**抑郁问卷的异质性：基于对27个抑郁测量问卷的内容分析**

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摘要

关键词

# 1. 引言

[第一段的主旨句]

抑郁障碍的严重性（患病率、社会成本等），青少年期和成年早期是关键的时间。

[第二段的主旨句]

自评量表在抑郁症的研究中广泛使用，也是各类关于青少年与学生政策的基础（中国、世界范围内大规范调查的的数据）

[第三段的主旨句]

但抑郁自评量表数量繁多，被广泛使用的量表也不在少数，有潜在的重大影响（如影响到心理健康问题的检出率）。

[第四段的主旨句]

当前研究发现不同抑郁问题可能在测量不同的内容。Fried（2017年）的研究表明，不同的抑郁量表不能互相替代使用，这给抑郁研究带来了挑战。

[第六段的主旨句]

上述问题可能也延伸到发展中国家，但目前没有实证的数据进行评估，本研究将对用于学生的抑郁自评量表进行分析。

# 2. Method

## 2.1 Questionnaire collection and screening

Four recent meta-analyses in the section on the Prevalence of Mental Health Problems among Chinese students provided the basis for collecting a total of 34 questionnaires to detect depression. (于晓琪等, 2022; 黄潇潇等, 2022; 张亚利等, 2022; 陈雨濛等, 2022). The specific names of the questionnaires are listed in Table 1.

When addressing instances where the same questionnaire name had varying translated versions, we retrieved all 470 depression-related literature pieces included in the meta-analysis dataset. Subsequently, we compiled and compared these translated versions to determine the definitive choice for analysis (refer to the initial step depicted in Figure 1). The specific criteria we have implemented are: firstly, ensuring reliability and validity; secondly, considering whether authors include symptom names to aid subsequent content analysis. If multiple translated versions lack symptom names, priority is assigned to choosing the translation most commonly used within the meta-analysis dataset. For instance, in the case of the CES-D scale, the 20th item "I could not get going" is more commonly used in the version by 汪向东等(1999), translated as "I walk very slowly". However, 章婕等(2010) pointed out that "I walk very slowly" is an incorrect translation. Consequently, this study adopts the version by 章婕等(2010), where the translation is "I lack the motivation to do things".

Among the mentioned 34 scales, Mini International Neuropsychiatric Interview for children and adolescents (Mini-KID), WHO-CIDI 3.0, Psychological Health Inventory (PHI), and the Symptom Checklist 45 did not provide items for these scales.

The Beck Depression Inventory, Zhang Yuxin Revised Edition, and Short Depression Scale solely presented questionnaire names in the articles featured within the meta-analysis, without offering item details and references. As a result, these measures were ineligible for inclusion in this study. Both 'Gu & Chen(2020) 'and '季成叶(2007)' were assessed using the instrument "During the past 12 months, did you ever feel so sad or hopeless almost every day for two weeks or more in a row that you stopped doing your usual activities?". The only difference between them was the language – one was in Chinese, and the other was in English. As a result, they were combined, with only '季成叶(2007) ' being retained. In addition, the Child Behavior Checklist (CBCL) included versions for boys and girls. A total of 27 scales were finally included in the analysis. Regarding the sources of questionnaire items in this study, as well as the origins and quantities of questionnaire items from each scale within the meta-analysis dataset, please refer to Table 1.

