

PSYCHOLOGICAL PATTERNS IN SEXUAL RELATIONSHIPS: UKRAINIAN ADAPTATION OF THE MULTIDIMENSIONAL SEXUAL QUESTIONNAIRE

ANASTASIIA SHYROKA

Department of Psychology and Psychotherapy, Faculty of Health Sciences,
Ukrainian Catholic University
17 Ilariona Svientsitskoho St., Lviv, 79000, Ukraine
E-mail address: shyroka@ucu.edu.ua
ORCID: <https://orcid.org/0000-0002-5265-2794>

TETIANA ZAVADA

Department of Psychology and Psychotherapy, Faculty of Health Sciences,
Ukrainian Catholic University
17 Ilariona Svientsitskoho St., Lviv, 79000, Ukraine
E-mail address: zavada_t@ucu.edu.ua
ORCID: <https://orcid.org/0000-0001-9745-2772>

ABSTRACT

Aim. Human sexuality is an important multidimensional subject for psychological research. However, the study of sexuality remains relatively closed for Ukrainian researchers, primarily due to a lack of valid and reliable measures of sexuality in general, and in particular, measures of psychological patterns in human sexuality. Therefore, the aim of the present study was to validate a self-report English-language tool, the Multidimensional Sexual Questionnaire (MSQ), for the Ukrainian language.

Methods. A total of 1113 Ukrainian-speaking participants were administered the MSQ-UA. The MSQ-UA factor structure was measured using EFA and CFA procedures. Alpha and Omega estimates of internal consistency were calculated. The test-retest reliability was established in a five-week time period. The correlations of the MSQ-UA subscales with relevant psychopathology, personality measures and control statements were accomplished to prove the construct validity of the questionnaire.

Results. Findings indicated that the MSQ-UA is an eleven-dimensional measure, which is almost identical to the original English-language version. Subscales of the MSQ-UA display acceptable excellent psychometric properties of internal consistency (Alpha and Omega within a range of 0.70 to 0.92). The test-retest reliability over the five-week period was appropriate ($r=0.68-0.93$). The MSQ-UA subscales demonstra-



ted from moderate to high correlations with relevant measures, and the associations were absent or low in cases when criterion measures were irrelevant to the subscale.

Conclusion. The MSQ-UA demonstrated appropriate psychometric properties and may be applied to assess a broad range of psychological patterns in sexual relationships in the Ukrainian-speaking population.

Keywords: sexuality, Ukrainian-language adaptation, reliability, psychological tendencies, sexual relationships, validity

INTRODUCTION

Sexuality is an important part of human life. However, it only became the topic for scientific inquiry just a few decades ago. Scientific interest in sexuality has increased since the middle of the XXth century, partly due to the spread of HIV/AIDS, and the need to promote sexual health (Parker, 2009). Gradually the dominating biomedical model changed to the understanding of sexuality as a complex biopsychosocial phenomenon, which facilitated the spread of psychological studies of sexuality as well. Now there is a great variety of research topics about sexuality, concerned with different age groups (Eleuteri et al., 2017; Forbes et al., 2017), gender identity (Fredriksen-Goldsen & Kim, 2017; Jacobson & Joel, 2018), and life experiences, during COVID-19 pandemic (Lehmiller et al., 2020), for example, or living with a disease (Porter et al., 2021; Schover et al., 2014). The findings of such studies form the basis for sexual health educational programs on a broad set of topics among a variety of populations.

Human sexuality is an important multidimensional subject for psychological research. As follows from the definition by the World Health Organisation (2006), “although sexuality is a phenomenon of relationships, it is also deeply rooted in how an individual experiences, perceives, evaluates and thinks about it.” And many such characteristics can be described within the scope of psychological patterns of sexuality. For example, studies showed that sexual self-esteem was associated with sexual behaviour, contraception use and romantic relations (Maas & Lefkowitz, 2015); sexually preoccupied individuals were more inclined to use pornography and engaged in risky sexual behaviour (Clancy et al., 2021); sexual motivation positively correlated with sheer disco clothing (Grammer et al., 2004). An examination of psychological patterns in sexuality is beneficial for understanding individuals’ relationships and behaviour.

There are many English-language questionnaires with acceptable psychometric properties. Some of them measure only one or a few aspects of sexuality, like the Sexual Self-esteem Inventory (Zeanah & Schwarz, 1996), the Sexual Motivation Scale (Gravel et al., 2016) or the Sexuality Scale (Snell & Papini, 1989). There are also multidimensional questionnaires, e.i. The Multidimensional Sexual Questionnaire (Snell et al., 1993). Thus, depending upon the purpose of the study the researcher can choose between separate scales and multidimensional measures.

