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Research article

A Chinese version of the infertility self-efficacy scale: Reliability and validity assessment

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ABSTRACT

Objective: To translate, cross-culturally adapt and test the reliability and validity of a Chinese version of the Infertility Self-Efficacy scale.

Methods: The Infertility Self-Efficacy (ISE) scale was translated into Chinese using forward and backward translations, expert consultation, cognitive interviews and a pilot study. To test the scale's reliability and validity, 515 infertile women in two hospitals were recruited to evaluate the Chinese version of the scale. Content validity was assessed by means of expert consultation. Exploratory factor and confirmatory factor analyses were performed using SPSS 26.0 and Amos 24.0. Reliability tests of the scale included Cronbach's alpha coefficient, split-half reliability and test-retest reliability.

Results: The Chinese version of the ISE scale contains 16 items and one dimension. Content validity of the scale was 0.96. Results of exploratory factor analysis suggested that the one factor model was suitable for the scale, and factor loading of all items was greater than 0.4. Model fitting parameters of confirmatory factor analysis of the ISE scale were $\chi^2/df = 2.710$, Root Mean Square Error Approximation (RMSEA) = 0.079, Standardized Root Mean Square Residual (SRMR) = 0.042, Comparative Fit Index (CFI) = 0.953, and Tucker–Lewis Index (TLI) = 0.939. Cronbach's alpha coefficient of the Chinese ISE was 0.980; split-half coefficient was 0.972 and retest reliability was 0.848 ($P < 0.01$).

Conclusion: The Chinese ISE scale is a reliable and valid instrument to evaluate the self-efficacy of infertile Chinese women.

1. Introduction

A large population-based psychometric study involving eight provinces in northern and eastern China showed that the prevalence

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of infertility among Chinese childbearing aged couples reached 25.0 % [1]. In China, the most important treatment measures for infertile couples are artificial insemination, in vitro fertilization and embryo transfer. Infertility diagnosis and treatment cause physical pain as well as psychological distress in infertile women and impairs their QoL, which can further affect their treatment compliance and success rate [2]. Pregnancy failure and treatment failure further decrease women's confidence in coping with treatment and cause lower self-efficacy [3]. Individuals with low self-efficacy may focus on their deficits and are prone to experience negative emotions, anxiety and even depression [4]. In contrast, those with high self-efficacy take positive measures to cope with infertility, such as contacting relevant organizations to adopt children or actively undergoing fertility treatment [3,5]. A high level of self-efficacy contributes to better QoL [4]. Self-efficacy can help patients master knowledge of their disease and treatment, promote the establishment of patient confidence and cultivate good health habits, thereby ensuring that patients obtain better treatment results [6].

Higher infertility self-efficacy has been found to be related to a decreased incidence of mental health problems including stress, depression and anxiety in infertile women in different cultures including mainland China [5,7]. Self-efficacy as a positive psychological resource has been widely used in clinical practice, and has been shown to positively predict fertility QoL in infertile couples [8,9]. Therefore, it is important to assess self-efficacy as a foundation for implementing appropriate strategies to improve QoL. There are various instruments for measuring self-efficacy, but, in China the instruments are relatively general and do not measure self-efficacy in different populations [10]. The general scale lacks sensitivity and covers a wide range of content, which may fail to reflect the relevant situation of the target population [11]. Cousineau et al. [11] developed the infertility self-efficacy scale to measure the perceived ability and confidence of infertile individuals to cope with events related to infertility diagnosis and infertility treatment or attitudes towards these behaviors. The Infertility Self-Efficacy (ISE) scale has been found to have adequate reliability and validity in several international studies [11–13]. However, the instrument has not been validated in China. The purpose of this study was to translate the ISE into Mandarin Chinese and assess its psychometric properties among infertile women in China.

2. Methods

2.1. Design, setting and participants

This is a cross-sectional study using convenience sampling and was conducted in the infertility clinic and inpatient department of the reproductive medical center of two hospitals in Wuhan, China between August 1, 2021 and November 31, 2021. Wuhan is the largest city in China in terms of urban area, and the annual birth rate was 9.0 % in 2021 [14]. The study conducted in mainland China and was approved by the Ethics Committee of Wuhan University School of Medicine (2020YF0084).