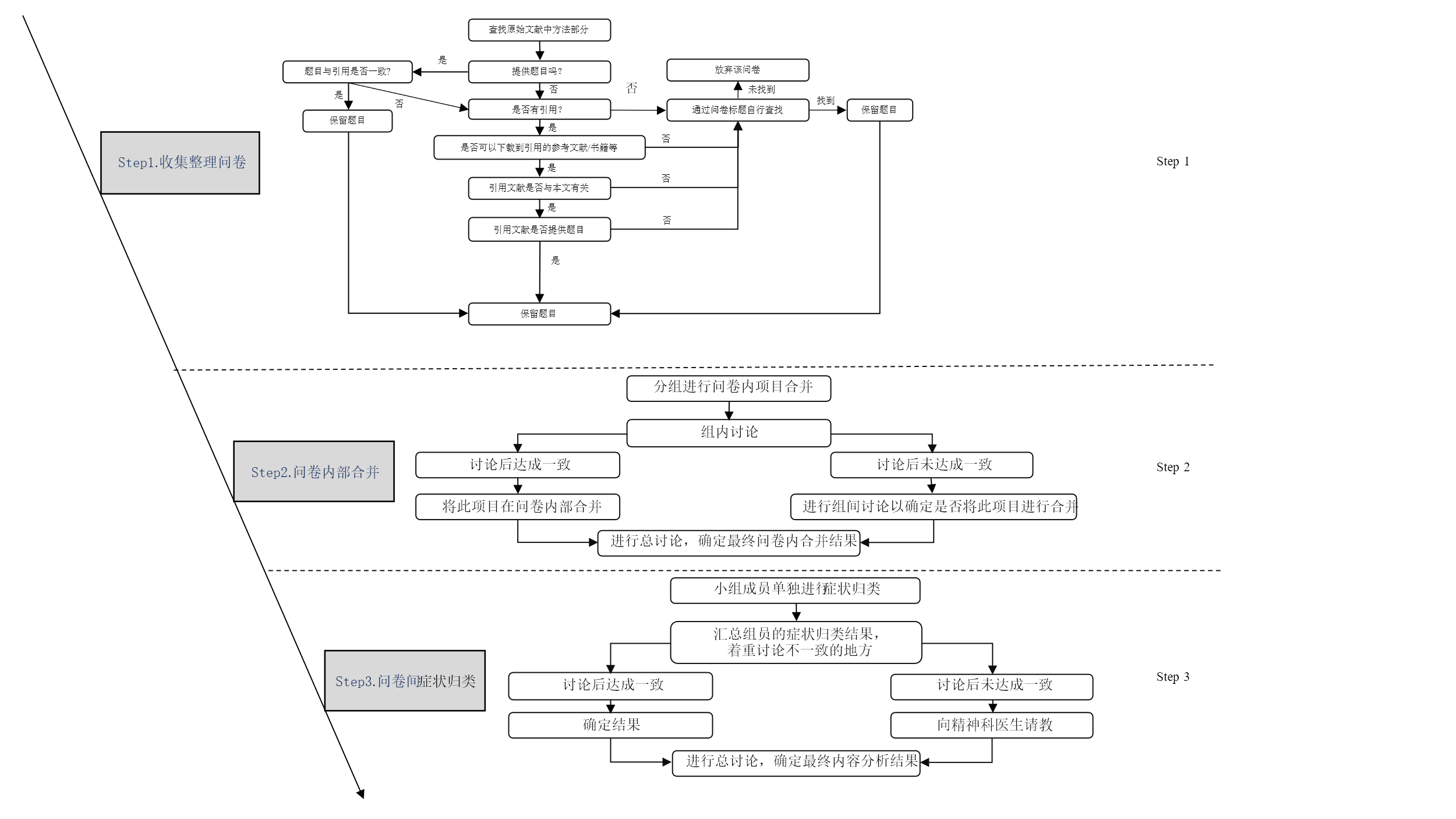
图1 内容分析流程图

表1 量表题目的具体来源及收集情况

| 量表名称27个(共34个，排除7个) | 元分析数据中该量表来源 | 元分析中使用该量表的文章数量 | 本文量表直接来源 | 备注 |
| --- | --- | --- | --- | --- |
| Self- Rating Depression Scale (SDS) | 汪向东等(1999)39篇, 张明园(1998)15篇, 陈姜等(2000)1篇, Jordan et al.(2000)2篇, 王汝展等(2009)1篇, Zung(1965)18篇, 任艳峰等(2015)1篇, 苏春燕等(2003)1篇, 张作记(2005)8篇,姚树桥和孙学礼(2008)1篇, 戴晓阳(2010)2篇, 王俊等(2013)1篇, 崔庆霞和王在翔(2014)1篇, 段泉泉和胜利(2012)1篇, 郑世华等(2016)1篇, 王征宇和迟玉芬(1984)1篇, 张明园等(2015)1篇, Zung(1969)1篇, 崔杰诚和陈国生(1998)。 | 135 | 张明园(1998)20题 | Jordan et al.(2000)、王汝展等(2009)、王俊等(2013)、崔庆霞和王在翔(2014)、段泉泉和胜利(2012)、郑世华等(2016)、Zung(1969)未提供题目。  陈姜等(2000、任艳峰等(2015)、苏春燕等(2003)的与本量表无关。  相对汪向东等(1999)，张明园(1998)在提供条目的同时也直接提供症状，更方便内容分析。  崔杰诚和陈国生(1998)无法获取。 |
| Symptom Checklist 90（SCL-90） | 汪向东等(1999)16篇, 戴晓阳(2010),戴海崎等(2007),仲稳山(2009)1篇, 王征宇(1984),高成阁等(1997), Derogatis et al.(1976)1篇, 陈树林和李凌江(2003)2篇, 张明园(1998)2篇, 黄赐英和裴利华(2005)1篇, 陈国鹏(2005), Mensah & Kiernan(2010)1篇, 金华等(1986)2篇, 张作记(2005)1篇, Derogatis(1973)1篇, Derogatis(1977)1篇, Hoffmann & Overall(1978)1篇 | 114 | 汪向东等(1999)13题 | 戴海崎等(2007)、高成阁等(1997)、王征宇(1984)、Derogatis et al.(1976)、陈树林和李凌江(2003)、黄赐英和裴利华(2005)、陈国鹏(2005)、Mensah & Kiernan(2010)、金华等(1986)、Hoffmann & Overall(1978)未提供题目。  Derogatis(1973)、Derogatis(1977)、仲稳山(2009)未获得。 |
| The Center for Epidemiological Studies Depression Scale (CES-D) | 汪向东等(1999)14篇, 史从戎等(2011)1篇, Radloff(1991)1篇, 戴晓阳(2010)2篇, 张作记(2005)1篇, 章婕等(2010)5篇  Cheng et al.(2012)4篇, Lee et al.(2008)2篇, Cheung & Bagley(1998)1篇, 陈祉妍等(2009)4篇, Wang et al.(2013)2篇, Yang et al.(2015)1篇, Radloff(1977)10篇, 潘丝媛等(2018)1篇, 1篇, Jiang et al.(2019)1篇, 刘平(1999)1篇 | 68 | 章婕等(2010) 20题 | 史从戎等(2011)、Cheng et al.(2012)、Yang et al.(2015)、陈祉妍等(2009)、潘丝媛等(2018)、刘琰等(2015)、Jiang et al.(2019)未提供题目，刘平(1999)未能获得全文。 |
| Children's Depression Inventory (CDI) | Kovacs(1992)6篇, Beck et al.(1961)1篇, 洪忻等(2012)1篇, 陈海燕等(2012)1篇, 俞大维和李旭(2000)3篇, 吴文峰等(2010)2篇, Samm et al.(2008)1篇, Kovas(1985) | 38 | 俞大维和李旭(2000)27题 | Beck et al.(1961)实际是 BDI-I的文章并不是CDI。  洪忻等(2012)、陈海燕等(2012)、吴文峰等(2010)未提供题目。  俞大维和李旭(2000)提供的是症状名，可以用于内容分析，但是无法用于实际测量。  Kovacs(1992)、Kovas(1985)无法获取。 |
| ﻿Depression Self-rating Scale for Children (DSRSC) | 苏林雁等(2003)11篇, 王凯等(2002)4篇。 | 18 | 苏林雁等(2003)18题 | 王凯等(2002)是焦虑的常模与抑郁无关。  苏林雁等(2003)提供的是症状名，可以用于内容分析，但是无法用于实际测量。 |
| Beck Depression Inventory（BDI-I） | 周德新(2006)1篇, 汪向东等(1999)3篇, Beck & Beck(1972)2篇, Beck et al.(1988)1篇, Beck et al.(1961)1篇, Beck & Beamesderfer(1974)1篇 | 16 | 汪向东等(1999)21题 | 徐俊冕(1991)、Beck et al.(1988)未提供题目。  周德新(2006)与本量表无关。 |
| Mental Health Inventroy of Middle-school students（MSSMHS） | 王极盛等(1997)8篇 | 15 | 王极盛(1998)5题 | 王极盛等(1997)未提供题目 |
| Beck Depression Inventory-II（BDI-II） | 杨文辉等(2014), 王振等(2011), Wang et al.(2009), Dere et al.(2015) | 11 | 王振等(2011)21题 | 杨文辉等(2014)、Dere et al.(2015)未提供题目。  Wang et al.(2009) 与本量表无关。 |
| Patient Health Questionnaire-9 items (PHQ-9) | Spitzer et al.(1999)3篇, Kroenke & Spitzer(2002)3篇, Sun et al.(2017)1篇 | 11 | 张明园等(2015)9题 | Sun et al.(2017)未提供题目。  Spitzer et al.(1999),和Kroenke & Spitzer(2002)题目一致。 |