The Multidimensional Sexuality Questionnaire (MSQ) is one among the English-language self-report instruments with many advantages. The MSQ helps to describe a substantial number of psychological patterns in sexual relationships. The questionnaire was developed by William Snell, Terri Fisher, and Andrew Walters (1993) as a result of combining The Sexual Awareness Questionnaire and The Sexuality Scale. A final version of the questionnaire included twelve subscales: 1 - Sexual Esteem (SeEs), 2 - Sexual Preoccupation (SePr), 3 - Internal Sexual Control (IntSC), 4 - Sexual Consciousness (SeCon), 5 - Sexual Motivation (SeMtv), 6 - Sexual Anxiety (SeAnx), 7 - Sexual Assertiveness (SeAss), 8 - Sexual-Depression (SeDep), 9 - External-Sexual-Control (ExtSC), 10 - Sexual-Monitoring (SeMnt), 11 - Fear-of-Sexual-Relations (FSeR) and 12 - Sexual Satisfaction (SeS).

All subscales had appropriate degrees of convergent, concurrent, discriminant validity, internal consistency and test-retest reliability compared to other instruments conceptually similar to the MSQ (Snell et al., 1993). The findings of the exploratory factor analysis showed that subscales of the MSQ formed a relatively independent factor structure, which also meant that they could be used separately or in combination depending on the study purpose (Ismail-Pratt et al., 2007; Snell et al., 1993). The MSQ was translated and adapted in other languages where it also demonstrated acceptable psychometric properties (Brenk-Franz & Strauß, 2011; Ochnik, 2016; Sepehrian Azar & Sorbi, 2018; Tao et al., 2012). The participants can respond to the statements of the MSQ in terms of real current, past, or imagined sexual relationships, which make it possible to apply the MSQ to adults with different sexual experiences. Considering a large number of relatively independent subscales, acceptable psychometric properties, and the ability to evaluate the psychological patterns in sexuality, regardless of the presence or frequency of sexual relationships, the MSQ can be used in Ukrainian studies.

The study of sexuality remains relatively closed for Ukrainian researchers, primarily due to the lack of valid and reliable measures of sexuality in general, and particularly measures of psychological patterns in human sexuality. Therefore, the aim of the present study was to validate a self-report English-language tool, the Multidimensional Sexual Questionnaire (MSQ), for the Ukrainian language. A preliminary study of the MSQ psychometric properties was conducted by Anna Muzalevska (2021) in her master's thesis research. This study integrated the preliminary results of reliability, and construct validity (N = 382), with new data, obtained from the larger (N = 1113) sample. Also, additional statistical procedures of exploratory and confirmatory factorial analysis were performed to evaluate the structure of the MSQ-UA.

The acronyms "MSQ" and "MSQ-UA" were used to distinguish between the original and Ukrainian versions of the Multidimensional Sexual Questionnaire.

EQUIVALENCE BETWEEN LANGUAGE VERSIONS

The permission to translate and adapt the MSQ for the Ukrainian population was obtained from the authors. The questionnaire was translated into Ukrainian by three psychologists fluent in English independently, and then they agreed on the initial version of the MSQ-UA. The back-translation procedure of this initial version was performed by American psychologists who knew Ukrainian, and items were corrected for minor content inadequacies. This procedure helped to ensure semantic equivalence between the language versions. Nevertheless, considering that particular notions and sentence structure were changed slight semantic inconsistency is possible. The results of exploratory and confirmatory factor analysis, provided in this manuscript, proved that items and scales of the original and Ukrainian versions generally maintain the same factors. Thus, two language versions possess conceptual equivalence. Concerning the criterion equivalence between the MSQ-UA and the original version, it remained unknown. The authors of the MSQ (Snell et al., 1993) collected data only from undergraduate students' samples. In the present study the, data were obtained from a community sample and include a wider range of ages (Beaton et al., 2000; International Test Commission, 2017).

MATERIALS AND METHODS

Participants

Participants were adults aged 18-69 years old ($N = 1113$; 95% women; M age = 32.20, $SD = 8.33$), who agreed to take part in an online survey. One group of participants completed the MSQ-UA together with the other questionnaires aimed to determine to construct validity ($N=382$). 31 undergraduate students completed the MSQ-UA twice over a period of five weeks to establish test-retest reliability. The rest of the participants completed only the MSQ-UA. All participants who filled out the questionnaires were included in the analyses. The study included only those responses that were filled out completely. The responses that were filled out partially were not saved in the Google Form and, thus, were not used in the study.

