Original Article

The Copenhagen Multi-centre Psychosocial Infertility (COMPI) Fertility Problem Stress and Coping Strategy Scales: A Psychometric Validation Study in Turkish Infertile Couples

Dr. Tulay Yilmaz
Istanbul University Faculty of Health Sciences Department of Midwifery, Istanbul, Turkey

Dr. Umran Yesiltepe Oskay
Istanbul University Florence Nightingale Faculty of Nursing, Istanbul, Turkey

Correspondence: Dr. Tulay Yilmaz, Istanbul University Faculty of Health Sciences Department of Midwifery, Demirkapı Cad. Karabal Sk. Bakırköy Ruh ve Sinir Hastalıkları Hastanesi Bahçesi içi 34740 Bakirkoy Istanbul, Turkey E-mail: tyilmaz@istanbul.edu.tr tulaymert@hotmail.com

Abstract

Background: There are no scales in Turkey to determine the stress occurring as a result of infertility and infertility treatment and the methods of coping with it.
Aim: This study aim was to evaluate the psychometric validation of The Copenhagen Multi-centre Psychosocial Infertility (COMPI) Fertility Problem Stress Scales and Coping Strategy Scales in infertile couples in Turkey.
Methodology: The validity and reliability studies of The COMPI Fertility Problem Stress Scales and Coping Strategy Scales were carried out in 206 infertile couples (N = 412) between January 2010 and January 2011. The translate-retranslate method was used to determine language in both scales. Confirmatory factor analyses were performed to determine the structural validity of scale. Reliability of the scale was determined with the test-retest reliability and, Cronbach's alpha coefficients and discriminant validity of scale was also investigated.
Results: Cronbach's alpha scores, for the three subscales of COMPI Fertility Problem Stress Scales in women and men for the personal domain, were 0.82, 0.83 and 0.83; for the marital domain were 0.75, 0.68 and 0.72; and for the social domain were 0.78, 0.86 and 0.81. Cronbach's alpha scores for the four subscales of COMPI Coping Strategy Scales for active-avoidance were 0.67 in women and 0.65 in men; for active-confronting were 0.68 in women, and 0.70 in men; for passive-avoidance were 0.62 in women and 0.58 in men; for meaning-based coping were 0.70 in women and 0.68 in men.
Conclusion: Factor analysis confirmed that the scales were in accordance with their original forms. It can be concluded that these measurement scales have good validity and reliability when used for infertile couples in Turkey.

Keywords: infertility stress, coping, instrument development, infertility nursing

Introduction

Infertility and infertility treatment are sources of stress (Newton, 1999; Hammarberg, 2003; Jose-Miller, Boyden, & A. Frey, 2007; Domar, 2008; Dilbaz, 2010). Together with its individual negative effects on men and women, infertility stress is affecting infertility treatment negatively, leading to an increase in the rate of couples giving up on infertility treatment (Domar & Kelly, 2004; Domar, 2008; Dilbaz, 2010).

Infertility is difficult to bear and may exhaust a couple's capacity to cope, and their support network (Ak, 2002; Schmidt, Christensen, & Holstein, 2005). The diagnosis and treatment approaches also make it harder for the couple to cope (Karlıdere et al., 2007). Couples can manage the infertility crisis by using coping strategies during the diagnosis and treatment of infertility (Peterson, Newton, Rosen, & Skaggs, 2006; Türkçapar, Vardereli, & Türkçapar, 2008).

For childless couples, reproductive health means the accomplishment of the very much desired pregnancy. Through this they are being able to overcome the stigmatisation and sorrow they are experiencing due to being childless. For lots of women and men the spread of reproductive technologies all over the world in the 21st

century has enabled the realisation of their dreams. Particularly in Muslim cultures, with pronatalist social norms and strong support for the will to bear children, the wish to use of reproductive technologies is very apparent (Inhorn & Gurtin, 2012).