A convenience sample of 515 women was recruited for this study. Researchers provided informed consent using in-person, verbal explanation and described the study's aim and research significance before participants completed the questionnaire. Inclusion criteria were: 1) diagnosis of infertility; 2) able to read and write in Mandarin; and, 3) age 20–45 years. Exclusion criteria were: 1) mental disorder or cognitive impairment.

2.2. Sample size

According to the requirements for exploratory factor analysis, the sample size should have at least five participants per item. There are 16 items in the ISE scale. Given a rate of 10.0 % invalid questionnaires, a sample size of at least 178 women was needed. Confirmatory factor analysis requires that the sample size should be greater than 200 cases, and considering a 10.0 % rate of invalid questionnaires, 210 participants were needed [15]. Therefore, the total sample size required for this study should be greater than 378. A total of 515 women participated in this study.

2.3. Instrument

The ISE scale originally developed by Dr. Tara Cousineau [11] was designed to assess self-efficacy of people coping with infertility treatment. It consists of 16 items using a 9-point Likert scale from 1 (not at all confident) to 9 (totally confident). The total score of the scale ranges from 16 to 144, with higher scores indicting greater self-efficacy. The Cronbach's alpha of the original scale was 0.94, and test–retest reliability was 0.91 [11].

2.4. Cultural translation procedures

The translation of the scale followed Brislin's model, which is widely used in translating cross-cultural instruments [16]. Forward translation from English to Mandarin was conducted independently by two translators of which, one had no medical knowledge and was not informed about the purpose of the study. Therefore, two different Mandarin versions of the (ISE-1, ISE-2) were created. A third bilingual translator having a medical background carefully compared the two versions (ISE-1, ISE-2) with the original scale, discussed the results with the research team members and after reaching consensus, the Mandarin version of the ISE was developed. Backward translation was performed independently by two bilingual translators who had not seen the original scale. Therefore, two different backward versions of the ISE (ISE-A, ISE-B) were developed. After a comparative analysis, the comprehensive backward translated version of the ISE-AB evolved and was sent to the author of the original scale. Based on Chinese culture and suggestions from the original author, research members revised the scale items. The initial Mandarin version then became the second Mandarin version of the scale for expert consultation. Experts from obstetrics and gynecology and reproductive medicine departments reviewed the second

Mandarin version of the ISE.

Participants' thinking processes in completing the scale can be affected by the differences in language and culture, length, instruction and the approach to answering the scale [17]. Therefore, a face-to-face cognitive interview was performed in July to August 2021 of patients coming to the reproductive medicine centers. Patients were invited to participate if they were more than 20 years old, able to read and speak Mandarin, willing to participate in the interview, and had no cognitive impairment. A purposive sampling strategy was used to recruit a diverse sample. Participants needed to be from different age groups, and had different causes of infertility, duration of diagnosis, duration of fertility treatment, embryo transfer cycle, diverse occupational backgrounds and varying educational levels. Face-to-face cognitive interviews were conducted in a private and quiet conference room. Thus, the final version of the scale evolved.

A pilot study involving 30 infertile women who met the inclusion criteria was done using convenience sampling. Participants completed a researcher-designed socio-demographic questionnaire and the final version of the ISE scale. Feedback was obtained from these participants on understanding and potential problems. The participants were not included in the completed study.

2.5. Statistical analysis

Content validity and construct validity were used to assess the degree of effectiveness. Cronbach's alpha coefficient, split-half reliability and retest reliability were used to assess internal consistency reliability. The SPSS 26.0 and SPSS Amos 24.0 were used in the exploratory factor analysis (EFA) and confirmatory factor analysis (CFA).

Content validity was determined by seven experts. They rated all items to evaluate their necessity by using a 4-point rating scale: 1) not relevant, 2) somewhat relevant, 3) fairly relevant, and 4) highly relevant. The item content validity index (I-CVI) value should be greater than 0.78 and the entire scale content validity index (S-CVI) needed to be greater than 0.9 [15].

