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ADAPTATION AND VALIDATION OF THE COMPI COPING-STRATEGY SCALE FOR INFERTILE MEN AND WOMEN

Dr. Bushra Naz[1]*, Dr. Syeda Shahida Batool[2]

[1*]Department of Psychology, University of Central Punjab, Lahore, nzbushra@gmail.com
https://orcid.org/0000-0002-1082-8421
[2]Department of Psychology, Government College University, Lahore, shahidaphd@yahoo.com

***Corresponding Author:** Dr. Bushra Naz
*E-mail: nzbushra@gmail.com

ABSTRACT
OBJECTIVES: *"The Copenhagen Multi-Centre Psychosocial Infertility (COMPI) Coping-Strategy Scale"* was translated from English to Urdu, adapted and validated for the indigenous Pakistani population. The further aim was to establish its psychometric properties.
METHOD: The research was conducted in two phases, *Phase I* involved translating the COMPI Coping Strategy Scale from English to Urdu using the Breslin forward-backward translation approach. *Phase-II*: examining and establishing the psychometric properties of the scale. Total No. of sample included N=270, men (n=66) and women (n=204) with primary infertility. The sample was selected through purposive sampling strategy with a mean age of $\pm$ 32 years.
RESULTS: Data analysis led to retaining 18 items that are converging and form a cluster of four factors of the Scale *i.e., (a) "active-avoidance Coping"*, *(b) "active-confronting Coping"*, *(c) "passive-avoidance Coping",* and *(d) "meaning-based Coping"*. Furthermore, findings also demonstrated model fit indices for these four factors (χ^2/df =214.64/129=1.70, RMSEA=.05, GFI=.92, TLI=.91, CFI=.92). Reliability analysis exhibited the adequate alpha coefficient estimates for the scale and its sub-scales. In addition, the construct validity of the scale was established through convergent and discriminant validities. Results of the independent sample t-test depicted the mean differences in terms of gender on CSS, ACCS and MBCS.
CONCLUSION: This study has provided a psychometrically robust coping measure for future research with Pakistani infertile individuals in Urdu-speaking settings. This study contributed to the methodological development of the COMPI Coping Strategy Scale. Further, it is recommended for Pakistani physicians and mental health professionals utilize this measure to investigate the coping mechanisms of infertile men and women.

Keywords: Translation and Validation, Infertile Men and Women, Coping Scale, Mental Health Professionals

INTRODUCTION

All human beings have fundamental rights to enjoy the highest achievable standards of mental as well as physical health. Similarly, couples have the right to decide on the count, time, and gap of their children. However, infertility takes far away all these essential rights of couples. The majority of infertile men and women experience infertility as a life-altering event that frequently comes with unanticipated challenges, stressors, and the possibility of stigmatization.[1] Male and female with

infertility experience physical and emotional hardships.[2] People are emotionally and psychologically ready to have children in these circumstances, but it is not physically possible. Thus, this situation imposes stern pressure in the form of misery, sadness, outrage, nervousness, marital problems, social isolation, financial issues, and sexual brokenness. In contemplation to overcome stress and other psychosocial problems related to infertility, men and women utilize various coping strategies.[2,3] These coping mechanisms used by infertile people determine their ability to adjust to stress caused by infertility. However, the painful consequences of infertility are difficult to face, and many people gradually lose their resilience.