In Turkey, the first regulations regarding in vitro fertilization (IVF) procedures were set in 1987. These were reviewed in 2010. IVF services have been offered to married couples since 1987 (Karatas, Sehiraltı, Gorkey, & Guven, 2011; Amanak & Kavlak, 2013). The frequency of infertility in Turkey was reported as ranging between 10-20% (Amanak & Kavlak, 2013). It was also estimated in another study that there are 1.5-2 million infertile couples in Turkey (Oğuz, 2004). There are no publications revealing the exact number of women having infertility treatment in Turkey. It was reported that in 2005 the rate of pregnancies acquired by IVF was 44.2% and the rate of births resulting from such pregnancies was 12.1% of all live births. The rate of pregnancies acquired by intracytoplasmic sperm injection (ICSI) was 36.2% and rate of births resulting from this procedure was 8.9%. However, there were no published figures regarding success rates of gamete intrafallopian transfer (GIFT) (Zegers-Hochschild et al., 2014).

There are more than 100 IVF clinics in Turkey (Inhorn & Gurtin, 2012). These clinics are serving married couples and the treatment is supported by social insurance. In these clinics in Turkey, in terms of assisted reproductive techniques, donor usage, the application of pre-implantation genetic diagnosis (PGD) (if there is no gender related genetic illness), surrogate motherhood, embryo collection for research and the cloning of human beings are all prohibited (Amanak & Kavlak, 2013).

The research tools, the validity of which was determined, were used to assess the level of stress experienced by the infertile couples and the methods they use to cope with this stress. The findings of this investigation of the stress experienced by the couples and the methods they use to cope during infertility treatment will be a significant source of knowledge and data for the planning, practice of the teaching and consulting roles of nurses working in infertility clinics.

Background

Infertility is a situation which causes stress and infertile couples need to cope with this (Peterson et al., 2006; Jose-Miller et al., 2007; Dilbaz, 2010). In the studies carried out in infertile couples it was found that women experienced more stress than men during the diagnosis and treatment of infertility (Newton, 1999; Lee & Sun, 2000; Bayley, Slade, & Lashen, 2009). Moreover, it was reported that women used a wider range of coping methods to cope with infertility than men did (Schmidt et al., 2005; Peterson, Pirritano, Christensen, & Schmidt, 2008). In the follow-up studies carried out on infertility stress and the methods of coping, it was found that there was a relationship between the rise and fall of stress levels and the methods used to cope with stress (Bayley et al., 2009; Peterson et al., 2006; Peterson et al., 2009). It is important to determine the stress levels of infertile individuals and the coping methods they use to lessen their stress. To make these determinations we need to have valid scales suited to achieving these aims.

There are the COMPI Fertility Problem Stress Scales and Coping Strategy Scales, developed by Schmidt (2006) to determine the infertility stress and the methods of coping with it. These scales are being widely used in various countries like Denmark, where the scales were developed (Peterson, Sejbaek, Pirritano, & Schmidt, 2014), Portugal (Martins, Peterson, Almeida, & Costa, 2011), Iran (Aflakseir & Zarei, 2013) and Hungary (Nicolett, 2012). COMPI Coping Strategy Scale was also used in Egypt (Hashim, Soliman, & Mansour, 2012).

In Turkey, an “Infertility Distress Scale” was developed so as to determine the impact level of infertility and infertility treatment processes on women (Akyüz, Gurhan, & Bakir, 2008). This scale was directed to evaluate the psychosocial responses of women to infertility and infertility treatment. (Akyüz et al., 2008). However, there are no scales in Turkey to determine the stress occurring as a result of infertility and infertility treatment and the methods of coping with it. Determination of infertility stress and the methods to cope with it will be a great help to those providing consultation to infertile couples. Coping with infertility during diagnosis and treatment positively affects the health status of the couples involved. For the present study, the COMPI Fertility Problem Stress Scales and Coping Strategy Scales developed by Schmidt (2006) were adapted and translated into Turkish. The COMPI Fertility Problem Stress Scale determines the stress levels particular to

individuals dealing infertility. The COMPI Coping Strategy Scale is used to assess methods of coping with infertility stress in couples.

Aim

In Turkey, there is need for scales to determine infertility stress and the methods used to cope with it during the diagnosis and treatment of infertility. The aim of the present study was to evaluate the psychometric characteristics of The COMPI Fertility Problem Stress Scales and Coping Strategy Scales in infertile couples in Turkey.

Methods

The validity and reliability of these scales were tested in two phases. In the first phase, the translation to Turkish language from the English version and back-translation into English. In the second phase content analysis by a panel of specialists. In the third phase pretesting and psychometric testing.