| The Depression Anxiety Stress Scale，DASS -21 (DASS-21) | 苑新群(2014)1篇, Lovibond & Lovibond(1995)3篇, 龚栩等(2010)1篇 | 9 | 龚栩等(2010)7题 | 龚栩等(2010) 提供的是症状名，可以用于内容分析，但是无法用于实际测量。 |
| Child Behavior Checklist (CBCL) | 汪向东等(1999)1篇, 苏林雁等(1998)1篇, 忻仁娥(1994)1篇, Achenbach & Edelbrock(1987)1篇 | 6 | 汪向东等(1999)  男16题，女18题 | 苏林雁等(1998)未提供题目。  汪向东等(1999)提供的抑郁维度男生跟女生的题目不一样。  忻仁娥(1994)、Achenbach & Edelbrock(1987)未获取全文。 |
| Mood and Feelings Questionnaire (MFQ-C) | Wood et al.(1995)1篇 | 3 | 曹枫林等(2009)33题 | Wood et al.(1995)未提供题目。  曹枫林等(2009)中为情绪问卷MFQ，推测是MFQ-C。 |
| Middle school students' depression scale (CSSSDS) | 王极盛等(1997)2篇 | 3 | 王极盛(1998)20题 | 王极盛等(1997)未提供题目。 |
| Center for Epidemiologic Studies Depression Scale for Children (CES-D-C) | William Li et al.(2010) | 2 | William Li et al.(2010)20题 |  |
| Adolescent Depression Inventory（ADI） | Huang & Hsu(2003)1篇 | 1 | 楊雅惠(2003)31题 | Huang & Hsu(2003)未获得全文 |
| Brief Symptom Rating Scale (BSRS-5) | Lee et al.(1990)1篇 | 1 | Lee et al.(1990)7题 |  |
| Short version of Center for Epidemiologic Studies Depression Scale (CES-D-13) | Li et al.(2016), 张宝山和李娟(2011) | 1 | 张宝山和李娟(2011)13题 |  |
| CEPS-constructed scale (CEPS) | Ma et al.(2020)1篇 | 1 | Ma et al.(2020)4题 |  |
| Depression Status Inventory (DSI) | 汪向东等(1999)1篇 | 1 | 汪向东等(1999)20题 |  |
| Gu & Chen(2020) self-designed questionnaire (Gu\_2020) |  | 1 | Gu & Chen(2020)1题 | 与（Ji\_2007）合并 |
| Hospital Anxiety and Depression Scale (HADS) | Zigmond & Snaith(1983)1篇 | 1 | 汪向东等(1999)7题 |  |
| Hamilton Depression Rating Scale for Depression (HAMD) |  | 1 | 汤毓华和张明园(1984)24题 |  |
| Comprehensive Survey Report on Health-Related/Risk Behaviors among Chinese Adolescents. (Ji\_2007) | 季成叶(2007)1篇 | 1 | 季成叶(2007)1题 |  |
| Kutcher Adolescent Depression Scale (KADS-11) | 周慧鸣等(2015)1篇 | 1 | 周慧鸣等(2015)11题 | 周慧鸣等(2015) 提供的是症状名，可以用于内容分析，但是无法用于实际测量。 |
| Sakuma et al.(2010) self-designed questionnaire (Sakuma\_2010) | Sakuma et al.(2010)1篇 | 1 | Sakuma et al.(2010)4题 | 自编 |
| Short Mood and Feelings Questionnaire (SMFQ) | 程培霞等(2009) | 1 | 程培霞等(2009)13题 |  |
| University Personality Inventory (UPI) | Yu & Cai(2007)1篇 | 1 | Huang et al.(2020)12题 | Yu & Cai(2007)未能获得全文，Huang et al.(2020)直接提供了题目，但引用的是Yu & Cai(2007) |
| Chinese College Student Mental Health Scale (CCSMHS) |  | 1 | 张华(2021)8题 |  |
| Mini International Neuropsychiatric Interview for children and adolescents (Mini-KID) | 刘豫鑫等(2010), 刘豫鑫等(2011) | 2 | 未获得 | 刘豫鑫等(2010), 刘豫鑫等(2011)未提供题目 |
| Beck Depression Inventory, Zhang Yuxin Revised Edition |  | 1 | 未选择 | 没有具体引用的文章名，但在附录有题目。 |
| Short Depression Scale |  | 1 | 未选择 | 作者未提供简式抑郁量表(Andrensen (1994)具体的引文，自行搜索应为Andresen et al.(1994)一文，题目完全摘自CES-D，因此排除 |
| WHO-CIDI 3.0 (WHO-CIDI 3.0) | Kessler & Stün(2004)1篇 | 1 | 未获得 | Kessler & Stün(2004)未提供题目 |
| Psychological Health Inventory (PHI) | 宋维真和张建平(1993)1篇 | 1 | 未获得 | 宋维真和张建平(1993)未获得全文 |
| Symptom Checklist 45 (SCL-45) |  | 1 | 未获得 | 附录有题目，但无法得知用于测量抑郁的条目。 |