Managing an issue under physical and psychological stress effectively is referred to as coping. Contrarily, coping mechanisms are practical psychological-behavioral attempts to control the perceptions of demanding situations that impact one's capacity.[3] According to Lazarus (1984), coping is defined as the psychological strategies employed by an individual to manage the challenges imposed by stressful person-environment interactions.[3] Coping is the fundamental desire to control the cognitive and behavioral responses one encounter after being diagnosed that they are infertile. Studying the relationship between infertility and associated coping strategies has gained prominence over the past few decades. Since infertility has been regarded as an uncontrollable and overwhelming source of stress that may exceed an infertile person's capacity for coping, dealing with infertility is frequently very difficult.[4] The stress and coping approach presented by Biggs et al. (2017) states that cognitive and behavioral coping strategies are employed to deal with stress, and stress arises when an individual perceives situations in the surroundings as exceeding his or her capabilities.[5] Couples can experience financial, social and emotional stains. Therefore, people may choose to adopt coping mechanisms while going through infertility. Infertile people frequently use coping mechanisms such as *"active avoidance"* (eluding pregnant women or kids), *"active confronting"* (asking other sterile people for support), *"passive avoidance"* (trying to forget everything about sterility), and *"meaning-based coping"* (growing as a person positively & finding other life goals).[6] While coping practices like looking for social support and actively problem-solving have been shown to lessen the stress caused by infertility. The negative relationship was explored between infertility, perceived social support, and emotion-focused coping strategies.[7] Infertile women frequently employ coping mechanisms such as active addressing (expressing emotions and seeking help from others). While avoiding family gatherings and other reminders of infertility, men also typically focus on their work, try to understand why they are infertile, share their suffering with others, or look for services to boost their self-worth.[8] In a relationship, men, and women typically share infertility. However, the difference in emotional disturbance severity between men and women is related to various coping mechanisms for each person. According to studies, women with infertility seek more coping mechanisms than men do to manage infertility.[9] Furthermore, infertile individuals adopt a variety of coping strategies, therefore it is essential to adopt a standardized tool for coping strategies.

Rationale

In Pakistan, an “Emotional and Social Distress Scale for Infertile Men and Women" was developed by Naz et al. (2022) to measure distress.[10] Moreover, the available translated version of the Coping Strategy Scale by Abbasi and Loona[2] lacks advanced psychometric characteristics of the scale for the Pakistani Population. Now, there is no reliable scale available in the Urdu language to assess the coping strategies for the Pakistani infertility Population. Therefore, this study aimed to translate, validate, and adapt the COMPI Coping Strategy Scale in the Urdu language for the Pakistani infertility Population. Furthermore, the existing study also provides a well-established and empirically valid factor structure of the Urdu-translated version of the scale that reflects the coping strategies of Pakistani infertile men and women.

Objectives

1. Urdu language translation of the COMPI Scale.
2. To determine the reliability coefficients of the Urdu-translated version of the measure.
3. To confirm the factors of the Urdu-translated version of the scale through CFA.

4. To investigate the gender differences in terms of COMPI Coping Strategies.

METHOD

The present scale undergoes different phases of adaptation. Back-word translation and content analysis by the expert panel were conducted during the initial phase of translation. In the second phase, psychometric testing was completed.

Phase I: *Forward-backward Translation of the COMPI Coping Strategy Scale*

To create a measure that is sensitive to cultural differences, the infertility-specific coping strategy scale's 19 items were modified and translated by the acknowledged translation quality standards. The measure was translated and used in the present research with permission from the author.[11,12] Five bilingual Ph.D. psychologists who specialized in translation from English into Urdu translated the scale in the initial phase. Three more specialists (two PhDs and one post-Doc) evaluated the translated materials. The items that showed the most semantic similarity were kept. Then a bilingual expert finalized the backward translation. The 30 infertile people took part in a field study using the 19 original items, forward-translated, and back-translated versions of the scale to determine correlations. The respondents in this field study have provided feedback on the items' understanding, clarity, and comprehensibility. The converted scale is regarded as valid, and its item attributes are reliable and similar when the correlation between the translated and original scales (r=.8 and higher) is considered acceptable. According to research, early translated investigations should give values of at least r=.30 and greater.[13]

Phase II: *Establishing the Psychometric Properties of the Newly Translated Scale*

Research Design

In the current phase of the study, a correlational research design was used.

Participants

The data was gathered using a purposive sampling technique. The study included N=270 people with primary infertility (*i.e., 66 men* and *204 women*). The participants varied in age from 20 to 44 years (M=31.18, SD=6.51). Data was gathered from various public and private hospitals in Lahore, Pakistan. After gaining consent from infertile married males and females, information was obtained from the respondents in person. Subsequent infertile males and females with any comorbid condition (*e.g.,* cancer, diabetes) were excluded from the research. Furthermore, the existing study excluded married males and females who had been married for less than 12 months and having secondary infertility.