Table 1
Demographic characteristics of the samples

	Participants	Study 1 ¹ (N=382)	Study 2 ² (N=731)	Retest ¹ (N=31)	Total ² (N=1113)
Sex					
Male		54 (14.1%)	0	8 (25.8%)	54 (5%)
Female		328 (85.9%)	731	23 (74.2%)	1059 (95%)
Age					
Range		18-69	18-49	18-67	18-69
Mean (SD)		33.85 (12.25)	31.34 (5.03)	29.06 (10.46)	32.20 (8.33)

Participants	Study 1 ¹ (N=382)	Study 2 ² (N=731)	Retest ¹ (N=31)	Total ² (N=1113)
Marriage status				
Married	193 (50.5%)	646 (88.4%)	13 (42%)	839 (75.3%)
In relationship	21 (5.5%)	49 (6.7%)	4 (13%)	70 (6.3%)
Single	168 (44%)	36 (4.9%)	14 (45%)	204 (18.3%)
Children	198 (51.8%)	678 (92.7%)	22 (71%)	876 (78.7%)
Permanent sexual partner	280 (73.3%)	695 (95%)	16 (51%)	975 (87.7%)
Administered the MSQ-UA about:				
Current SR	288 (75.4%)	694 (94.94%)	27 (87.1%)	982 (88.2%)
Past SR	67 (17.5%)	25 (3.42%)	4 (12.9%)	92 (8.27%)
Imagined SR	27 (7.07%)	12 (1.64%)	0	39 (3.5%)

Note: SR - sexual relationship.

Source: master's thesis research (Muzalevska, 2021)¹; own research².

Procedure

The online survey was conducted between November 2020 and January 2021. All participants completed the MSQ-UA together with others as one component of a larger battery of questionnaires. The battery was delivered online via Google Forms. Participation was anonymous and voluntary.

Measures

The Multidimensional Sexual Questionnaire (MSQ-UA) (Snell et al., 1993) is a 61-item self-report measure that assesses twelve psychological patterns in sexual relationships: sexual esteem, sexual consciousness, sexual monitoring, sexual motivation, sexual assertiveness, sexual preoccupation, internal and external sexual control, sexual anxiety, sexual depression, fear of sexual relations and sexual satisfaction. Participants can check appropriate items using the scale from 0 ("not at all characteristic of me") to 4 ("very characteristic of me"). Four items (19, 31, 47 and 59) are reverse-coded. Responses for each item are summed together to yield twelve subscale scores. The advanced subscale's score indicated that the person has a more pronounced feature. The psychometric properties of the MSQ-UA and its subscales are described throughout the manuscript.

Considering the lack of valid and reliable Ukrainian-language measures of sexuality in general, and in particular, measures of psychological patterns in sexuality, the construct validity of the MSQ-UA was evaluated in comparison with available relevant psychopathology, personality measures and control statements.

The Outcome Questionnaire 45.2 (OQ-45.2) (Lambert, 1996) is a 45-item questionnaire. The current study used only the Interpersonal Relations

Scale (IRS) 11-item scale. Participants check their answers for each item according to the scale from 0 ("never") to 4 ("almost always") assessing the quality of relationships over the last week. Item 12 is scored in reverse. A subscale score is created by summing all items. Higher scores corresponded to greater distress, conflict and withdrawal in relationships. The OQ-45.2 was translated and validated in Ukrainian (Shyroka & Mykolaychuk, 2020). The IRS Cronbach's Alpha in this study was 0.80.

The Body-Related Locus of Control Scale (BRLCS) (Khomulenko et al., 2020) includes 20 opposite statements which assess individual beliefs in internal or external forces, which control physical fitness, appearance, body health and sexuality. Each pair of opposite statements is rated from -3 ("not at all true") to +3 ("completely true"). Raw scores are transformed into scores from 1 to 7 and the scale score is created by summing all items. Higher scores correspond to a higher level of internal body-related locus of control, which means a tendency to see the causes of what happens to the body in one's own actions and to accept responsibility for them. The authors reported that the BRLCS had excellent internal consistency, convergent, and discriminant validity, and test-retest reliability (Khomulenko et al, 2020). The BRLCS Cronbach's Alpha in this study was 0.84.

The Anxiety (GAD-7) and Depression (PHQ-9) Modules of the Patient Health Questionnaire (Spitzer et al., 2006; Kroenke et al., 2001) are 7-item and 9-item screening tools used to evaluate anxiety and depression symptoms respectively. Participants assess the severity of the symptoms observed during the previous two weeks on a scale from 0 ("not at all") to 3 ("nearly every day"). The final scores are created by summing all items. Higher scores correspond to a greater level of symptoms. The GAD-7 and PHQ-9 were translated into Ukrainian by the Ukrainian Institute of CBT. In this study, Cronbach's Alpha for GAD-7 and PHQ-9 was 0.89 in both cases.

The Satisfaction with Life Scale (SWLS) (Diener et al., 1985) is a 5-item questionnaire, which evaluates the individual's perception of his/her life satisfaction. Participants answered using a scale from 1 ("strongly disagree") to 7 ("strongly agree"). The final scores are created by summing all items. Advanced scores indicated that the person is more satisfied with his/her life. The Ukrainian translation of SWLS was used (Horbal, 2016). In the study, SWLS Cronbach's Alpha was 0.85.