# 2.2 Content analysis

The content analysis of symptoms was conducted following the method described by Fried(2017). Initially, similar symptoms within each questionnaire were consolidated, and subsequently, the symptoms from different questionnaires were compared to identify overlaps.

## 2.2.1 Consolidate the items in the questionnaire.

Items assessing identical or similar symptoms within the questionnaire were consolidated. Four trained coders independently completed the combination of items in each questionnaire, which was then assessed in two separate groups. Subsequently, the two groups collaborated to form a unified combined plan, which was further reviewed. Discrepancies in the combination schemes of the two groups were resolved through discussions involving the four coders and the corresponding author. A clinically trained physician (co-author \*\*\*) provided the final verification.

## 2.2.2 *Comparative analysis of symptoms across different questionnaires.*

This study compares the measurement of depressive symptoms among various questionnaires after merging them. It also aims to understand the degree of overlap in measuring depressive symptoms between different depression questionnaires. The process is analyzed in a manner similar to the consolidation of items within each questionnaire.

Unlike Fried(2017), we endeavored to preserve the maximum amount of information regarding symptoms. Fried(2017) adopted a highly conservative approach, distinguishing between symptoms only when they are clearly different. He asserted that items were considered equivalent if their phrasing exhibited substantial resemblance, for example, 'feeling sad' (IDS), 'feeling depressed' (HRSD), and 'feeling blue' (SDS), or if their phrasing demonstrated marked contrast, as in 'pessimistic' (IDS, BDI, MADRS) and 'being hopeful about the future' (SDS, CES-D). In the Chinese context, variations exist in the interpretation of terms such as sadness, depression, and blue. In this study, the compound symptom of 'depressed mood' comprised 'blue', 'low mood', 'sad', and 'anhedonia'. Similarly, within this study, divergent wording in items was deemed indicative of inequality when comparing symptoms across questionnaires.

To present more comprehensive information, this study simultaneously retained compound symptoms and specific symptoms. Compound symptoms encompass a broader and more comprehensive range of manifestations, whereas specific symptoms exhibit greater precision and pertain to a narrower scope. For example, 'appetite changes' are categorized as compound symptoms, whereas 'appetite increased' and 'appetite decreased' fall under its specific symptoms.