Research Measure

The COMPI Coping Strategy Scales. It is developed by Schmidt et al. (2005) consist of a 19-item questionnaire.[14] This questionnaire is grounded on the transactional model of stress by Lazarus and Folkman and incoperated Folkman's (1997) modified coping model, which includes meaning-based coping derived from qualitative interview research.[15] The 19-item Scale span a broad range of coping responses and are organized into four subscales based on their conceptual content: active-avoidance coping (k=4), active-confronting (k=7), passive-avoidance (k=3), and meaning-based coping (k=5). The items within each subscale shows significant intercorrelations.Confirmatory factor analysis indicated goodness-of-fit-index (GFI) of 0.88 for the overall model. However, removing each subscale one at a time resulted in GFIs of 0.9.[14] The Cronbach's alpha for the scale in current study is α=.80, indicating good internal consistency.

Procedure

The ethical approval to conduct this study was obtained from the Psychology Department of Government College University, Lahore. The approval was also acquired from the hospital administrators and the departmental Incharge. The permissions to use the research instruments were

taken from the original authors of the scale. The corresponding authors gave their consent for the study's scope. The data were collected from several hospitals in the private and governmental sectors. Men and women with primary infertility who had been diagnosed by medical doctors were recruited. Before beginning the data collection, consent was obtained. The participants were provided instructions on the instruments and responses were obtained. Participants were asked to respond independently and honestly to each question about the scales. Before collecting any data, the participants were made aware of the study's goals and provided with written informed permission. Similarly, to that, the study's participants' data and responses were kept private and anonymous. All study participants agreed to participate voluntarily, and they has the liberty to exit the study whenever they wanted. If required, participants received psychological treatment as well as relaxation exercises and emotional ventilation. Some participants in the study were illiterate, therefore the researcher read the questionnaires to participants so they could respond. Patients who were examined by infertility specialists and awaited further treatment each received a survey. Concerning the questionnaire, the researcher answered questions. Additionally, the participants were provided the instructions on how to complete the questionnaite. The survey was mostly filled out by respondents on the same day. Some took their time and returned the form on their subsequent visit. A few individuals failed to return the surveys at all, and some of the questions were not completed properly. In the conclusion, the issues, treatments, and solutions were discussed with the participants.

RESULTS

Several analyses were conducted to achieve the objectives of the current study. The data were initially screened to look for missing values, coding mistakes, and outliers. AMOS-22 was used for confirmatory factor analysis (CFA) to check and prove the internal consistency of the newly Urdu-translated version of the scale. To evaluate internal consistency reliability analysis was carried out. Convergent and discriminant validity was constructed to support the concept of construct validity of the Urdu translated scale.

Figure 1: Measurement Model for the COMPI Coping Strategy Scale (Urdu-Translated).

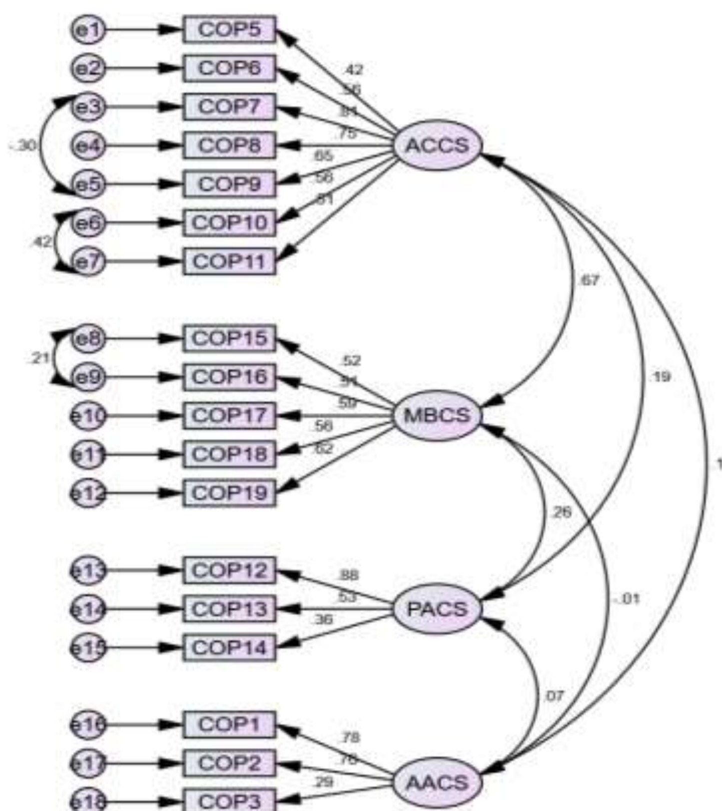

Table 1*Indices of the COMPI Scale* (*N*=270)