Study setting, working design and example

This was a cross-sectional study conducted at Istanbul University Istanbul Medicine Faculty, Department of Reproductive Endocrinology and Infertility.

In scale implementation studies, the number of cases should be at least 5-10 times the number of items in the scale to be implemented (Talbot, 1995; Öner, 1997).

The population of the subjects of the present study was formed of all the infertile couples attending Istanbul University Istanbul Medicine Faculty, Department of Reproductive Endocrinology and Infertility between the dates January 2010 – January 2011.

From this population, the infertile couples who fulfilled the criteria below were chosen as the sample group.

Selection criteria to take part in the study: Couples who

- attended Istanbul University Istanbul Medicine Faculty, Department of Reproductive Endocrinology and Infertility between the dates January 2010 – January 2011,

- had no children,

- had the ability to understand the given scales,

- had no chronic illnesses,

- had no diagnosed psychiatric illnesses,

- agreed to participate in the study.

Structure validity

The factor structures of the Turkish version of the scales were tested by confirmatory factor analysis (CFA) in 206 infertile Turkish couples.

Participants

Couples who attended to the infertility clinic between January 2010 and January 2011, had no live children, with a diagnosis of infertility, had no chronic illness and no diagnosed psychiatric illness, had the ability to understand the scales, were married and agreed to take part in the study were taken in the study.

Ethics

Permission to use the scales in this study was obtained from the developer (Schmidt (2006) before commencement. Ethics approval was granted by the Ethical Committee of Istanbul University (No: 22463). The research conforms to the provisions of the Declaration of Helsinki. Participants in the study were informed and their written approvals were collected.

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Measurements

Introductory Information Form

The introductory information form was developed for this study by the researcher after consulting the relevant literature. It consisted of 14 questions displaying socio-demographic characteristics: age, sex, marital status, place of residence, educational status, profession/working status and financial status, as well as questions regarding the effects of infertility on participants' lives pertinent to obstetric, marriage and infertility history.

The COMPI Fertility Problem Stress Scales

This scale used to evaluate the stress experienced by infertile couples was developed by Schmidt (2006) in 1996. The COMPI Fertility Problem Stress Scale has three subscales with 14 items and can be applied to both men and women. Subscales of the scale are the personal domain (how much stress the individual felt in their life as a result of childlessness) measured by six items (items 1,2,11,12,13,14), the marital domain (how much stress childlessness placed on the

marriage and the sexual relationship) measured by four items (items 3,4,5,6) and the social domain (how much stress the fertility problem placed on relationships with family, friends and workmates) measured by four items (items 7,8,9,10). The first four questions that made up the COMPI Fertility Problem Stress Scale were presented as statements with response alternatives on a five-point Likert scale (1= strongly disagree, 5= strongly agree) and the next ten questions were presented on four-point Likert scale (1= none at all, 4= a great deal). The range and the Cronbach's alpha coefficients differed depending on the subscale: personal domain (range 0-20, Cronbach's alpha for women 0.81 and for men 0.78); marital domain (range 0-14, Cronbach's alpha for women 0.73 and for men 0.72) and social domain (range 0-12, Cronbach's alpha for women 0.79 and for men 0.84).

The COMPI Coping Strategy Scales

This scale used for evaluating the coping with experienced stress of infertile couples was developed by Schmidt (2006) in 1996. The COMPI Coping Strategy Scale is a 19 item scale with four subscales. It can be applied to both women and men. Active-avoidance (e.g. I avoid being with pregnant women or children) was measured by four items (items 1,2,3,4). Active-confrontation (e.g. I ask other childless people for advice) was measured by seven items (items 5,6,7,8,9,18,19). Passive-avoidance (e.g. I try to forget everything about our childlessness) was measured by three items (items 10,11,12) and meaning-based coping (e.g. I find other life goals) was measured by five items (items 13,14,15,16,17). Responses on the COMPI Coping Strategy Scales are made on a four-poin Likert scale (1= not used, 4= used a great deal) for questions 1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16 and 17, and on a three-point Likert scale (1= not used, 3= used) for items 18 and 19. The range and Cronbach's alpha coefficients differed depending on the subscale: active-avoidance (range 4-16, Cronbach's alpha for women 0.68 and for men 0.71); active-confronting (range 7-26, Cronbach's alpha for women 0.76 and for men 0.74), passive-avoidance (range 3-12, Cronbach's alpha for women 0.46 and for men 0.55) and meaning-based coping (range 5-20, Cronbach's alpha for women 0.59 and for men 0.53).