Construct validity was tested through EFA and CFA, which was used to confirm the latent structure of the instrument. Data were randomly divided into two groups to test EFA (N = 239) and CFA (N = 276), respectively. The Kaiser-Meyer-Olkin (KMO) and Bartlett's test of sphericity were used to check the suitability of the data for EFA. The Maximum Likelihood analysis with maximum variance orthogonal rotation was used in the analysis and the KMO measure recommended value was 0.6 [18]. The factor loading coefficient of the item should be greater than 0.4 [19].

The CFA was conducted to assess the model fitness by fit indices, including Chi-square and degrees of freedom ratio (χ^2/df), Root Mean Square Error Approximation (RMSEA), Standardized Root Mean Square Residual (SRMR), Comparative Fit Index (CFI) and Tucker–Lewis Index (TLI). When χ^2/df was less than 3.0, RMSEA and SRMR were less than 0.08, and CFI and TLI were at least 0.9 or higher [20], the model was considered tolerable and confirmable.

Cronbach's α coefficient was used to evaluate the internal consistency of the entire scale and its dimensions. The retest reliability of the questionnaire was assessed at two-week intervals in 28 infertile women. Test-retest reliability was calculated using the Pearson correlation coefficient [11].

3. Results

3.1. Translation

3.1.1. Forward translation

A master's student majoring in English and a master's student majoring in nursing completed the translation of the ISE independently. Therefore, two different Chinese versions of ISE (ISE-1, ISE-2) evolved. A third master's student majoring in nursing carefully compared the two different Chinese versions with the original scale, discussed their findings with the research team members, and the result was the first Chinese version of the ISE. During the translation of the ISE scale, researchers consulted Dr. Cousineau about the meaning of the item "Feel like a sexual individual", and what this included. Dr. Cousineau suggested the meaning was more along the lines of: "I feel comfortable with my sexuality". Based on this suggestion and discussions among research team members, the item was translated into "Feel comfortable and satisfied with my sex life".

3.1.2. Backward translation

One of the backward translators was a master's student majoring in nursing and the other was an English-major graduate student having studied abroad for three years. They completed their translations independently. Therefore, two backward versions of the ISE (ISEA, ISE-B) were created. A third master's student majoring in nursing carefully compared the two different backward translated versions, shared the findings with the research team members and a final backward translation of the ISE was accepted. It was sent to the author of the original scale for review.

3.1.3. Group discussion

Members of the research group conducted a comparative analysis and discussed the initial Chinese and English versions of the ISE, and revised two items based on the Chinese culture and the original author's suggestions. Item 9 was "Handle personal feelings of anger or hostility". Members of the research team thought that the word "hostility" was ignored in Chinese version, and infertility people sometimes trigger hostility on the basis of anger. Therefore, the item was revised. Item 14 was "Feel good about my body and myself". Members of the research team thought that infertility self-efficacy refers to one's ability to cope with the disease and infertility treatment. Therefore, there will be many difficulties and setbacks in this process, so you should try to keep your physical and mental

state in a good state. Therefore, the word "feel" was translated into "keep" in Chinese version. The initial Chinese version was revised to become the second Chinese version of the questionnaire for expert consultation.

3.1.4. Expert consultation

Seven experts compared and revised the items of the second Chinese version of the questionnaire with the original scale. Combined with expert suggestions and team discussions, the researchers made two modifications of the ISE. Item 16 was "Feel like a sexual individual". Suggestions of experts were "On the one hand, Chinese people express more implicitly about sex. On the other hand, sex not only includes sexual life, but also includes sexual charm and so on". The word sex life is too straightforward and one-sided, it is recommended to change it to "sexual aspect". Therefore, the item was revised. The second Chinese version of the scale was then modified to become the third Chinese version of the ISE for use in the cognitive interview.

3.1.5. Cognitive interview

Two rounds of cognitive interviews were conducted with 10 infertile women. Item 6 was "keep from getting discouraged when nothing I do seems to make a difference".

> Interviewee 2: *This is too extreme, and if I've tried everything and can't get pregnant, I probably won't try treatment again. (Pauses) Because the time and financial costs are too high, I think it's fine for my husband and I to spend the future together even without children.*

The researchers contacted the original author about this item. The author replied that from the statistics of IVF success alone, the chances of pregnancy are relatively low, and patients who begin to broaden their perspective to consider a variety of outcomes/possibilities and practice acceptance will fare better, rather than clinging to a formidable belief of "leaving no stone unturned" or "never give up". Self-efficacy, personal agency and psychological flexibility allow for the realization that the intended path may not

Table 1
Socio-demographic characteristics of participants (N = 515).

