Psychometric Testing of the Support and Control in Birth Scale

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learner objectives:

- Examination of the reliability and validity of research tools is an important process in nursing research.

- As all scales are developed on the basis of a specific set of concepts or application to a specific population, great care must be taken in the translation and handling of questionnaires developed in different languages or, in particular, by people from different cultures.

- Only after passing through an integral process of repetitive translation and reliability/validity examinations can they be regarded as accurate research tools and be widely utilized.

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A successful birth experience gives a woman a sense of fulfillment and helps her to develop a good concept of herself and her ability to successfully develop into a mother in the future.

Nursing support and control during birth are both crucial factors influencing whether a woman has a satisfying birth experience.
Introduction-(2)

- Self-control is the most important foundation of satisfaction for women in labor.
- Maternal self-control of time and space indirectly affects personal feelings of self-esteem.
- If a person loses control, he or she will lose self-esteem and experience negative emotional reactions and negative self-concept.
Nursing continuous support including various non-pharmacological analgesic methods can help the maternity woman to be controlled during the birth process and has a positive significance for her labor experience.
Aim of the study

- The SCIB scale was a measurement of women's support and control feelings in the labor and birth process, and then understand the labor and birth experience of women, expect this scale can be applied to explore the psychological aspects of postpartum women in the future.

- To develop a translated Chinese version of the Support and Control in Birth Questionnaire (SCIB) and then to determine the reliability and validity of this Chinese-version scale in terms of measuring the SCIB of maternity women in Taiwan.
Research framework

Birth control

Birth support (nursing)

birth experience
Methods
Setting and participants

The participants were recruited from one Regional Teaching Hospital in Taiwan.

The inclusion criteria for the research participants as follows:

1. Term pregnancy (over 37th weeks)
2. Women within one week after delivery, without any complications during the labor process.
3. Can listen, speak, read and write Chinese.

In total, 252 postpartum women were enrolled in the program, 12 women were excluded due to invalid questionnaire.
Procedure

Translation and backtranslation

- the SCIB was translated into Chinese by adopting the Brislin's translation model revised by Jones et al. (2001).
Translation and back translation

English SCIB → bilingual translator1 → bilingual translator2 → three experts synthesized the translations → First version Chinese of SCIB

bilingual translator 1 backtranslation → Bilingual translator 2 Backtranslation → Meeting – review all the translations → Second version CSCIB

Pilot test → Final CSCIB
Examination of the psychometric characteristics of the CSCIB

- **The reliability**: test-retest reliability ($N=60$) and internal consistency (Cronbach's $\alpha$ coefficient).

- **The validity**
  - content validity: (CVI, Content Validity Index) four experts (two Physician, an associate professor, and one nursing specialist)

2. criterion-related validity

- **predictive validity**: tested through the scale of women's views on birth experience
- **concurrent Validity**: tested through the Bryanton Adaptation of the Nursing Supporting Labor Questionnaire (BANSILQ) and the control in birth scale.

3. Construction validity: confirmatory factor analysis (CFA)
Results
Demographic characteristics of participants

- The 240 women had a mean age of 28.9 years (Range 16 to 46 years old)
- 37.1% of them were university graduates or above
- Primipara were 53.3%
- About 63.3% participants received the prenatal education program.
<table>
<thead>
<tr>
<th>variable</th>
<th>N</th>
<th>M± SD</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (M± SD)</td>
<td>28.99±5.171 (range = 16 ~ 46 years)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>primipara</td>
<td>128</td>
<td>53.3</td>
<td></td>
</tr>
<tr>
<td>Multipara</td>
<td>112</td>
<td>46.7</td>
<td></td>
</tr>
<tr>
<td>Educational level</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>high school or below</td>
<td>151</td>
<td>62.9</td>
<td></td>
</tr>
<tr>
<td>College or above</td>
<td>89</td>
<td>37.1</td>
<td></td>
</tr>
<tr>
<td>Prenatal education</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>yes</td>
<td>152</td>
<td>63.3</td>
<td></td>
</tr>
<tr>
<td>no</td>
<td>88</td>
<td>36.7</td>
<td></td>
</tr>
<tr>
<td>The main companion during the labor period</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td>3</td>
<td>1.25</td>
<td></td>
</tr>
<tr>
<td>Husband</td>
<td>205</td>
<td>85.4</td>
<td></td>
</tr>
<tr>
<td>other</td>
<td>32</td>
<td>13.3</td>
<td></td>
</tr>
</tbody>
</table>
Reliability of the CSCIB