Analysis of the Data

For analysis of the data of the study, SPSS for Windows (Statistical Package for Social Science for Windows, version 12.0) and LISREL 8.71 programs were used. Of the descriptive statistics, means and percentages were used. In the content validity analyses, arithmetic means and CVI were used. In the test-retest validity, Spearman's Correlation Analyses and the Wilcoxon Test were applied. The internal consistency of scale subscales were evaluated with Cronbach's alpha. The structural validity of scales was evaluated with CFA. The level of significance was accepted as $p<0.05$.

Results

At the end of the first phase of the study the CVI scores of each of the scales were ≥80%. The CVI of the Turkish versions of scales in this study was 0.94 for The COMPI Fertility Problem Stress Scale and 0.93 for Coping Strategy Scale.

The average age was 29.0±5.1 for women and 35.6±5.2 for men. 56.3% of women and 38.8% of men were graduates of primary school. The cause of infertility was 26.7% female factor and 27.7% male factor. The couples were married for 6.0±3.7 years and they were having infertility treatment for 3.7±3.1 years at the average. 72.3% of the couples did not have pregnancy after treatment history (Table 1). The descriptive characteristics of the attendants are presented in Table 1.

Internal Consistency Reliability Coefficient of the Scales

The mean scores obtained by test and retest were assessed for reliability of subscales of the scales translated into Turkish using the Wilcoxon Test. There were no statistically significant differences between the mean scores of both measures.

Also when the relationship between the scores of the first and the second application were subject to Spearman's Correlation analyses, the reliability coefficient for three subscales of two measured scores of The COMPI Fertility Problem Stress Scale for the personal domain, the marital domain and the social domain were $r = 0.79$; 0.65; 0.70 for women; and $r = 0.80$; 0.59; 0.72 for men, respectively. These were statistically significantly and positively related.

The relationship between the two score measures of the four subscales of The COMPI Coping Strategy Scale, the reliability coefficients for active-avoidance, active-confronting, passive-avoidance and meaning-based coping were r = 0.83; 0.81; 0.63; 0.90 for women and r = 0.44; 0.66; 0.75; 0.62 for men, respectively. These scores were also positively and statistically significantly related.

The COMPI Fertility Problem Stress Scales subscale score means of women were 8.96±5.39 for personal domain, 3.44±3.47 for marital domain and 2.16±2.75 for social domain. These score means in men were 6.58±5.20 for personal domain, 2.95±3.08 for marital domain and 2.12±3.03 for social domain (Table 2). The Cronbach's alpha scores, for the three subscales of COMPI Fertility Problem Stress Scales in women and men were 0.82 and 0.83 for personal domain; 0.75 and 0.68 for marital domain; and 0.78 and 0.86 for social domain (Table 2). The active-avoidance score means for the COMPI Coping Strategy Scales subscales were 7.95±2.79 for women and 7.29±2.69 for men. The active-confronting score means were 15.00±3.94 for women and 13.19±3.90 for men. The passive avoidance score means were 7.83±2.58 for women and 7.10±2.58 for men. The meaning-based coping score means were 3.42±3.57 for women and 13.15±3.60 for men (Table 3). The Cronbach's alpha scores for the four subscales of COMPI Coping Strategy Scales for active-avoidance were 0.67 in women and 0.65 in men; for active-confronting were 0.68 in women and 0.70 in men; for passive-avoidance were 0.62 in women and 0.58 in men; for meaning-based coping were 0.70 in women and 0.68 in men. The Cronbach's alpha reliability coefficients of The COMPI Fertility Problem Stress Scale are given in Table 2 and of The COMPI Coping Strategy Scale are presented in Table 3. The Cronbach's alpha scores showing intercultural consistency reliability of The COMPI Fertility Problem Stress Scale and Coping Strategy Scale in Turkish and in the original English version are given in Table 4.

