

Translation and Validation of the Implementation Leadership Scale in Chinese Nursing Context

Presented by: Jiale Hu PhD(c), MScN, RN

Background

- No valid and reliable tool for measuring implementation leadership in China
- The Implementation Leadership Scale (ILS)
 - well developed
 - having good validity and reliability
 - used widely in different settings

Purpose

- To **translate** and the ILS into Chinese
- To **validate** the translated ILS into Chinese nursing context

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Methodology

- Translation
 - Forward Translation (English to Chinese)
 - Comparison of the Two Forward Translation (Chinese) Versions
 - Blind Backward Translation (Chinese to English)
 - Comparison of the Two Backward Translation (English) Versions
- Linguistic validation
- Content validation
- Psychometric testing

Sousa VD, Rojjanasrirat W. Translation, adaptation and validation of instruments or scales for use in cross-cultural health care research: a clear and user-friendly guideline. *Journal of evaluation in clinical practice*. Apr 2011;17(2):268-274.

Translation

- **2** rounds of forward translation and backward translation
- **24** translation issues were identified (1st R 19, 2nd R 5)
 - **Semantic equivalence issue: 16**
 - Operational equivalence issue : 1
 - Conceptual equivalence issue : 5
 - Item equivalence issue : 2

Main Solutions

- Using “**sense-to-sense translation**” rather than “word-to-word translation”
e.g. Implementation Leadership=Leadership for implementing evidence-based practice specifically
- Using **Oxford English Dictionary**
e.g. appreciate = recognize ... in a good way
- **Definition and examples**
e.g. evidence-based practice=Sackett's definition along with four examples of evidence-based practice

Linguistic Validation

- Using **cognitive interview** to evaluate how Chinese nursing staff and leaders **understood and responded** to the translated ILS (Chinese)
 - Comprehension: encoding process
 - Recall: retrieval process
 - Inference: judgment process
 - Mapping: response process
 - Editing: process used to edit answers

(Mear & Giroudet, 2012; Nichols & Childs, 2009; Willis, 2005)

Sample of Linguistic Validation

- A convenience sample
- Shanghai Ninth People's Hospital, which is an academic health institution affiliated with Shanghai Jiaotong University
- Nursing staff and leaders who had worked more than **three** years in their current positions

Results of Linguistic Validation

- 2 rounds of cognitive interviews (n=10, each round)
- 33 translation issues were identified (1st R 25, 2nd R 8)
 - **Comprehension Issue: 21**
 - Recall Issue: 5
 - Inference Issue: 3
 - Mapping Issue: 3
 - Editing Issue: 1

The seven adaptations in the Chinese ILS

⑦ →

Instructions:

1. "Supervisor" means the direct nursing leader supervising you most in clinical practice.
2. EBP means the use of current best evidence in making decisions about the care of individual patients that integrates the best external evidence with individual clinical expertise and patients' choice. For example, only using normal saline instillation prior to endotracheal suctioning if it is clinically indicated (i.e. not routinely).

③ →

Please indicate the extent to which you agree with each statement. **All answers are based on your perception of leadership behavior. If you are not sure, please give the best answer you think.**

← ④

0	1	2	3	4
Not at all	Slight extent	Moderate extent	Great extent	Very great extent

⑥ →

Proactive

1. Your supervisor[Name of Supervisor] has developed a plan to facilitate implementation of evidence-based practice 0 1 2 3 4
2. Your supervisor[Name of Supervisor] has ~~worked to minimize~~ obstacles to the implementation of evidence-based practice 0 1 2 3 4
3. Your supervisor[Name of Supervisor] has established clear department standards for the implementation of evidence-based practice 0 1 2 3 4

← ①

Knowledgeable

4. Your supervisor[Name of Supervisor] is knowledgeable about evidence-based practice 0 1 2 3 4
5. Your supervisor[Name of Supervisor] is able to answer staff's questions about evidence-based practice 0 1 2 3 4
6. Your supervisor[Name of Supervisor] knows what I am talking about when it comes to evidence-based practice 0 1 2 3 4

