tingling in a part of the body
55	Attention decline	Trouble concentrating
59	Thinking about the scene of death	Thinking about on one's deathbed or the scene of death
65	Must wash your hands repeatedly, counting	Repeating the same actions, such as touching, counting, cleaning, etc
68	There are thoughts that others don't have	Have ideas or beliefs that can't be known to others
69	Feeling nervous for others	Feeling uncomfortable with others
80	Something familiar becomes strange or not really	Feeling that something harmful is about to happen
83	Feel like someone else wants to take advantage	If you let them, they will benefit
86	Trying to get things done	Scared thoughts or scenes
89	Feel criminality	Feeling guilty

\* It is original sequence number from Symptom Checklist-90 (Derogatis Version) and Symptom Checklist-90 Revised (Derogatis Version).

tion uses “unhappy thoughts” to instead. About (4), the meaning from “cataplexy” of Wang Version is not exactly, thus New Translation used “vertigo.” About (5), for the Chinese, the meaning of this sentence from Wang Version is vague. The New Translation indicates a decrease in “sexual desire” and “sexual pleasure.” About (6), the object direction of this sentence from Wang Version is vague. The New Translation shows that “self feel the harshness of others.” About (10), the specified range of this sentence from Wang Version is narrow. The New Translation has wider semantics and is more consistent with the principles of psychopathology. About (22), the “someone wants to catch you” in Wang Version, it’s not a common symptom. The New Translation used “getting into trouble” is more appropriate. About (28), for this sentence, the New Translation indicates that it was hindered by others and Wang Version did not state this. About (52), the New Translation adds a limit for “part” of the body for Wang Version. About (55), the New Translation uses “the power of attention” instead of “attention” from Wang Version. About (59), according to the original meaning of the Derogatis Version SCL-90-R, the New Translation adds the idea of something “on the verge of death.” About (65), the New Translation adds the “repeat the same action”. This is more in line with the original meaning of Derogatis Version SCL-90-R. About (68), according to the original meaning of the Derogatis Version SCL-90-R, the New Translation adds the restriction in which “not to be known to others.” About (69), the meaning of this sentence from Wang Version is vague. The New Translation indicates the “feel uncomfortable to meet others.” About (80), this item text is translated from Derogatis Version SCL-90 into Wang Version. But, the Derogatis Version SCL-90-R is more explicit and accurate, so the New Translation adopts the Derogatis Version SCL-90-R: “feeling that something harmful is about to happen.” About (83), the New Translation clearly states that “if you let them, they’ll benefit.” About (86), the New Translation adopts the Derogatis Version SCL-90-R: “scared thoughts or scenes”. About (89), Wang Version said “feeling guilty” and the New Translation stated “self-reproach.”

From the above analysis, it is easy to find that previous researchers (such as Xie & Dai<sup>[20]</sup>) have questioned the item text of Wang Version SCL-90, but failed to make the item text revision. Conversely, our study has made a comprehensive and systematic revision of the item text of Wang Version SCL-90. Undoubtedly, this study results have taken one step forward on the basis of previous studies, which will play an important role in improving the quality of Chinese version SCL-90 and improving the mental health level of Chinese people.

For our research perspective, first we focus on the reliability of text translation, which is consistent with previous research ideas.<sup>[34]</sup> Second, our attention to the semantics of project text is also in line with the requirements of the “Item writing guidelines for Likert type items.”<sup>[35]</sup> Finally, our interest in cross-cultural is also the same as the point of view of medical anthropology. Such as Donald<sup>[36]</sup> said that “biology and culture matter equally in the human experience of disease. Every aspect of the illness experience, from the individual’s recognition of symptoms to assessments of treatment outcome, is shaped by the cultural frameworks of the sufferer and of those to whom he/she turns for help. A biocultural perspective is essential to avoid reductionist views of disease” (p.XI). So, our findings are reliable and trustworthy.

About the writing or revision of a project text of a psychometric tool, what value does it have in improving the quality of a psychometric tool? Psychometric theory has shown

that the writing and revision of item texts have a broad impact on the quality of psychometric tools. As Michael<sup>[37]</sup> noted that “good item writing is a literary form that has not received its due recognition. As the building blocks of standardized tests, test items must be carefully and systematically developed in support of the validity of intended interpretations and uses of test scores” (p259). As early as 1984, Zhang pointed out “the dependability of the symptom scale, also known as the reliability, refers to the stability and repeatability of the scale itself. The factors that cause the reliability are not high, there are three aspects . . . . the most important of these is the problem of the scale itself” (p57).<sup>[38]</sup> This shows that our research is meaningful.

Moreover, to facilitate the academic exchange of peers worldwide, we suggest changing the name of the Chinese version SCL-90 to SCL-90-R.

#### 4.1. Limitations and future directions

It is theoretically inferred that our findings will improve the reliability of this psychometric tool from the source. Of course, whether this theory is valid or not must be evaluated by future empirical research.

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#### Author contributions

Jian Zhou put forward the research idea, completed the research design, managed the research implementation and wrote the main manuscript text. The research implementation was supervised by Jian’er Yu. Yuanyuan Zhou was involved in data analysis and Jianxia Qiu provided some research resources. All authors reviewed the manuscript.\*

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