The min-max scores; means and standard deviations and subscale item correlations of items of scales are presented in Table 2 for The COMPI Fertility Problem Stress Scales and in Table 3 for The COMPI Coping Strategy Scales.

The Structural Validity of the COMPI Fertility Problem Stress Scales and Coping Strategy Scales

In order to confirm the structural validity of adapting The COMPI Fertility Problem Stress Scale and Coping Strategy Scale to Turkish, confirmatory factor analyses were carried out.

The factor loads of all the items of The COMPI Fertility Problem Stress Scale in self subscales were 0.45 and 0.83 in women; 0.40 and 0.93 in men. CFA accordance scores of The COMPI Fertility Problem Stress Scale are given in Table 5. The CFA confirmed the original structure, revealing overall good fit indices (for women X^2= 2.09; standardised root mean square residual (SMRM) = 0.067; comparative fit index (CFI) = 0.97, root mean square error of approximation (RMSEA) = 0.073; (for men X^2= 2.72; SMRM= 0.073; CFI= 0.96, RMSEA= 0.092).

The factor loads of all the items of The COMPI Coping Strategy Scale in self subscales were 0.32 and 0.82 in women and 0.31 and 0.83 in men. CFA accordance scores of The COMPI Coping Strategy Scales are presented in Table 5. The CFA confirmed the original structure, revealing overall good fit indices (for women X^2= 2.28; SMRM= 0.084; CFI= 0.89; RMSEA= 0.079) (for men X^2= 2.04; SMRM= 0.080; CFI= 0.92, RMSEA= 0.071).

Discussion

This study was conducted to adapt to Turkish and to test the validity and reliability of the COMPI Fertility Problem Stress Scale and Coping Strategy Scale. These scales are the first tools specifically determining the infertility stress level and the methods to cope with infertility stress.

The CVI score should be ≥ 80 % for a good level of reliability (Peirce, 1995). In the present study the CVI score of both scales were at desired levels.

In scale adaptation studies it is recommended that the correlations in evaluating reliability should be higher than 0.25 or 0.30 (Talbot, 1995; Öner, 1997; Gözüm & Aksayan, 2002; Akgül & Çevik, 2005). When the subscale item correlations are taken into consideration the scales can be regarded as reliable.

Table 1: Patients' demographic and treatment characteristics

	n	%
Women (n = 206)		
Age (years)		
18-34	172	83.5
≥35	34	16.5
Educational Status		
Primary School	116	56.3
Secondary School	31	15.0
Lyceum	36	17.5
University	23	11.2
Working Status		
Working	53	25.7
Not Working	153	74.3
Men (n = 206)		
Age (years)		
18-34	147	71.4
≥35	59	28.6
Educational Status	80	38.8
Primary – Secondary School	35	17.0
Lyceum	55	26.7
University	36	17.5
Working Status		
Working	206	100
Not Working	0	0
Women (n = 206)		
Financial Status		
Not enough income	83	40.3
Enough income	123	59.7
Family Type		
Nuclear family	152	73.8
Wide family	54	26.2
Social security		
Yes	197	95.6
No	9	4.4
IVF Application		
Yes	38	18.4
No	168	81.6
Cause of Infertility		
Female	55	26.7
Male	57	27.7
Both	20	9.7
Unexplained	74	35.9
Marital Duration		
1-6 years	141	68.4
7 years and more	65	31.6
Treatment Duration		
1-4 years	152	73.8
5 years and more	54	26.2
Pregnancy after treatment		
Yes	57	27.7
No	149	72.3

Table 2: Description, item-to-total correlations (rs) and cronbach's alpha values of the COMPI fertility problem stress scales