It is important to note that when distinguishing between specific and compound symptoms, partial overlap is also recognized if one questionnaire features specific symptoms while the other incorporates compound symptoms. In the coding process, a score of 2 signifies complete correspondence to compound symptoms in the questionnaire, while a score of 1 indicates coding for specific symptoms under compound symptoms. For instance, for the CDI 'Q18: appetite changes' a score of 2 is assigned under the compound symptom 'appetite changes,' while a score of 1 is assigned for both specific symptoms 'appetite increased' and 'appetite decreased' (refer to Supplementary Materials for detailed information).

## 2.3 Statistic analysis

Jaccard Index was used to calculate the degree of content overlap between different questionnaires (Fried, 2017). Overlapping of the index in the range is 0 (no overlap among scales) to 1 (complete overlap). The Jaccard Index or Jaccard similarity coefficient, is computed using the formula s/(u1 + u2 + s), where "s" represents the number of items shared by two questionnaires, and "u1" and "u2" denote the number of items that are exclusively present in each of the two scales.

It is interpreted with reference to the Fried(2017) guidelines: very weak 0.00–0.19, weak 0.20–0.39, moderate 0.40–0.59, strong 0.60–0.79, and very strong 0.80–1.0. In addition to the Jaccard Index, the proportions of idiosyncratic symptoms (symptoms not found on other scales), the respective proportions of compound and specific symptoms, and the proportions of DSM-5 depressive symptoms included were reported.

# 3 Result

## 3.1 Combined results of items in the questionnaire

Among the 27 questionnaires, 22 items were consolidated, with the 'MFQ-C' questionnaire featuring the highest count of merged items, specifically 8, which were combined into 3 symptoms. 7 questionnaires incorporated only 2 items each, whereas 19 questionnaires exhibited no consolidation of items. In total, 412 items were encompassed in the content analysis (refer to Table 2), considering cases where specific questions gauged multiple symptoms. The ultimate tally of symptoms considered in the content analysis reached 383.

Table2 Combined results of items in the questionnaire

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Scale | Number of items before combining | Number of items after combining | Item | Symptoms after combining |
| SDS | 20 | 19 | Q17: I feel like I'm a useful person, and someone needs me. & Q19: I believe that if I were to die, others might be better off. | Worthlessness |
| BDI-I | 21 | 20 | Q5: 0, I don't have a strong sense of guilt. 1, I feel guilty about many things I have done or should have done but didn't. 2, I feel guilty most of the time. 3, I feel guilty at any time. & Q8: 0, I don't blame or criticize myself any more than I did in the past. 1, I blame myself more than I used to. 2, Whenever I am at fault, I blame myself. 3, Whenever something bad happens, I blame myself. | Guilty/Self-accusation |
| BDI-II | 21 | 20 | Q5: Guilty & Q8: Self-accusation | Guilty/Self-accusation |
| CBCL男生 | 16 | 15 | Q18: Intentionally harming oneself or attempting suicide. & Q91：Expressing the intention to commit suicide. | Suicidal ideation |
| MFQ-C | 33 | 28 | Q6: Slower than usual in activities. & Q13: Speaking slower than usual. | Retardation |
| MFQ-C |  |  | Q16: Life is not worth living. & Q17：Thinking about death. & Q19：Thinking of suicide. | Suicidal ideation |
| MFQ-C |  |  | Q8: No longer a good person. & Q9: Feeling self-blame for things that aren't my fault. & Q24: Considering oneself a bad person. | Guilty/Self-accusation |
| CSSDS | 20 | 19 | Q4: I have no interest in studying. & Q8: I find studying dull and uninteresting. | Learning difficulties |
| CES-D-C | 20 | 19 | Q8: Was not happy & Q17: Was happy(R) | Happy |
| UPI | 12 | 11 | Q9: Lack of confidence & Q10: Feeling self-abased | Self-abased |

## 3.2 The symptoms of across the questionnaire

An analysis was conducted on a total of 383 symptoms across 27 scales, resulting in the identification of 84 depressive symptoms (refer to Figure 2). Among these, there are 8 symptoms that are compound symptoms. They include *Depressive mood* as the compound symptom, with its specific symptoms being *Blue*, *Low mood*, *Sad*, and *Anhedonia*; *Irritability* as the compound symptom, with its specific symptom being *Prone to anger towards parents*; *Self-abasement* as the compound symptom, with its specific symptoms being *Psychological inferiority* and *Negative body perception*; *Interest/pleasure loss* as the compound symptom, with its specific symptoms being *Interest loss* and *Pleasure loss*; *Somatization* as the compound symptom, with its specific symptoms being *Gastrointestinal*, *Sympathetic arousal*, and *General somatic symptoms*; *Appetite changes* as the compound symptom, with its specific symptoms being *Appetite increase* and *Appetite decrease*; *Somnipathy* as the compound symptom, with its specific symptoms being *Poor sleep*, *Hypersomnia*, *Early insomnia*, *Middle insomnia*, and *Late insomnia*; and *Reduced socialization* as the compound symptom, with its specific symptom being *I didn’t want to see my friends*. Symptoms appear in a mean of 5.62 of the 27 rating scales.