Control Statements. Three control statements were created to evaluate the participants' level of preoccupation ("I often think about sex"), motivation ("In my opinion, it is important to be sexually active") and monitoring of sexual relationships ("In my opinion, it is important how people around perceive my sexuality and sexual life"). Participants used a 10-point scale

to provide answers about each of the statements. In the data analysis, the statements were evaluated separately.

Data Analysis

Descriptive statistics were calculated to describe the distribution of the participants' answers to each statement. Subscales' mean and standard deviation scores were determined for men and women separately. Then the results of Kaiser, Mayer, Olkin Test (KMO), Bartlett's Test of Sphericity, and intercorrelations between the subscales were accounted to implement further exploratory factor analysis (EFA). To determine that the data are provided for factor analysis, the KMO should be higher than 0.8 and the significance level of the Bartlett test less than 0.05. Also, low and medium correlations between subscales are expected - therefore the statements of the questionnaire can be formed by various factors. EFA was computed to indicate the latent factor structure of the MSQ-UA. The factors were extracted the by principal-axis method followed by oblique rotation since some of the subscales were intercorrelated. The diagonally weighted least squares (DWLS) estimator was applied (Li, 2016). The root mean square error of approximation (RMSEA), root mean square residual (RMR), Bentler-Bonnet normed fit (NFI), comparative fit (CFI) and goodness of fit (GFI) indices were analyzed. This was followed by a CFA (Confirmatory factor analysis) procedure to determine whether the probable factor models of the questionnaire were appropriate i.e. to test the possible latent factor models fit (Kline, 2005). A DWLS (diagonally weighted least squares) estimator was used (Li, 2016). As a result of the analysis, the following indices were analysed: the root mean square error of approximation (RMSEA), root mean square residual (RMR), Bentler-Bonnet normed fit (NFI), comparative fit (CFI) and goodness of fit (GFI). To conclude that the proposed model had an excellent fit the following threshold values were expected: RMSEA lower than 0.05, RMR lower than 0.10, NFI and CFI higher than 0.90, and GFI higher than 0.95 (Kline, 1998). Finally, the subscales' internal consistency was estimated by calculation of Cronbach's Alpha and McDonald's Omega coefficients. Both coefficients should exceed 0.7 to prove the internal consistency. To evaluate test-retest reliability the Pearson's correlation coefficient was calculated. Construct (convergent and discriminant) validity involved computing Spearman's correlation coefficient between the MSQ-UA and criterion tests. In all cases, correlations assumed to be significant if p-level was lower than 0.05. Analyses were conducted in R Studio software (RStudio Inc., Boston, MA, USA) using packages *psych* v.2.1.9 (Revelle, 2021), *GPArotation* v.2014.11-1 (Bernaards & Jennrich, 2005), *lavaan* v.0.6-9 (Rosseel, 2012), *semTools* v.0.5-5 (Jorgensen et al., 2021) and *REdaS* v.0.9.3 (Maier, 2015).

RESULTS

Descriptive Statistics and Subscales Correlations

Items Descriptive Statistics

Item-level descriptive statistics are presented in Annex A. Considering the results the distribution of each MSQ-UA item was examined. For most of the items, there were no significant deviations from normality. It means that items have sufficient variation to differentiate respondents from the community sample. Slight positive skewness was detected in items in Sexual-Consciousness (52), Sexual-Preoccupation (14, 50), Fear-of-Sexual-Relations (23, 35), Sexual-Depression (32, 44) and External-Sexual-Control (9, 21, 33) subscales. The most problematic looked the sexual monitoring subscale, where all items were positively skewed (10, 22, 34, 46, 58) and two items (10 and 22) also had positive kurtosis 3,93 and 6,07 respectively. Slight positive skewness in some items is expected considering that individuals from the community sample, in general, don't have severe dysfunctional patterns in sexual relationships. Items with high kurtosis (10 and 22) needed to be reformulated to have more power to differentiate respondents.

Scales Descriptive Statistics

The results of the MSQ development and adaptation in other languages revealed that men and women responded in unique ways to the MSQ (Brenk-Franz & Strauß, 2011; Ochnik, 2016; Snell et al., 1993). Considering the results, mean and standard deviation scores were determined for men and women separately (Table 2). Some gender differences were detected, however, we are not able to make a strong conclusion, because there was a relatively small sample size of men (5%), which means greater variability of the data.