	Women (n = 206)				Men (n = 206)				Total (N = 412)			
The COMPI Fertility Problem Stress Scales	**Mean±SD**		**Item-to- total correlation**		**Mean±SD**		**Item-to- total correlation**		**Mean±SD**		**Item-to- total correlation**	
	$\bar{x}$	**SD**	**r**	**P**	$\bar{x}$	**SD**	**r**	**p**	$\bar{x}$	**SD**	**r**	**p**
Factor 1. Personal domain	**8.96**	**5.39**			**6.58**	**5.20**			**7.78**	**5.43**		
1) My life has been disrupted because of this fertility problem	3.34	1.55	-0.79	0.001	3.50	1.51	-0.83	0.001	3.42	1.53	-0.80	0.001
2) It is very stressful for me to deal with this fertility problem	2.24	1.41	-0.65	0.001	2.80	1.51	-0.76	0.001	2.52	1.49	-0.72	0.001
How much stress has your fertility problem placed on the following												
11) Your relationship with people, with children?	3.16	1.06	-0.72	0.001	3.33	0.96	-0.69	0.001	3.24	1.01	-0.71	0.001
12) Your relationship with pregnant women?	3.06	1.08	-0.70	0.001	3.59	0.79	-0.61	0.001	3.33	0.99	-0.68	0.001
13) Your physical health?	2.88	1.15	-0.74	0.001	3.29	1.02	-0.72	0.001	3.09	1.11	-0.74	0.001
14) Your mental health?	2.32	1.10	-0.79	0.001	2.88	1.12	-0.82	0.001	2.60	1.15	-0.81	0.001
Cronbach's alpha			**0.82**				**0.83**				**0.83**	
Factor 2. Marital domain	**3.44**	**3.47**			**2.95**	**3.08**			**3.20**	**3.30**		
What consequences has your childlessness for your marriage?												
The childlessness has ...												
3) caused crisis in our relationship	3.95	1.46	-0.83	0.001	4.13	1.39	-0.81	0.001	4.04	1.43	-0.82	0.001
4) caused thoughts about divorce	4.64	0.98	-0.63	0.001	4.72	0.86	-0.60	0.001	4.68	0.93	-0.62	0.001
How much stress has your fertility problem placed on the following…												
5) Your marriage?	2.82	1.05	-0.82	0.001	3.00	1.01	-0.76	0.001	2.91	1.04	-0.80	0.001
6) Your sex life?	3.14	1.02	-0.76	0.001	3.17	0.98	-0.67	0.001	3.15	1.00	-0.72	0.001
Cronbach's alpha			**0.75**				**0.68**				**0.72**	
Factor 3. Social domain	**2.16**	**2.75**			**2.12**	**3.03**			**2.14**	**2.89**		
How much stress has your fertility problem placed on the following…												
7) Your relationships with your family?	3.45	0.88	-0.84	0.001	3.26	1.05	-0.88	0.001	3.36	0.98	-0.86	0.001
8) Your relationships with your family-in-law?	3.11	1.11	-0.82	0.001	3.50	0.87	-0.80	0.001	3.31	1.02	-0.79	0.001
9) Your relationships with friends?	3.54	0.82	-0.78	0.001	3.52	0.85	-0.86	0.001	3.53	0.84	-0.82	0.001
10) Your relationships with workmates?	3.71	0.68	-0.67	0.001	3.56	0.81	-0.81	0.001	3.64	0.76	-0.74	0.001
Cronbach's alpha			**0.78**				**0.86**				**0.81**	

Response key for items 1-2 on personal domain and for items 1-2 on marital domain: (1) strongly disagree, (2) somewhat disagree, (3) neither agree nor disagree, (4) somewhat agree, (5) strongly agree. Response key for remaining items: (1) none at all, (2) a little, (3) some, (4) a great deal.

Table 3: Description, item-to-total correlations (r_s) and cronbach's alpha values of the COMPI coping strategy scales