Variables	Total (N = 515)		EFA (N = 239)		CFA (N = 276)	
	N	%	N	%	N	%
Age (years)						
≤ 35	418	81.2	192	80.3	226	81.9
> 36	94	18.3	44	18.4	50	18.1
Ethnicity						
Han nationality	495	96.1	225	94.1	270	97.8
Minority	13	2.5	7	2.9	6	2.2
Employment						
Employed	111	21.6	52	21.8	59	21.4
Unemployed	389	75.5	187	78.2	202	73.2
Education Level						
Junior high school or below	61	11.8	28	11.7	33	12.0
High school	101	19.6	47	19.7	54	19.6
College or university	282	54.8	140	58.6	142	51.5
Master's degree or higher	62	12.0	22	9.2	40	14.5
Average monthly income per family member (yuan)						
< 5000	104	20.2	52	21.8	52	18.8
5000 to 10000	236	45.8	105	43.9	131	47.5
10001 to 15000	98	19.0	52	21.8	46	16.7
> 15000	58	11.3	24	10.0	34	12.3
No response	14	2.7	1	0.4	13	4.7
Type of infertility						
Primary	282	54.8	128	53.6	154	55.8
Secondary	223	43.3	103	43.1	282	102.2
Duration of infertility diagnosis (years)						
≤ 1	221	42.9	87	36.4	134	48.6
≤ 2	102	19.8	54	22.6	48	17.4
≤ 3	83	16.1	32	13.4	51	18.5
Duration of fertility treatments (years)						
≤ 1	304	59.0	121	50.6	183	66.3
≤ 2	73	14.2	39	16.3	34	12.3
≤ 3	58	11.3	30	12.6	28	10.1
> 3	59	11.5	32	13.4	27	9.8
Embryo transfer cycle						
0	284	55.2	111	46.4	173	62.7
1	132	25.6	63	26.4	69	25.0
2	44	8.5	26	10.9	18	6.5
3	17	3.3	9	3.8	8	2.9
> 3	28	5.4	20	8.4	8	2.9

Abbreviation: EFA, exploratory factor analysis; CFA, confirmatory factor analysis.
Some variables have missing values.

lead to the desire outcome. Some people think that this item means that "even if I cannot get pregnant in the end, I can still face the future life optimistically". Therefore, this item was revised.

> Interviewee 7: *I think the order of items 5 and 6 can be replaced, accepting that the outcome of not being able to get pregnant should come first, and then the attitude I choose to face the future life.* Therefore, the researchers changed the order of items 5 and 6.

The third Chinese version of the scale was modified to become the fourth Chinese version of the questionnaire for the pilot study.

3.1.6. Pilot study

Participants (N = 30) expressed that the questionnaire was comprehensive, clear and easy to understand, and the completion time was within the acceptable range. No further revisions were done.

3.2. Validity

Table 1 describes the socio-demographic characteristics of the participants. A total of 515 participants were randomly divided into EFA (N = 239) and CFA (N = 276).

3.2.1. Content validity

A total of seven experts were invited to evaluate content validity. The I-CVIs ranged from 0.86 to 1; S-CVI was 0.96 (Table 2).

3.2.2. Construct validity

(1) Exploratory factor analysis

The value of the Kaiser Meyer Olkin (KMO) was 0.956 and the Bartlett's Test of Sphericity was statistically significant (χ^2 = 4044.970, P < 0.001), supporting the exploratory factor analysis. The scree plot and eigenvalue (>1) suggested that the one factor model was suitable for the scale (Fig. 1). Only one factor was extracted which could explain 66.9 % of the total variance.