Subscales Intercorrelations

As expected, the scales of the MSQ-UA showed different patterns of intercorrelations (Table 2). While some subscales are totally independent (e.g., Sexual-Anxiety (SeAnx) and Internal-Sexual-Control (IntSC) ($r=-0.00$), Sexual-Monitoring (SeMnt) and Sexual-Motivation (SeMtv) ($r=-0.04$)), the others have from low to high associations with each other. The Sexual Satisfaction (SeS) and Sexual-Depression (SeDep) subscales had the highest negative correlation ($r=-0.76$). The results of correlations showed that the subscales of the MSQ-UA evaluated rather different psychological tendencies of sexuality, and with some exceptions might constitute separate factors, which were further investigated.

Table 2
 Descriptive statistics and intercorrelations (Spearman) among the MSQ-UA subscales (N=1113)

	MEN Mean (SD), n=54	WOMEN Mean (SD), n=1059	SeEs	SePr	IntSC	SeCon	SeMtv	SeAnx	SeAss	SeDep	ExtSC	SeMnt	FSeR
SeEs	18.46 (4.40)	17.64 (4.52)											
SePr	13.13 (4.11)	10.04 (4.35)	.38**										
IntSC	18.41 (3.14)	16.82 (3.88)	.50**	.29**									
SeCon	19.20 (2.80)	17.95 (4.15)	.59**	.40**	.66**								
SeMtv	18.31 (4.57)	17.03 (4.91)	.54**	.57**	.48**	.62**							
SeAnx	11.83 (4.37)	11.88 (4.29)	-.25**	.25**	-.00	.02	.18**						
SeAss	17.46 (4.40)	16.79 (5.04)	.64**	.33**	.44**	.56**	.45**	-.20**					
SeDep	10.00 (4.59)	10.28 (5.04)	-.52**	-.05	-.31**	-.31**	-.24**	.59**	-.49**				
ExtSC	19.61 (3.48)	19.22 (3.63)	-.25**	.11*	-.16**	-.14**	-.09*	.38**	-.28**	.56**			
SeMnt	19.28 (4.18)	17.50 (3.28)	-.13**	.20**	-.01	-.03	.04	.37**	-.10*	.32**	.40**		
FSeR	10.39 (4.88)	10.29 (4.39)	-.56**	-.14**	-.33*	-.39**	-.38**	.33**	-.47**	.51**	.34**	.31**	
SeS	17.52 (5.39)	17.45 (5.33)	.66**	.18**	.41*	.42**	.37**	-.43**	.53**	-.76**	-.40**	-.21**	-.51**

Note: * p < 0.05; ** p < 0.01.

Source: own research.

Table 3
Twelve-factor structure and item loadings for the MSQ-UA (loadings ≥ 0.03, N=1113)

Item, subscale	F1 (SeDp+SeS)	F2 SePr	F3 SeMtv	F4 SeMnt	F5 SeAss	F6 SeEs	F7 FSeR	F8 ExtSC	F9 IntSC	F10 SeAnx	F11	F12
8 SeDep	-.37									.38		
20 SeDep	-.58											
32 SeDep	-.42											
44 SeDep	-.60											
56 SeDep	-.34										.30	
12 SeS	.74											
24 SeS	.88											
36 SeS	.73											
48 SeS	.58											
60 SeS	.77											
2 SePr		.69										
14 SePr		.81										
26 SePr		.85										
38 SePr		.82										
50 SePr		.93										
5 SeMtv			.59									
17 SeMtv			.34									
29 SeMtv			.79									
41 SeMtv			.78									
53 SeMtv			.88									
10 SeMnt				.74								
22 SeMnt				.83								
34 SeMnt				.66								
46 SeMnt				.69								
58 SeMnt				.75								
7 SeAss					.61							
19 SeAss					.71							
31 SeAss					.73							
43 SeAss					.63							

Item, subscale	F1 (SeDp+SeS)	F2 SePr	F3 SeMtv	F4 SeMnt	F5 SeAss	F6 SeEs	F7 FSeR	F8 ExtSC	F9 IntSC	F10 SeAnx	F11	F12
55 SeAss				.70								
1 SeEs					.61							
13 SeEs					.67							
25 SeEs					.50							
37 SeEs					.57							
49 SeEs					.32							
11 FSeR						.63						
23 FSeR						.72						
35 FSeR						.73						
47 FSeR						.40						
59 FSeR			-.30			.31						
9 ExtSC							.77					
21 ExtSC							.76					
33 ExtSC							.57					
45 ExtSC							.43					
57 ExtSC										.47		
3 IntSC								.36				
15 IntSC								.53				
27 IntSC								.31				.43
39 IntSC								.76				
51 IntSC			.30					.51				
6 SeAnx										.47		
18 SeAnx										.50		
30 SeAnx										.49		
42 SeAnx										.56		
54 SeAnx			.34							.47		
4 SeCon												
16 SeCon						.33						
28 SeCon									.39			.43
40 SeCon									.31			
52 SeCon			.30								.31	

Source: own research.