Supportive

7. Your supervisor[Name of Supervisor] recognizes and appreciates employee efforts toward successful implementation of evidence-based practice 0 1 2 3 4
8. Your supervisor[Name of Supervisor] supports employee efforts to learn more about evidence-based practice 0 1 2 3 4
9. Your supervisor[Name of Supervisor] supports employee efforts to use evidence-based practice 0 1 2 3 4

Perseverant

10. Your supervisor[Name of Supervisor] perseveres through the ups and downs of implementing evidence-based practice 0 1 2 3 4
11. Your supervisor[Name of Supervisor] carries on through the challenges of implementing evidence-based practice 0 1 2 3 4
12. Your supervisor addresses critical issue(s) regarding the implementation of evidence-based practice[Name of Supervisor] reacts to critical issues regarding the implementation of evidence-based practice by openly and effectively addressing the problem(s) 0 1 2 3 4

← ②

***Investigator Guide:**

The term "department" in Item 3 could be modified and pre-determined by investigators based the specific context. For example, "Your supervisor has established clear department standards for the implementation of evidence-based practice" will be modified to "Your supervisor has established clear unit standards for the implementation of evidence-based practice", when the Chinese ILS (Staff Version) is used to evaluate the implementation leadership of head nurses.

← ⑤

The logo for the Journal of Nursing Management features a yellow-to-white gradient bar on the left. To its right, the text "Journal of" is in a smaller, light blue font, and "Nursing Management" is in a larger, bold, yellow font, all set against a dark blue background.

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ORIGINAL ARTICLE

Translation and linguistic validation of the implementation leadership scale in Chinese nursing context

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Content Validation

- To evaluate the **relevance** of the specific items for representing the concepts being measured
 - A four-point scale (1=not relevant, 2=somewhat relevant, 3=quite relevant, 4=highly relevant)
 - An open-ended question: comments or suggestions on wording revisions were encouraged through an open-ended question at the end of the questionnaire.

(Streiner, 2008; Pilot & Beck, 2006)

Sample of Content Validation

- **Ten** experts, who are knowledgeable about the construct of leadership in the content area of EBP in healthcare

Characteristics	Content Validation (n=10)
Education	
Doctoral Degree	5
Master Degree	3
Bachelor Degree	2
Position	
Hospital Administrator	2
Clinical Unit Leaders	3
Researchers	3
Senior Nurse Leader	2
Working Years	
11~20	6
>20	4

Content Validity Index

- **Item-level content validity index (I-CVI**, percentage of experts rating an item as “relevant” or “highly relevant”): **0.80-1.00** (0.78, **good**)
- **Scale-level CVI/averaging calculation (S-CVI/Ave**, mean of the I-CVIs for all items on the scale): **0.98** (0.90, **good**)
- **Scale-level CVI/universal agreement calculation (S-CVI/UA** , percentage of items on a scale rated as “relevant” or “highly relevant” by all the experts) : **0.83** (0.80, **good**)
- **Item-level modified Cohen’s coefficient kappa (k^*)** : **0.79-1.00** (≥ 0.75 , **good**)

(Streiner, 2008; Pilot & Beck, 2006)

Summary of Translation, Linguistic Validation, Content Validation

- **12** months to complete
- Having the original instrument developers involved enhanced the robustness of the translation and validation process.
 - when these stages were complete
 - revisions or adaptations to the tool were necessary
 - the potential benefits and/or disadvantages of each revision
 - the most unclear and important changes

Psychometric Testing

- **Validity**
 - Structural validity: Confirmatory Factor Analysis
 - Convergent validity: Correlation with MLQ
- **Reliability**
 - Internal consistency: Cronbach Alpha
- **Acceptability**
 - Time length: Seconds
 - Easy to response: 0-4 (“Not at all” to “Very great extent”)
 - Relevancy: 0-4
 - Clarity: 0-4