<table>
<thead>
<tr>
<th>Cronbach's $\alpha$ coefficient</th>
<th>.846</th>
</tr>
</thead>
<tbody>
<tr>
<td>test-retest reliability</td>
<td>.96</td>
</tr>
</tbody>
</table>

- CSCIB has good internal consistency
## Content validity index of the CSCIB

<table>
<thead>
<tr>
<th>Category</th>
<th>Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>item-level content validity indexes (I-CVIs)</td>
<td>.99</td>
</tr>
<tr>
<td>scale-level content validity index (S-CVI)</td>
<td>.99</td>
</tr>
</tbody>
</table>
Criterion-related validity of the CSCIB

predictive Validity

- The test results showed that there was a significant correlation between the CSCIB and the scale of women's views on birth experience ($r = .31, p < .01$).
Concurrent validity

- The test results showed that there was a moderate correlation between the BANSILQ and the support factor \( (r = .50, p < .01) \);
- the control in birth scale had a low to moderate correlation between the factor of internal control \( (r = .44, p < .01) \) and external control \( (r = .30, p < .01) \).
Construct validity of the CSCIB

- CSCIB consists of three subscales: internal control (10 items), external control (11 items), and support (12 items) adapted from the CFA.
- The assessed goodness-of-fit index indicate the Parsimony fit indices, the data well based upon the CFA.
- Specific values are shown in the table below
## Model fit index of the Chinese version of SCIB

<table>
<thead>
<tr>
<th></th>
<th>Results</th>
<th>Threshold</th>
<th>Judgment of fit</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>absolute fit measure index</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$\chi^2$ test</td>
<td>1498.27</td>
<td>p&gt;.05</td>
<td>poor</td>
</tr>
<tr>
<td>RMSEA</td>
<td>.093</td>
<td>&lt; .05</td>
<td>poor</td>
</tr>
<tr>
<td>GFI</td>
<td>.85</td>
<td>&gt; .90</td>
<td>Marginal</td>
</tr>
<tr>
<td>AGFI</td>
<td>.737</td>
<td>&gt; .90</td>
<td>poor</td>
</tr>
<tr>
<td><strong>Incremental fit indices</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IFI</td>
<td>.85</td>
<td>&gt; .90</td>
<td>Marginal</td>
</tr>
<tr>
<td>CFI</td>
<td>.85</td>
<td>&gt; .90</td>
<td>Marginal</td>
</tr>
<tr>
<td>NFI</td>
<td>.79</td>
<td>&gt; .90</td>
<td>poor</td>
</tr>
<tr>
<td>TLI(NNFI)</td>
<td>.84</td>
<td>&gt; .90</td>
<td>Marginal</td>
</tr>
<tr>
<td><strong>Parsimony fit indices</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PGFI</td>
<td>.64</td>
<td>&gt; .50</td>
<td>well</td>
</tr>
<tr>
<td>PNFI</td>
<td>.50</td>
<td>&gt; .50</td>
<td>well</td>
</tr>
<tr>
<td>PCFI</td>
<td>.588</td>
<td>&gt; .50</td>
<td>well</td>
</tr>
<tr>
<td>$\chi^2$/df</td>
<td>3.105</td>
<td>&lt;2.00</td>
<td>poor</td>
</tr>
</tbody>
</table>
Discussion

- The better the internal consistency of a measurement is, the higher the reliability.
- Our results showed that Cronbach's $\alpha$ of the CSCIB was .846, which is lower than the English version (Cronbach's $\alpha = .95$).
- Alphas were calculated for each subscale of the 33 items retained.
- Overall, the CSCIB has considerable reliability in different cultures.

<table>
<thead>
<tr>
<th>The alphas of each component</th>
<th>internal control</th>
<th>external control</th>
<th>support</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCIB</td>
<td>0.86</td>
<td>0.93</td>
<td>0.93</td>
</tr>
<tr>
<td>CSCIB</td>
<td>0.75</td>
<td>0.71</td>
<td>0.88</td>
</tr>
</tbody>
</table>
Content validity refers to the degree to which the items in the questionnaire reflect the content that is meant to be measured.

It is generally believed that an I-CVI $\geq .78$ and S-CVI $\geq .90$ indicate that the content of the questionnaire is valid.

Our results concerning the I-CVI and S-CVI showed that the CSCIB could reflect the concept and connotation of labor control and support.

- (O'Keefe-McCarthy et al., 2014).
The CFA results confirmed the three-factor structure.
Not most of the model fit indexes were above the recommended criteria, but the parsimony fit indices is fit.
conclusion

- These findings support the CSCIB as a reliable and valid scale that measures control and support in labor among Postpartum women in Taiwan.


Thank you for your attention

Questions?