Fit Indexes	χ^2/df	*p*	CFI	RMSEA	GFI	TLI
Model	214.64/126=1.70	.02	.92	.05	.92	.91

Note. χ^2=*chi square*, $p<.05$

Table 1 indicates the findings of construct validity of the COMPI Coping Strategy Scale. Based on the statistical characteristics (χ^2/df=1.70, GFI=.92, CFI=.92, TLI=.91, and RMSEA=.05), the confirmatory factor analysis model fits the data well.

Table 2 Factors, Factor Loadings, Item to Total Correlations, Number of Items, Chronbach's alpha and Means, Standard Deviation of the Newly Urdu Translated Scale (N= 270)

Item #	ACCS	MBCS	PACS	AACS	Item-total γ
5	.42				.53**
6	.56				.54**
7	.81				.70**
8	.75				.62**
9	.65				.59**
10	.56				.53**
11	.51				.53**
15		.52			.51**
16		.51			.52**
17		.59			.53**
18		.56			.52**
19		.62			.56**
12			.88		.38**
13			.53		.30**
14			.36		.35**
1				.78	.23**
2				.76	.22**
3				.29	.32**
k	07	05	03	03	18
α	.80	.71	.60	.60	.80
M(*SD*)	17.08 (4.56)	12.67 (3.50)	9.84 (1.98)	6.00 (1.97)	

Note. **Correlation is significant at the 0.001 level, *AACS:* Active Avoidance Coping Scale, *MBCS:* Meaning Based Coping Scale, *PACS:* Passive Avoidance Coping Scale, *ACCS:* Active Confronting Coping Scale.

Table 2 shows the factor loadings after CFA. It varies from .29 to .88. The total correlation between all of the items is significant and acceptable. The original four factors were retained except item 4 in factor-1, which was deleted because of low loading on the present sample. Additionally, the table also displays high alpha reliability coefficients for the whole translated version of the COMPI coping strategies scale and its subscales.

The composite reliability (CR) of the translated Urdu version of the scale is α=.60 (see Table 2). Furthermore, the construct validity of the Urdu-translated version was established through "Ryff's Psychological Well-beingScale (RPWS)" and "Depression, Anxiety, and Stress Scale DASS-21". The evidence showed that translated version of the (COMPI) Coping Strategy Scale for Infertile men and women was positively (r= .50, $p<.05$) related to RPWS and negatively (r=-.42, $p<.05$) associated to DASS-21.

Table 3 *Gender Difference in terms of the COMPI Coping Strategies Scale and Sub-scales* (*N*=270)

Variables	Men *n*=66	Women *n*=202			95% CI		Cohen's *d*
	M (*SD*)	*M* (*SD*)	*t*(268)	*p*	LL	UL	
CSS	48.10 (9.25)	44.72(7.5)	2.98	.003	1.15	5.61	.40
AACS	5.84 (1.60)	6.00 (1.98)	0.57	.564	.68	.37	.08
ACCS	18.57(4.54)	16.55 (4.46)	3.17	.002	.76	3.26	.44
PACS	9.46 (2.23)	9.98(1.86)	1.83	.068	1.05	.037	.25
MBCS	14.21 (3.64)	12.17 (3.64)	4.21	.000	1.08	2.98	.56

Note. CSS: COMPI Strategies Scale, AACS: Active Avoidance Coping Scale, *MBCS:* Meaning Based Coping Scale, *PACS:* Passive Avoidance Coping Scale, *ACCS:* Active Confronting Coping Scale.

Results of the independent sample *t*-test depicted the mean differences in terms of gender. A significant mean difference was found in the total of CSS where men scored higher as compared with women. A significant difference was found between ACCS and MBCS; men scored higher on both scales. A non-significant difference was found between AACS and PACS, it indicated men and women cope equally on a given scale. Furthermore, Cohen's *d* effect size varies in different scales according to their significance level raging from ACCS *d*=.08, PACS *d*= .25, CSS *d*=.40, ACCS *d*= .44, and MBCS *d*= .56 respectively (see Table 3).