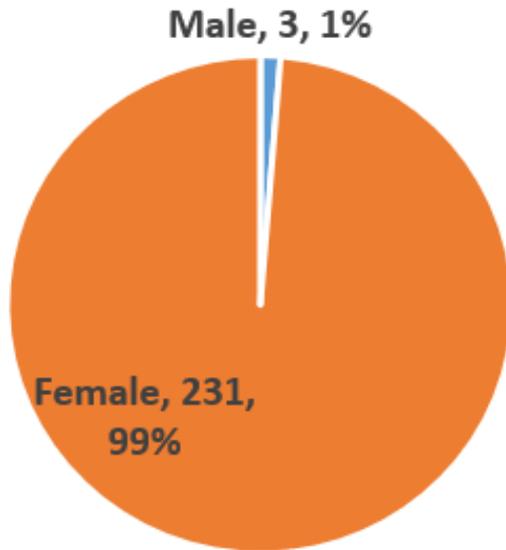
(Streiner, 2008; Tabachnik & Fidell, 2013)

Sample of Psychometric testing

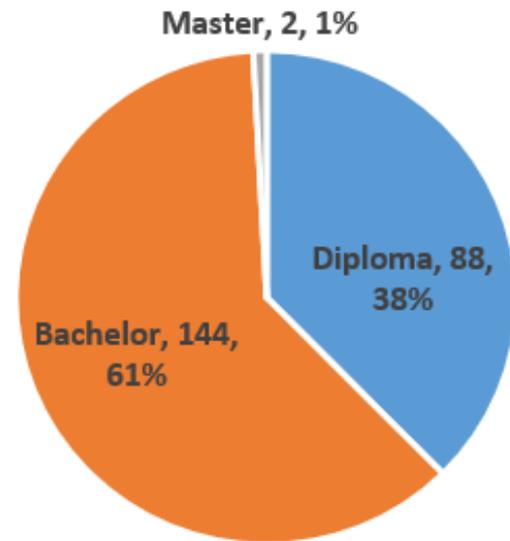
- A convenience sample
- Shanghai Ninth People's Hospital, which is an academic health institution affiliated with Shanghai Jiaotong University
- Nursing staff who had worked more than **one** year in their current positions

Participants

- 234 nurses/285 nurses (response rate:85.26%)
 - 35 units (Mean 6.67/unit, 3/unit to 16/unit)
 - Position Working Years: Mean 8.55, Median 7, Range 1-33