Among the 84 symptoms, 18 (21.42%) were idiosyncratic symptoms and only appeared in one scale. None of the symptoms were present on all scales. The symptom that occurred most frequently was *Sense of hopelessness*, observed in 21 out of the 27 scales. The second most prevalent symptom was *Interest loss*, which was present in 18 out of the 27 scales. Notably, *anhedonia*, a fundamental symptom of major depression, is differentiated into *loss of interest* and *loss of pleasure* in DSM-5. *Pleasure loss* was observed less frequently than *loss of interest*, appearing in only nine out of the 27 scales.

As mentioned earlier, this study retained several symptom descriptions related to depressive mood, including the compound symptom of *depressed mood*, and the specific symptoms of *blue*, *low mood,* *sad* and *anhedonia*. *Depressed mood* in 5 scales, *blue* appeared in 10 scales, *low mood* appeared in 15 scales, *sad* appeared in 13 scales, *anhedonia* appeared in 16 scales. If these symptoms were combined with *depressed mood*, this symptom would be the most frequent symptom among the 26 scales. Table 3 lists in how many scales each of the symptoms are listed; for instance, 12 of the 84 symptoms (14.29%) appear across a subset of 2 scales.

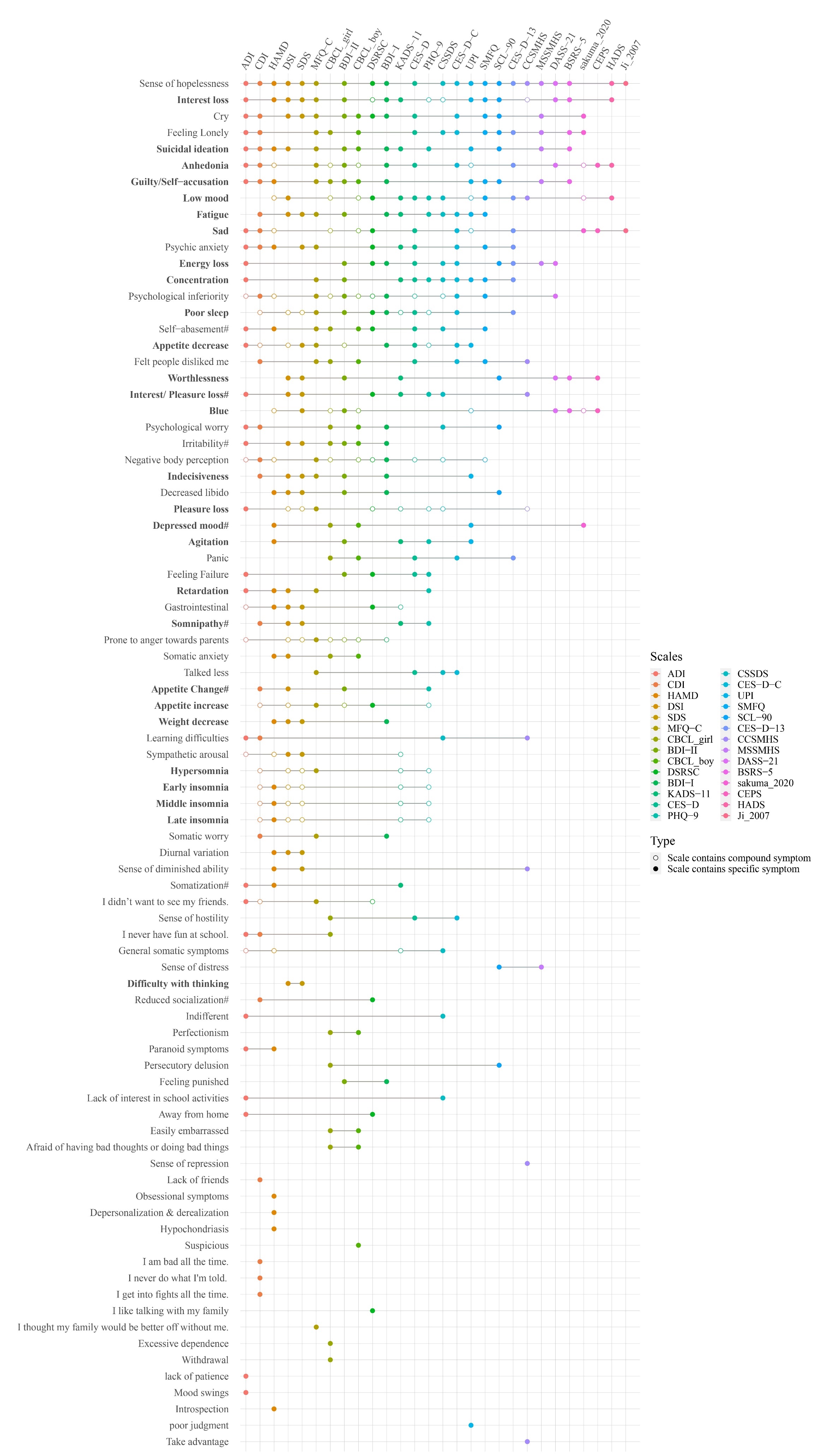


Table 3 Number of symptoms that appear across combinations of scales.