Factor Structure of the MSQ-UA

Exploratory Factor Analysis

Taking into account that the value of KMO (0.95) and Bartlett's Test significance ($p < 0.001$) were acceptable further procedures of EFA were performed. The twelve-factor structure of the MSQ was replicated. The results of EFA are presented in Table 3.

Items from ten out of twelve subscales formed distinct factors consistent with the MSQ coding instruction. All items had a loading of 0.3 or above. 66% of variance was explained in such twelve-factor solution. Sexual-Depression (SeDep) and Sexual-Satisfaction (SeS) negatively correlated subscales formed one factor, which is expected given the high intercorrelation between these subscales and the theoretical closeness of the constructs. An unexpected result was that items from the Sexual-Consciousness (SeCon) subscale scattered between different factors, which means that the theoretical construct of the Sexual-Consciousness is needed to be specified, and the items of the subscale should be reworded to distance them from closer in meaning but different Internal-Sexual-Control (IntSC), Sexual-Motivation (SeMtv) and Sexual-Assertiveness (SeAss) subscales, considering the results of intercorrelations (Table 1). Six out of total sixty items (i.e., items 8, 56 from Sexual-Depression (SeDep), items 27, 51 from Internal-Sexual-Control (IntSC), item 42 from Sexual-Anxiety (SeAnx), and item 59 from Fear-of-Sexual-Relationships (FSeR) subscale) were cross loaded, but still, they showed significant loadings in the appropriate factor. Considering that the constructs of Sexual-Anxiety and Sexual-Depression, Sexual-Motivations and Fear-of-Sexual-Relationships are closely related, the intercorrelations between their items are expected, and therefore such cross loadings might be acceptable.

Confirmatory Factor Analysis

The procedure of CFA was applied to evaluate the fit of three models: the ten-factor model derived from EFA (Sexual-Depression and Sexual-Satisfaction subscales were combined in the first factor, and the Sexual-Consciousness subscale was removed), the eleven-factor model (Sexual-Depression and Sexual-Satisfaction subscales were evaluated as a separate factors, and Sexual-Consciousness subscale was removed) and the original twelve-factor model with all twelve subscales. The models' goodness-of-fit indices are shown in Table 4.

Table 4

The results of CFI for three models of the MSQ-UA (N=1113)

	RMSEA (≤ 0.05)	RMR (≤ 0.10)	NFI (≥ 0.90)	CFI (≥ 0.90)	GFI (≥ 0.95)
10-factor model	0.07	0.10	0.93	0.94	0.95
11-factor model	0.06	0.09	0.94	0.95	0.95
12-factor model	0.05	0.11	0.84	0.87	0.82

Source: own research.

Fit for the original twelve-factor model was poor: four out of five indices didn't exceed the threshold values. Fits of the ten-factor and eleven-factor models were almost identical with slightly better indices for eleven-factor model: indices of RMR, NFI, CFI and GFI exceeded the necessary norms and the models overall can be considered acceptable. If used < .08 as a cutoff for RMSEA the models fit can be considered mediocre, but still acceptable (MacCallum, Browne, & Sugawara, 1996). Comparing ten- and eleven-factor models, the latter has more advantages, since Sexual-Depression and Sexual-Satisfaction are theoretically different while reciprocally affecting tendencies and should be assessed separately. In general, considering the results of EFA and CFA the MSQ-UA is an eleven-dimensional questionnaire (Sexual-Consciousness subscale was excluded).

Confirmatory Factor Analysis of the MSQ-UA Subscales as Unidimensional Measures

The MSQ-UA might also be considered as a collection of unidimensional scales, which measure different psychological tendencies of sexuality. Hence, we decided to treat each of twelve 5-item subscales of the MSQ-UA, as a separate measure and tested its unidimensional models using the procedure of CFA. The goodness-of-fits indices for each model are reported in Table 5.

Table 5
The results of CFI for the MSQ-UA subscales as unidimensional measures (N=1113)

Subscale	RMSEA (≤0.05)	RMR (≤0.10)	NFI (≥0.90)	CFI (≥0.90)	GFI (≥0.95)
SeEs	0.00	0.02	0.99	1.00	1.00
SePr	0.00	0.02	0.99	1.00	0.99
IntSC	0.07	0.06	0.98	0.98	0.99
SeCon	0.05	0.05	0.98	0.99	0.99
SeMtv	0.02	0.04	0.99	0.99	0.99
SeAnx	0.13	0.13	0.93	0.94	0.98
SeAss	0.08	0.08	0.99	0.99	0.99
SeDep	0.01	0.03	0.99	1.00	0.99
ExtSC	0.04	0.04	0.98	0.99	0.99
SeMnt	0.03	0.03	0.99	0.99	0.99
FSeR	0.08	0.09	0.96	0.97	0.99
SeS	0.00	0.02	1.00	1.00	1.00

Source: own research.