(2) Confirmatory factor analysis

A one factor model extracted by EFA was validated adopting the CFA sample. The results of CFA confirmed the one-factor structure had unacceptable model fit indicators. Model fit could be improved by correlating the residuals between several pair items within one factor (MIs>10). The modified one-factor model showed acceptable or good fit: χ^2/df = 2.710, RMSEA = 0.079, SRMR = 0.0423, CFI = 0.953, TLI = 0.939 (Table 3). The factor loadings of items corresponding to factors were all greater than 0.4 and were significant, indicating that each item can highly represent the corresponding latent variable (Fig. 2). Table 4 presents the item factor loadings of the Chinese ISE.

3.2.3. Reliability

Cronbach's alpha was 0.98 for the Chinese version of the ISE and indicated that the scale had satisfactory internal consistency. Split-half reliability was 0.972. The sample size of the test-retest reliability was 28 (not Including those previously involved in the study), reaching 10.0 % of the sample size of the exploratory factor analysis. The test-retest reliability was 0.848 (P < 0.01). The

Table 2
CVIs of the Chinese ISE.

Items	Expert rating							Number of scores of 3 and 4	I-CVI
	A	B	C	D	E	F	G		
ISE1	4	4	4	4	4	4	4	7	1.00
ISE2	4	2	3	4	4	4	4	6	0.86
ISE3	4	2	3	4	4	4	4	6	0.86
ISE4	4	3	4	4	4	4	4	7	1.00
ISE5	4	4	4	4	4	4	4	7	1.00
ISE6	4	4	4	3	4	4	4	7	1.00
ISE7	3	4	4	4	4	4	4	7	1.00
ISE8	4	4	4	4	4	4	4	7	1.00
ISE9	4	4	4	4	4	4	4	7	1.00
ISE10	4	4	4	4	4	4	4	7	1.00
ISE11	4	4	4	4	4	4	4	7	1.00
ISE12	4	4	4	4	3	4	4	7	1.00
ISE13	4	4	4	4	4	4	4	7	1.00
ISE14	4	4	4	2	4	4	4	6	0.86
ISE15	4	4	4	3	4	4	4	7	1.00
ISE16	4	4	3	3	3	1	4	6	0.86

Abbreviation: CVI, content validity index; ISE, infertility self-efficacy; I-CVI, item content validity index.

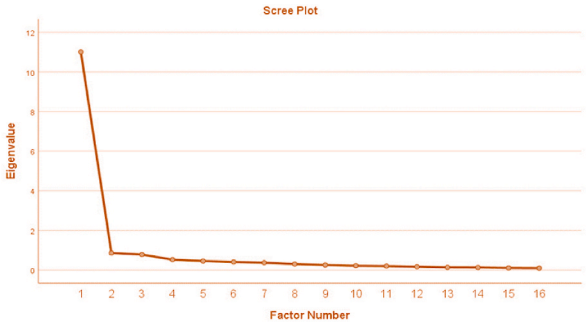

Fig. 1. Scree plot of the ISE acquired using the principal axis factoring method

Fig. 1 is a scree plot that suggested that the one factor model was suitable for the Chinese ISE scale. Only one factor was extracted which could explain 66.9 % of the total variance. The value of the Kaiser Meyer Olkin (KMO) was 0.956 and the Bartlett's Test of Sphericity was statistically significant ($\chi^2 = 4044.970$, $P < 0.001$), supporting the exploratory factor analysis.

Table 3
Results of confirmatory factor analysis.

Parameters	χ^2/df	RMSEA	SRMR	CFI	TLI
Before model modification	6.014	0.135	0.061	0.846	0.823
After model modification	2.710	0.079	0.042	0.953	0.939
Reference standards	<3	≤0.08	≤0.08	>0.90	>0.90

Abbreviation: χ^2/df, Chi-square/df; RMSEA, root mean square error approximation; SRMR, standardized root mean square residual; CFI, comparative fit index; TLI, Tucker–Lewis Index.

corrected item-total correlations of the Chinese ISE ranged from 0.660 to 0.905, and Cronbach's alpha did not increase when the 16 items were gradually removed.

4. Discussion

The current study translated and validated a Chinese version of the ISE for use in evaluating the self-efficacy of women with infertility. The translation, adaptation and validation of the scales followed the guidelines of scales in psychometric study [21].