|  |  |  |
| --- | --- | --- |
| Symptoms | Scales | % |
| 18 | 1 | 21.43 |
| 12 | 2 | 14.29 |
| 6 | 3 | 7.14 |
| 7 | 4 | 8.33 |
| 7 | 5 | 8.33 |
| 7 | 6 | 8.33 |
| 3 | 7 | 3.57 |
| 4 | 8 | 4.76 |
| 2 | 9 | 2.38 |
| 1 | 10 | 1.19 |
| 5 | 11 | 5.95 |
| 2 | 12 | 2.38 |
| 2 | 13 | 2.38 |
| 3 | 14 | 3.57 |
| 2 | 15 | 2.38 |
| 1 | 16 | 1.19 |
| 1 | 18 | 1.19 |
| 1 | 21 | 1.19 |

## 3.3 Scale properties and performance

Table 4 provides a comprehensive overview of the symptom count encompassed by each scale, the adjusted scale length, the number of idiosyncratic symptoms and the ratios of compound and specific symptoms. Furthermore, it outlines the prevalence of DSM-5 depressive symptoms within each scale.

Among the scales analyzed, 19 did not include any idiosyncratic symptoms. The CSSMHS exhibited the highest percentage of idiosyncratic symptoms, with a prevalence of 22.22%, while the remaining scales showed varying rates of idiosyncratic symptom inclusion, ranging from 3.85% to 12.5%. Ten scales did not incorporate compound symptoms, with proportions for the remaining scales varying from 7.69% to 47.37%. The DSI exhibited the highest prevalence of DSM-5 depression symptoms, encompassing 71.42% of the total nine DSM-5 depression symptoms. Conversely, the Ji\_2005 scale demonstrated the lowest representation, comprising only 3.57% of the nine DSM-5 depression symptoms. It is also the least number of questions among the questionnaires included in this study.

Table4 Characteristics of the scales

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Scale | Symptoms  captured  (No.) | Adjusted  scale  length  (No.) | Idiosyncratic  symptoms (%) | Specific  symptoms (%) | Compound  symptoms (%) | Scale captures X% of 9 DSM-5 MDD symptoms |
| SDS | 26 | 19 | 0 | 73.08 | 26.92 | 57.14 |
| SCL-90 | 12 | 13 | 0 | 100 | 0 | 17.86 |
| CES-D | 19 | 20 | 0 | 89.47 | 10.53 | 25 |
| CDI | 32 | 27 | 12.5 | 75 | 25 | 53.57 |
| DSRSC | 20 | 18 | 5 | 75 | 25 | 28.57 |
| BDI-I | 20 | 20 | 0 | 95 | 5 | 35.71 |
| MSSMHS | 7 | 5 | 0 | 100 | 0 | 10.71 |
| BDI-II | 23 | 21 | 0 | 86.96 | 13.04 | 53.57 |
| PHQ-9 | 19 | 9 | 0 | 52.63 | 47.37 | 64.29 |
| DASS-21 | 7 | 7 | 0 | 100 | 0 | 17.85 |
| CBCL\_boy | 22 | 15 | 4.55 | 68.18 | 31.82 | 25 |
| CBCL\_girl | 24 | 18 | 8.33 | 70.83 | 29.17 | 21.43 |
| MFQ-C | 26 | 28 | 3.85 | 100 | 0 | 46.43 |
| CSSDS | 18 | 19 | 0 | 77.78 | 22.22 | 25 |
| CES-D-C | 16 | 19 | 0 | 100 | 0 | 25 |
| ADI | 35 | 31 | 5.71 | 82.86 | 17.14 | 39.29 |
| BSRS-5 | 7 | 7 | 0 | 100 | 0 | 17.86 |
| CES-D-13 | 10 | 13 | 0 | 100 | 0 | 21.43 |
| CEPS | 4 | 4 | 0 | 100 | 0 | 14.29 |
| DSI | 29 | 20 | 0 | 68.97 | 31.03 | 71.42 |
| HADS | 4 | 7 | 0 | 100 | 0 | 10.71 |
| HAMD | 32 | 24 | 12.5 | 75 | 25 | 50 |
| Ji\_2005 | 2 | 1 | 0 | 100 | 0 | 3.57 |
| KADS-11 | 20 | 11 | 0 | 55 | 44 | 53.57 |
| Sakuma\_2010 | 7 | 4 | 0 | 57.14 | 42.86 | 17.86 |
| SMFQ | 13 | 13 | 0 | 92.31 | 7.69 | 17.86 |
| UPI | 15 | 11 | 6.67 | 73.33 | 26.67 | 46.43 |
| CSSMHS | 9 | 8 | 22.22 | 77.78 | 22.22 | 14.29 |