DISCUSSION

The current study was conducted to adapt and validate coping strategies scale for infertile men and women with primary infertility and establish its psychometric properties. Adaptation of the current scale has significant importance which demands cultural fit of the scale along with the significant psychometric properties and well-established factor structure. The Coping Strategies Scale (CSS) was adapted and validated as there was no indigenous measure available to measure the coping specific to infertile men and women in the Urdu language. This study provides robust evidence for the psychometric characteristics of the Urdu version of CSS with Pakistani infertile men and women. The Cronbach's Alpha reliability of the adapted scale was .80 which is comparable with the original scale and extends the applicability of the CSS to the Urdu-speaking sample. The Cronbach Alpha reliability of each subscale (ranges from .60 to .80) and total reliability of CSS is in the accepted range which indicated internal consistency of the Urdu Version of CSS. The internal consistency results of the total scale and subscales are by the original version developed by Schmidt (2006)[14] and with the adapted version in Turkey[15] and the adapted version in Pakistan.[2] Items-total correlation of CSS indicated adequate strength of the relationship. Confirmatory factor analysis results indicated overall Model fit which is in an acceptable range. The values of CFI, GFI, TLI, and RMSEA indicated the best fit of the hypothesized model. The results of CFA confirmed the measurement model of the original scale except for one item that was deleted because of the low loading on the current sample.[16] An 18 items CSS four-factor solution emerged from our analysis.

It has been noted that infertile individuals use active avoidance and passive avoidance coping strategies on the same level. Most studies reported contradictory results where women use more AACS and PACS as compared with men[17] however such a stereotypical notion was not proved in the current study where AACS and PACS both are used equally. Moreover, the results of our study demonstrated the significant difference between active confronting coping strategies and meaning-based coping strategies, where men scored higher on active confronting and meaning-based coping strategies than women. We interpret active confronting and meaning-based strategies as a kind of defense strategies where men reported emotional expression to handle infertility-related distress[18] and find the proactive practical solution to the problem by using meaning-based coping[19], therefore, it appears important for fertility experts to be mindful that men use a higher level of ACCS and MBCS as compare with women for their counseling. Overall contrary to our expectations men and women are equal in using AACS and PACS and overall men are using more coping strategies as compared

to women to deal with their infertility distress. Men are likely to use meaning-based coping more while women are more likely to use emotion-based.
As hypothesized, CSS showed a positive correlation with RPWS and a negative association with DASS-21 scores which indicated the convergent and discriminant validity of the adapted scale, which indicated that coping strategies are highly related to psychological well-being while negatively related to depression anxiety, and stress scale. Similar results were found in the CSS validation study too. our study further supports that coping strategies play a vital part in affecting mental health and psychological well-being consistently across cultures.[14,15]

Limitations and Suggestions
It is essential to acknowledge the limitations of the current study. The results are limited in their generalizability since they were based on a group of primary infertile patients who were seeking treatments. Although infertile patients came Lahore through out the country, we still cannot cover the other cities. Additionally, the representative sample was limited to provide a reliable representative of the population and to allow for the generalization of results. Male involvement lagged behind that of females because cultural stigmatization attached with the primary infertility. Future research should also take into account those who do not seek treatment.
Implications

10.53555/m3zepd38This study indicated significant findings including the adaptation of an *infertility-specific coping scale* that could be helpful for a health professional to assess the coping mechanisms of patients in a short period that can be utilized in their assessment and treatment. This measure could indeed benefit all infertile men and women.
Conclusions
It is concluded that the newly adapted coping strategies scale for infertile men and women was found to be a reliable instrument for evaluating the infertility-specific coping of primary infertile men and women in an accurate and precise manner as the original one. The CSS Urdu version can help to identify the coping resources of infertile individuals and a better treatment plan can be offered.