	Women (n = 206)				Men (n = 206)				Total (N = 412)			
The COMPI Coping Strategy Scales	**Mean ± SD**		**Item-to- total correlation**		**Mean ± SD**		**Item-to- total correlation**		**Mean ± SD**		**Item-to- total correlation**	
Items												
People cope with their fertility problem in different ways. How do you cope? I ...	$\bar{x}$	SD	r	P	$\bar{x}$	SD	r	p	$\bar{x}$	SD	r	p
Factor 1. Active-avoidance Coping Scale	**7.95**	**2.79**			**7,29**	**2.69**			**7.62**	**2.76**		
1. avoid being with pregnant women or children	1.52	0.85	0.69	0.001	1.31	0.73	0.62	0.001	1.42	0.80	0.66	0.001
2. leave, when people are talking about pregnancies and children	1.58	0.86	0.66	0.001	1.53	0.79	0.74	0.001	1.56	0.83	0.69	0.001
3. try to keep my feelings to myself	2.44	1.09	0.74	0.001	2.38	1.13	0.71	0.001	2.41	1.11	0.72	0.001
4. turn to work or substitute activity to take my mind off things	2.39	1.11	0.75	0.001	2.05	1.13	0.76	0.001	2.22	1.13	0.76	0.001
Cronbach's alpha			**0.67**				**0.65**				**0.66**	
Factor 2. Active-confronting Coping Scale	**15.00**	**3.94**			**13.19**	**3.90**			**14.10**	**4.02**		
5. let my feelings out somehow	1.84	0.96	0.54	0.001	1.70	0.91	0.54	0.001	1.77	0.94	0.54	0.001
6. accept sympathy and understanding from someone	2.22	1.13	0.62	0.001	2.05	1.14	0.72	0.001	2.13	1.14	0.66	0.001
18. ask other childless people for advice	2.02	0.59	0.41	0.001	1.81	0.63	0.40	0.001	1.92	0.62	0.43	0.001
19. talk to someone about how tests and treatments affect me emotionally	1.90	0.58	0.40	0.001	1.67	0.61	0.43	0.001	1.79	0.61	0.44	0.001
7. talk to someone about my emotions as childless	2.15	1.12	0.78	0.001	1.88	1.03	0.72	0.001	2.02	1.09	0.76	0.001
8. ask a relative or friend for advice	2.19	1.01	0.71	0.001	1.86	0.98	0.75	0.001	2.03	1.01	0.74	0.001
9. read or watch television about childlessness	2.65	1.13	0.57	0.001	2.19	1.07	0.54	0.001	2.43	1.13	0.58	0.001
Cronbach's alpha			**0.68**				**0.70**				**0.70**	
Factor 3. Passive-avoidance Coping Scale	**7.83**	**2.58**			**7.10**	**2.58**			**7.47**	**2.61**		
10. hope a miracle will happen	2.85	1.14	0.79	0.001	2.51	1.29	0.82	0.001	2.69	1.23	0.81	0.001
11. feel that the only thing I can do is to wait	2.73	1.13	0.75	0.001	2.61	1.18	0.72	0.001	2.68	1.16	0.73	0.001
12. have fantasies and wishes	2.23	1.15	0.72	0.001	1.96	1.01	0.67	0.001	2.10	1.09	0.70	0.001
Cronbach's alpha			**0.62**				**0.58**				**0.61**	
Factor 4. Meaning-based Coping Scale	**3.42**	**3.57**			**13.15**	**3.60**			**13.29**	**3.59**		
13. have grown as a person in a good way	2.36	0.97	0.67	0.001	2.41	1.04	0.61	0.001	2.39	1.01	0.64	0.001
14. think about the infertility in a positive light	2.86	1.05	0.70	0.001	2.79	1.10	0.74	0.001	2.83	1.08	0.72	0.001
15. find my marriage/partnership even more valuable now	2.90	1.13	0.72	0.001	3.00	1.13	0.76	0.001	2.95	1.14	0.73	0.001
16. find other life goals	2.05	1.09	0.64	0.001	1.87	1.04	0.49	0.001	1.97	1.07	0.57	0.001
17. believe there is a meaning in our difficulties in having children	3.23	1.04	0.63	0.001	3.06	1.13	0.70	0.001	3.15	1.09	0.66	0.001
Cronbach's alpha			**0.70**				**0.68**				**0.69**	

Response key for items 18, 19: not used (1), used (3). Response for remaining items key: (1) not used, (2) used somewhat, (3) used quite a bit, (4) used a great deal

Table 4: Cronbach's alfa values of scales in the present study and in Schmidt (2006)'s study

Scales	Present study			Original English Version (Schmidt, 2006)	
	Women	Men	Total	Women	Men
The COMPI Fertility Problem Stress Scales					
Personal domain	0.82	0.83	0.83	0.81	0.78
Marital domain	0.75	0.68	0.72	0.73	0.72
Social domain	0.78	0.86	0.81	0.79	0.84
The COMPI Coping Strategy Scales					
Active-avoidance Coping Scale	0.67	0.65	0.66	0.68	0.71
Active-confronting Coping Scale	0.68	0.70	0.70	0.76	0.74
Passive-avoidance Coping Scale	0.62	0.58	0.61	0.46	0.55
Meaning-based Coping Scale	0.70	0.68	0.69	0.59	0.53