In order to ensure that the translation conformed to Chinese culture and usage, many group discussions and expert consultations were conducted on discrepant and ambiguous words and items. The researchers contacted the original author several times to discuss the specific meaning of the item "Keep from getting discouraged when nothing I do seems to make a difference" and the item "Feel like a sexual individual". Multiple discussions between the research group and the instrument developers during the translation process were critical to the quality of the Chinese version of the ISE.

The Cronbach's alpha coefficient of the Chinese ISE was 0.98 indicating the scale had satisfactory internal consistency and reliability. The Cronbach's alpha coefficient of the Chinese ISE was slightly greater than in the original version (0.94), Turkish version (0.78), Korean version (0.92) and Portuguese version (0.96) [3,7,11,22]. Split-half coefficients were above 0.9 (0.948 and 0.980). The test-retest reliability was 0.848 ($P < 0.01$) and the sample size was 28, reaching 10.0 % of the sample size of the exploratory factor analysis. The test-retest reliability of the Chinese ISE was slightly more than the Korean (0.81) and Portuguese versions (0.77), and slightly less than the original version (0.91) [7,11,22].

The content validity index of each item and overall scale of the Chinese ISE was above 0.78 indicating that the questionnaire has good content validity. The structural validity was as follows. The initial EFA of 16 items showed that the Chinese ISE was a single-factor structure. The one-factor model is consistent with the original version as well as the Turkish, Korean and Portuguese versions, confirming that the Chinese version consists of one factor [3,7,11,22]. The factor loadings of 16 items were above 0.4. A previous study indicated that the proportion of extraction sums of squared loadings should be above 0.5 [3]. This single-factor structure accounted for 66.9 % of the variance, which was slightly greater than the original version (55.6 %), Turkish version (40.3 %), Korean version (58.4 %) and Portuguese version (63.9 %).

The Chinese ISE has satisfactory internal consistency, retest reliability and validity. This study provides a reliable and valid instrument to evaluate the infertility self-efficacy of Chinese women with infertility. There are strengths to this study. In the cross-cultural adaptation stage of the scale, two rounds of cognitive interviews were conducted to make the Chinese version of the ISE more suitable to the Chinese cultural background. In addition, use of this version of the scale provides a specific tool for future research on infertility self-efficacy of Chinese women with infertility.

There are limitations to this study. Participants were undergoing infertility treatment. Due to personal or other factors, there are many infertile couples who do not receive infertility treatment. Therefore, whether the questionnaire can be extended to the non-clinical population not undergoing infertility treatment needs to be further explored. In addition, participants in the current study

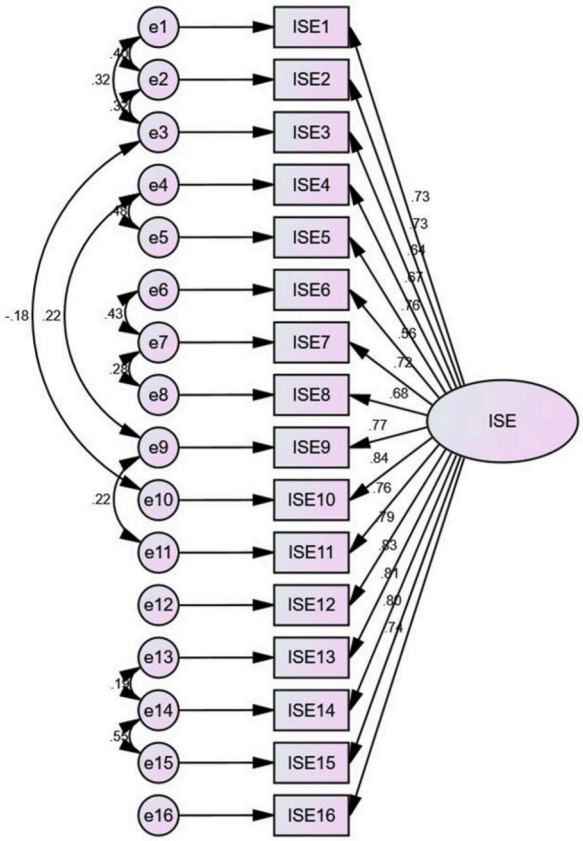

Fig. 2. Factor Structure of the Chinese ISE (Infertility Self-Efficacy)
One factor model extracted by EFA was validated adopting the CFA sample. The factor loadings of items corresponding to factors were all greater than 0.4 and were significant, indicating that each item can highly represent the corresponding latent variable. The results of CFA confirmed the one-factor structure had unacceptable model fit indicators. The modified one-factor model showed acceptable or good fit: $\chi^2/df = 2.710$, RMSEA = 0.079, SRMR = 0.0423, CFI = 0.953, TLI = 0.939.