In general, subscales as unidimensional measures had higher goodness-of-fit indices than the MSQ-UA as a multidimension measure. For all subscales, except Sexual-Anxiety (SeAnx), all five indices exceeded the cutoffs.

Although the Sexual-Anxiety (SeAnx) subscale had excellent scores of NFI, CFI and GFI (i.e., 0.93, 0.94, 0.98 respectively) the indices of RMR and RMSEA (i.e., 0.13, 0.13, respectively) might be improved. As an option, the statements might be reworded to use more parallel forms, for example in all five statements use "...feel anxious..." / "...worried about..." instead of "...uneasy feeling" or "...feel nervous..." because in Ukrainian such phrases had a different meaning. The overall results of CFA for the MSQ-UA subscales as unidimensional measures proved that depending on the purpose of the study each subscale might be used as a separate unidimensional scale.

Reliability of the MSQ-UA

Internal consistency reliability using a sample of 382 adults. As is evident in Table 6, all subscales demonstrated acceptable to excellent internal consistency scores in both smaller and larger samples. More heterogeneity existed in Internal- (IntSC) and External-Sexual-Control (ExtSC) subscales with the lowest coefficients of 0.70, which is still acceptable.

Table 6

The coefficients of internal consistency and test-retest reliability (Spearman) for the MSQ-UA subscales

	Cronbach's Alpha		McDonald's Omega	Test-Retest
	(N= 382) ¹	(N=1113) ²	(N=1113) ²	(N=31) ¹
SeEs	0.88	0.88	0.88	0.79*
SePr	0.91	0.90	0.91	0.89*
IntSC	0.70	0.74	0.73	0.80*
SeCon	0.72	0.80	0.80	0.75*
SeMtv	0.89	0.88	0.89	0.84*
SeAnx	0.81	0.77	0.74	0.80*
SeAss	0.88	0.85	0.84	0.85*
SeDep	0.91	0.88	0.88	0.91*
ExtSC	0.70	0.70	0.70	0.68*
SeMnt	0.82	0.80	0.81	0.68*
FSeR	0.84	0.72	0.71	0.77*
SeS	0.92	0.92	0.92	0.93*

Source: master's thesis research (Muzalevska, 2021)¹; own research²; *p < 0.05.

The 31 undergraduate students retook the MSQ-UA five weeks after the initial administration. The test-retest coefficients ranged from 0.68 for Sexual-Monitoring (SeMnt) and External-Sexual-Control (ExtSC) to 0.91 for Sexual-Depression (SeDep) subscale (Table 6). All subscales appeared to be temporally stable using this five-week time period, as expected for the measure that evaluated rather stable psychological patterns.

Construct Validity of the MSQ-UA

Two types of the construct validity of the MSQ-UA were examined. The subscales were expected to significantly correlate with the measures of similar theoretical constructs as a sign of convergent validity. Weak and no correlations with the theoretically irrelevant tools pointed to the discriminant validity.

Table 7

Validity estimates (Spearman) for the MSQ-UA (N= 382)

	SeEs	SePr	IntSC	SeCon	SeMtv	SeAnx	SeAss	SeDep	ExtSC	SeMnt	FSeR	SeS
CS 1	.29**	.70**	.17*	.33**	.52**	.17*	.31**	-.03	.11*	.18*	-.21**	.13*
CS 2	.42**	.48**	.11*	.32**	.70**	.02	.39**	-.17*	.02	.12*	-.30**	.29**
CS 3	-.10*	.05	-.02	-.04	.02	.30**	-.05	.21**	.19*	.49**	.17*	-.16*
IR	-.35**	.11*	-.18*	-.16*	-.13*	.53**	-.38**	.69**	.41**	.35**	.53**	-.65**
BRLCS	.11*	-.09	.21**	.25**	.12*	-.11*	.16*	-.16*	-.24**	-.26**	-.22**	.11*
PHQ-9	-.22**	.08	-.09	-.04	-.06	.34**	-.17*	.38**	.26**	.26**	.29**	-.33**
GAD-7	-.16**	.10*	-.11*	-.04	-.07	.37**	-.17*	.35**	.26**	.21**	.30**	-.32**
SWLS	.35**	-.02	.17*	.18*	.15*	-.26**	.24**	-.42**	-.27**	-.16*	-.28**	.41**

Note: *p < 0.05. **p < 0.01.

Source: master's thesis research (Muzalevska, 2021).