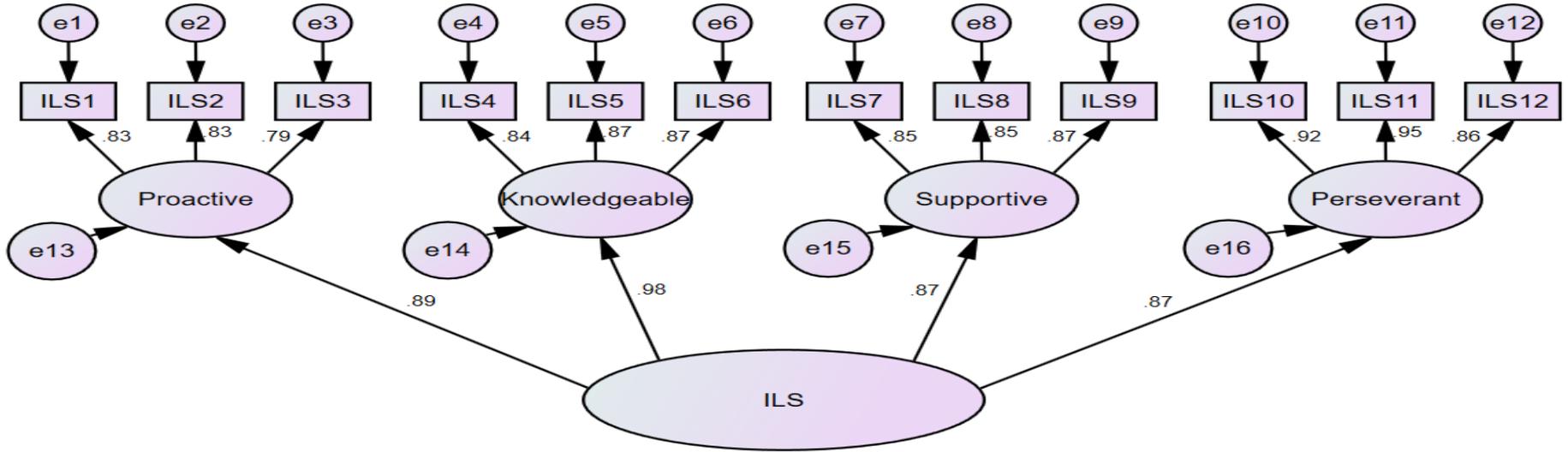
Gender



Education

Structural Validity

Confirmatory Factor Analysis



- Factor loadings: Item level **0.79-0.95**, Domain Level **0.87-0.98** (>0.6 **good**)
- Model fit Index
 - Normed chi-squared: **2.00** (<3 **good**)
 - RMSEA (Root Mean Square Error of Approximation): **0.07** (<0.05 **good**, <0.08 **adequate**)
 - RMSEA 90% CI: **0.04 -0.08** (<0.08 **good**)
 - CFI (Comparative Fit Index): **0.98** (>0.95 **good**)
 - TLI (Tucker-Lewis Index): **0.97** (>0.95 **good**)
 - Standardized RMR (Root Mean Squared Residual): **0.034** (<0.05 **good**)

(Tabachnik & Fidell, 2013)

Convergent Validity

	Implementation Leadership Scale				
	Proactive	Knowledgeable	Supportive	Perseverant	Total
Multifactor Leadership Questionnaire					
Transformational Leadership					
Inspirational Motivation	0.53**	0.58**	0.59**	0.57**	0.63**
Intellectual Stimulation	0.52**	0.56**	0.59**	0.56**	0.62**
Individualized Consideration	0.40**	0.45**	0.45**	0.50**	0.50**
Idealized Influence	0.52**	0.57**	0.60**	0.552**	0.63**
Transactional Leadership					
Contingent Reward	0.49**	0.52**	0.56**	0.54**	0.59**

Note: ** p<0.001

r>0.3 **adequate** (Cohen, 1988)

Reliability-Internal Consistency

ILS	Cronbach's Alpha
Total	0.95
Proactive	0.86
Knowledgeable	0.90
Supportive	0.89
Perseverant	0.93

Cronbach's Alpha(s) ≥ 0.70 **good** (Streiner, 2008)

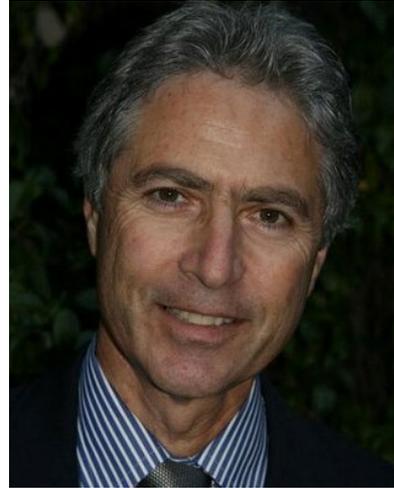
Acceptability

- Participants spend average **80 seconds** (30-240) finishing the ILS.
- 56.8% participants strongly agree that these questions are **easy to answer**.
- 66.7% participants strongly agree that these questions are **relevant**.
- 66.6% participants strongly agree that these questions are **clear**.

Conclusion

- In this study, we used a rigorous and systematic methodology to translate and validate the Implementation Leadership Scale into Chinese nursing context.
- The Chinese ILS has the potential to be a foundational factor in research on the development of implementation leadership in Chinese nursing; it can provide a common language for investigators conducting research in China to investigate and understand leadership within implementation science.

Research Team



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Up next: Denise Harrison

- Barriers and Facilitators to using recommended pain management for infants & children