Table 4
Item factor loading of the Chinese ISE.

Factors	Items	No-standardized factor loading	Standard error	Critical ratio (Z)	Standardized factor loading
ISE	ISE1	1			0.725
	ISE10	1.136	0.081	13.961	0.843
	ISE11	1.201	0.096	12.487	0.758
	ISE12	1.162	0.089	13.051	0.79
	ISE13	1.097	0.08	13.799	0.833
	ISE14	1.04	0.078	13.356	0.809
	ISE15	0.991	0.075	13.186	0.798
	ISE16	1.04	0.085	12.23	0.742
	ISE2	1.054	0.068	15.513	0.727
	ISE3	1.032	0.081	12.671	0.643
	ISE4	0.965	0.088	10.995	0.671
	ISE5	1.098	0.088	12.533	0.76
	ISE6	0.992	0.108	9.18	0.563
	ISE7	1.051	0.089	11.875	0.722
	ISE8	0.977	0.088	11.134	0.678

Abbreviation: ISE, infertility self-efficacy.

had good education and income levels. Therefore, it is necessary to further explore the applicability of the scale to infertile Chinese women with low education and economic levels.

Individuals with greater self-efficacy feel more confident in facing disease and treatment [23]. A high level of self-efficacy contributes to better QoL [4]. Self-efficacy can help patients master the knowledge of disease and treatment, promote the establishment of

patient confidence, improve treatment compliance and cultivate good health habits, thereby ensuring that patients obtain better treatment results and fertility QoL [6]. Therefore, an appropriate infertility self-efficacy scale can evaluate perceived ability and confidence of infertile individuals to cope with events related to infertility diagnosis and treatment or attitudes towards these behaviors. Relevant intervention strategies can then be developed and used to improve the fertility QoL and outcomes in infertile Chinese women.

The Chinese ISE includes 16 items having satisfactory reliability and validity. It is a reliable and valid instrument to evaluate the perceived ability and confidence of infertile Chinese women to cope with events related to infertility diagnosis and treatment or attitudes towards these behaviors.

What is already known on this topic

Currently, many studies have focused on the impact of infertility stress and other negative emotions on the quality of life of infertile women, and ignored the impact of a woman's internal positive psychological resources (resilience, self-efficacy and positive coping strategy). Understanding infertility self-efficacy can be useful in the development of health care interventions which may increase fertility of infertile women. At present, no instrument to assess infertility self-efficacy is available for use in China.

What this study adds

The Chinese version of the ISE scale is a reliable and valid instrument to evaluate the self-efficacy of infertile Chinese women.

How this study might affect research, practice or policy

To improve the quality of life (QoL) of infertile women, it is essential to assess their infertility self-efficacy. Public health policies can be implemented to improve the QoL of these women.

Data availability statement

The datasets generated and analyzed during the current study are not publicly available due the data also forms part of an ongoing study but are available from the corresponding author on reasonable request.

CRediT authorship contribution statement

Jing Xu: Writing – original draft, Project administration, Investigation, Data curation. **Yi-Bei Zhouchen:** Writing – review & editing, Writing – original draft, Data curation. **Rong Wang:** Writing – review & editing. **Sharon R. Redding:** Writing – review & editing. **Dou Fu:** Writing – review & editing. **Yan-Qiong Ouyang:** Writing – review & editing, Resources, Methodology.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Abbreviations

List of abbreviations	
Abbreviations	
QoL	Quality of life
ISE	Infertility self-efficacy
EFA	Exploratory factor analysis
CFA	Confirmatory factor analysis
I-CVI	Item content validity index
S-CVI	Scale content validity index
RMSEA	Root mean square error approximation
SRMR	Standardized root mean square residual
CFI	Comparative fit index
TLI	Tucker-Lewis Index

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