REFERENCE

1. Chen MX, Zhang Y, Cai QQ, Zhang S, Xu R, Chen H, et al. How fertility preservation guidelines have progressed worldwide: Potential implications and inspiration. Reprod. Dev. Med. 2022;6(01):34-41. DOI: 10.1097/RD9.0000000000000010
2. Abbasi TL, Loona MI. Translation of Coping Strategy Scale into Urdu Language, Family System and Age Wise Differences among Infertile Women. ASEAN Journal of Psychiatr. 2021;22(8):1-17.
3. Folkman S. Stress: appraisal and coping. In Encyclopedia of behavioral medicine. Cham: Springer International Publishing. 2020; 2177-2179.
4. Gourounti K, Anagnostopoulos F, Vaslamatzis G. Psychosocial predictors of infertility-related stress: A review. Curr. Women's Health Rev. 2010;6(4):318-31. DOI: 10.2174/157340410793362159
5. Biggs A, Brough P, Drummond S. Lazarus, and Folkman’s psychological stress and coping theory. The handbook of stress and health: A guide to research and practice. 2017:11 (04):351-64. https://psycnet.apa.org/doi/10.1002/9781118993811.ch21
6. Peterson BD, Pirritano M, Block JM, Schmidt L. Marital benefit and coping strategies in men and women undergoing unsuccessful fertility treatments over a 5-year period. Fertil. Steril. 2011;95(5):1759-63. https://doi.org/10.1016/j.fertnstert.2011.01.125
7. Keshavarz F, Mosalanejad L, Ghavi F, Abdollahifard S, Khodabakhshi Koolaee A. Coping strategies and perceived stress in infertile couples. J. Nurs. Care. 2018;4(2):80-7. http://dx.doi.org/10.32598/10.32598/jccnc.4.2.80

8. Schmidt L, Holstein B, Christensen U, Boivin J. Does infertility cause marital benefit?: An epidemiological study of 2250 women and men in fertility treatment. Patient Educ. Couns. 2005;59(3):244-51. https://doi.org/10.1016/j.pec.2005.07.015
9. Bayley TM, Slade P, Lashen H. Relationships between attachment, appraisal, coping and adjustment in men and women experiencing infertility concerns. Hum. Reprod. 2009;24(11):2827-37. https://doi.org/10.1093/humrep/dep235
10. Naz B, SS Batool, Fida MK, Khan MZ. Development and Validation Emotional and Social Distress Scale for Infertile Men and Women. Khyber Med. Univ. J. 2022;14(03). https://doi.org/10.35845/kmuj.2022.21660
11. Brislin RW. Back-translation for cross-cultural research. J Cross Cult Psychol. 1970;1(3):185-216. https://doi.org/10.1177/135910457000100301
12. Cha ES, Kim KH, Erlen JA. Translation of scales in cross-cultural research: issues and techniques. J. Adv. Nurs. 2007;58(4):386-95.
13. Stacciarini TS, Pace AE. Translation, adaptation, and validation of a self-care scale for type 2 diabetes patients using insulin. ACTA PAUL ENFERM. 2014;27(3):221-9. https://doi.org/10.1111/j.1365-2648.2007.04242.x
14. Schmidt L. Infertility and assisted reproduction in Denmark. Dan Med Bull. 2006;53(4):390-417.
15. Yilmaz T, Oskay UY. The Copenhagen multi-center psychosocial infertility (COMPI) fertility problem stress and coping strategy scales: a psychometric validation study in Turkish infertile couples. Int. J. Caring Sci.2016;9(2):452-61.
16. Raubenheimer J. An item selection procedure to maximize scale reliability and validity. SA J. Ind. Psychol. 2004;30(4):59-64. https://doi.org/10.4102/sajip.v30i4.168
17. Lykeridou K, Gourounti K, Sarantaki A, Loutradis D, Vaslamatzis G, Deltsidou A. Occupational social class, coping responses and infertility-related stress of women undergoing infertility treatment. J. Clin. Nurs. 2011;20(13-14):1971-80. https://doi.org/10.1111/j.1365-2702.2011.03696.x
18. Stanton AL, Danoff-burg S, Huggins ME. The first year after breast cancer diagnosis: hope and coping strategies as predictors of adjustment. Psycho-Oncology. 2002;11(2):93-102. https://doi.org/10.1002/pon.574