## 3.4 Scale overlap

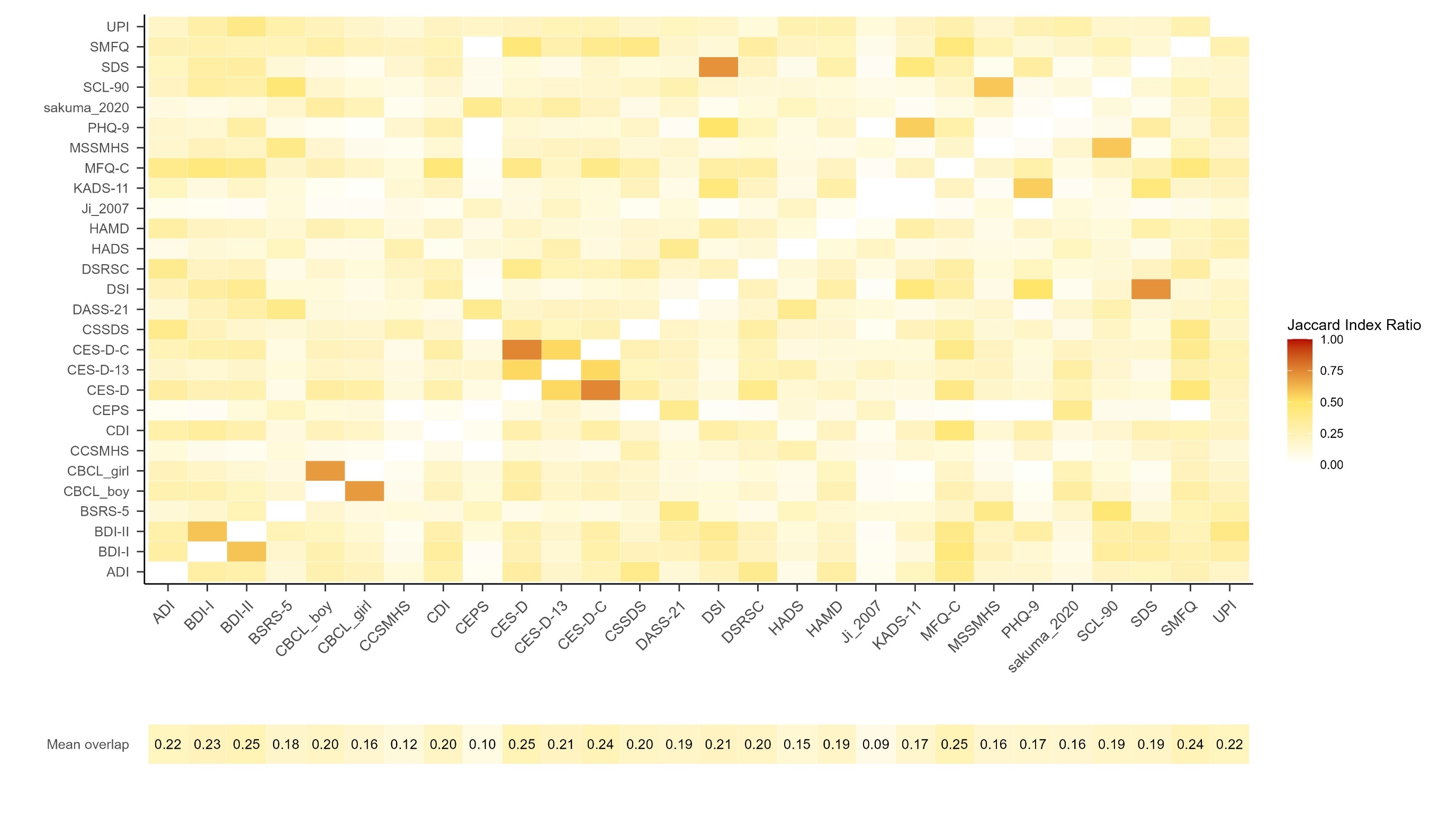
The degree of overlap between scales was calculated using the Jaccard coefficient. The average overlap across all scales was 0.19, indicating a very low level of similarity between these scales. For the specific degree of overlap between each pair of scales and the average overlap with other scales, refer to Figure 2.

None of the scales exhibited a mean overlap within the moderate range (0.40 - 0.59) with other scales. CES-D with other scale has the highest average degree of overlap, at 0.25, other scale of average degree of overlap between 0.08 to 0.25. The two scales with the highest overlap were CES-D and CES-D-C at 0.75, followed by DSI and SDS at 0.72.

There are a lot of scales that have zero overlap with each other, that is, they have nothing to do with each other. MSSMHS and CEPS exhibit no overlap; there is no overlap between PHQ-9 and both CEPS and Ji\_2005; CSSDS and CEPS lack overlap; CEPS, SMFQ, and CSSMHS do not overlap; Ji\_2005 and KADS-11 show no overlap.

The correlation coefficient between the mean Jaccard coefficient of each scale and the length of the scale is 0.55, while the correlation coefficient with the number of captured symptoms is 0.71 (Table 4, columns 1 and 2). This suggests that longer scales exhibit increased overlap with other scales, thus demonstrating enhanced representativeness.

图2 27个抑郁量表条目的重叠度



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