Table 5: CFA accordance scores of the COMPI fertility problem stress scales and the COMPI coping strategy scales

	The COMPI Fertility Problem Stress Scales			The COMPI Coping Strategy Scales		
CFA accordance scores	**Women (n = 206)**	**Men (n = 206)**	**Total (N = 412)**	**Women (n = 206)**	**Men (n = 206)**	**Total (N = 412)**
X^2/d.f.	2,09	2,72	3,72	2,28	2,04	3,09
RMSEA	0,073 (p = 0,00)	0,092 (p = 0,00)	0,081 (p = 0,00)	0,079 (p = 0,00)	0,071 (p = 0,00)	0,071 (p = 0,00)
SRMR	0,067	0,073	0,060	0,084	0,080	0,069
CFI	0,97	0,96	0,96	0,89	0,92	0,92
NNFI	0,96	0,95	0,96	0,87	0,90	0,90
GFI	0,91	0,88	0,91	0,86	0,87	0,90
AGFI	0,86	0,82	0,88	0,81	0,83	0,86

In evaluating internal consistency, which is one of the signs of reliability, Cronbach's alpha technique, a method appropriate to research instruments utilising Likert scales, can be used (Özgüven, 2000; Akgül & Çevik, 2005). If Cronbach's alpha reliability score is less than 0.40 then the measurement method is not suitable; 0.40-0.59 is low reliable; 0.60-0.79 is considerably reliable; 0.80-1.00 is highly reliable (Akgül & Çevik, 2005). In the present study, the Cronbach's alpha reliability coefficient of subscales of scales is accepted to be reliable for women, men and total group. The internal

consistencies of scales were in accordance with the results of Schmidt (2006).

Test-retest reliability demonstrates the strength of a measurement scale, giving consistent results in different studies and to showing uniformity regardless of time (Karasar, 1995; Polit & Hunger, 1997; Bahar, 2004). When the test and retest score means of scales were compared by the Wilcoxon Test, there were no statistically significant differences between the two measurement score means for all subscales of women, men and the total group. This result shows that scales measure similar results in measurements made in certain intervals, and that there were consistencies between measurements. When the relation between the first and second measurement scores are investigated by Spearman's Correlation Analyses, the positive and statistically significant relationships for all subscales, between the two measurement scores, made at two week intervals, show the strength of consistency between the results of the first and the second measurements.

The CFA results of scales showed good accordance and the original factor structure showed accordance with the factor structure of Turkish versions. All the results show that the measurement scales which were adapted were as reliable as the original ones. The Turkish version of the scales could be applied to women, men and couples.The validity and reliability of the scales should be studied in bigger infertile patient groups. In future studies the infertile patients might be grouped according to the therapy methods. The infertility clinic nurses can supply support to the infertility patients by determining their stress levels and the methods they use to cope with infertility by using these scales.

Limitations of the Study

The present study had some limitations. Its generalizability is limited as it was carried out within a single institution. The couples that participated in the study were not differentiated according to primary or secondary infertility. The study's cross-sectional nature might also be counted as a limitation. As the expressions in the scales were personal declarations, the margin of error should be taken into consideration.

Conclusion

The results in the present study support the equivalence of the Turkish and English versions of The COMPI Fertility Problem Stress Scale and Coping Strategy Scale. It was found that both scales were valid and reliable when tested on Turkish couples.

These scales can be applied to both men and women to determine the stress levels of infertile couples and the methods they use to cope with infertility. These results may serve as an important reference for the caregivers to infertile couples. The demonstration of the validity of these scales in infertile patients supports their use in such settings. In further studies the relationship between stress and the methods to cope with it might be addressed.

Acknowledgements

The present study is a part of the PhD Thesis of the first author. The present study was supported by the Scientific Research Projects Coordination Unit of Istanbul University.

Funding Statement

The present study was supported by the Scientific Research Projects Coordination Unit of Istanbul University /(Project number: 6243, 26762).

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