The results of the correlation analysis are presented in Table 7. As was expected the highest correlations were found between Distress-in-Interpersonal-Relations (IR) and such patterns of sexuality as Fear-of-Sexual-Relations (FSeR) ($r=0.53$), Sexual-Depression (SeDep) ($r=.69$), Sexual-Anxiety (SeAnx) ($r=0.53$) and Sexual-Satisfaction (SeS) ($r= -0.65$). Also, high correlations occurred between relevant control statements (CS 1, CS 2, CS 3) and Sexual-Preoccupation (SePr) ($r= 0.7$), Sexual-Motivation (SeMtv) ($r= 0.7$), and Sexual-Monitoring (SeMnt) ($r= 0.49$). Moderate correlations appeared between negative sexuality subscales and relevant psychopathology traits: Sexual-Depression (SeDep) and PHQ-9 ($r=.38$), Sexual-Anxiety (SeAnx) and GAD-7 ($r=.37$). The same is true for the relevant but quite distant constructs such as Satisfaction-with-life (SWLS) and Sexual-Satisfaction (SeS) ($r=0.41$), Bodily-Related-Locus-of-Control (BRLCS) and External-Sexual-Control (ExtSC) ($r= -0.24$)/ Internal-Sexual-Control (IntSC) ($r=0.21$). The subscales of Sexual-Esteem (SeEs), Sexual-Consciousness (SeCon) and Sexual-Assertiveness (SeAss) had moderate to low correlations with Distress-in-Interpersonal-Relations (IR) (r between -0.16 and -0.38) and Satisfaction-with-life (SWLS) (r between 0.18 and 0.35), as was theoretically predicted. The lower or absent correlations in the rest of the cases were interpreted as evidence of the discriminant validity of the subscales.

DISCUSSION

The availability of psychometrically sound tools allows the researchers to conduct studies and get reliable outcomes. Thus, the purpose of this study was to expand the choice of sexuality researchers, who conduct studies on the Ukrainian-speaking population. The Multidimensional Sexuality Questionnaire has been translated and validated in the Ukrainian adult sample. The findings indicate that the MSQ-UA is an eleven-dimensional measure, that is almost consistent with the original English version (Snell et al., 1993). The result also suggests that eleven out of twelve subscales (excepting the Sexual-Consciousness subscale) are empirically reasonable dimensions to assess eleven psychological patterns in sexual relationships. The questionnaire as a whole is psychometrically stronger when the Sexual-Consciousness subscale is excluded. All subscales have from "acceptable" to "excellent" internal consistency, which was proved by two estimates (Alpha and Omega), and demonstrates expected stability over a five-week period. In comparison with relevant psychopathology, personality measures and control statements the MSQ-UA subscales demonstrated moderate to high correlations, and the associations were absent or low in cases when criterion measures were irrelevant to the subscale. Also, the results of CFA showed that all twelve subscales of the MSQ-UA may be considered as unidimensional measures and could be used as separate unidimensional scales depending on the purpose of the study.

While the psychometric properties of the MSQ-UA are good, they also might be improved by rephrasing some items and making the specification of some subscales more understandable. Item 52 from Sexual-Consciousness and items 10 and 22 from Sexual-Monitoring can be rephrased to have stronger power to differentiate respondents from the community sample. In the twelve-factor model of the MSQ-UA items from the Sexual-Consciousness subscale scattered between the factors of Sexual-Motivation, Sexual-Assertiveness and Internal-Sexual-Control. These results mean that the theoretical construct of Sexual Consciousness needs to be more precisely defined, and the statements in the scale need to be rephrased accordingly. Probably, the statements "I am very aware...", "I tend to think..." and "I am very alert..." should be translated into Ukrainian with the most accurate equivalent, and the phrase "sexual tendencies" needs to be clarified, to provide a clear understanding of the term. The latent structure of the Sexual-Anxiety subscale might be improved since the indices of RMSEA, RMR and CFA did not reach the recommended values. To correct the situation the statements of the Sexual-Anxiety subscale should be reworded in more parallel forms, for example in all five statements use "I feel anxious/ I am worried..." instead of "...uneasy feeling/ I feel nervous...", because in Ukrainian translation such phrases participants perceived quite different in meaning. If the given items and subscales are rephrased, a new study of the psychometric properties of the MSQ-UA revised will be needed.

There are certain limitations of the study. Differences in men and women responses to the MSQ-UA were not detected, because there was a relatively small sample size of men (5%). While sex differences likely exist and other researchers indicated that men and women responded to the MSQ statements in unique ways (Brenk-Franz & Strauß, 2011; Ochnik, 2016; Snell et al., 1993). Also, there were significant limitations in valid Ukrainian-language questionnaires that could be used to validate the MSQ-UA. Hence, the obtained results are incomplete: there are a particular lack of correlations of the MSQ-UA with the sexuality objective and self-report measures. The factor structure of the MSQ was tested in EFA and CFA using the same sample, while to obtain more convincing results the procedure of CFA is needed to be repeated in another large enough community sample.

Despite some items and subscales that might be improved and limitations that can be overcome in the future studies, the overall findings indicate that the MSQ-UA has adequate psychometric properties and can be recommended for use in studies of sexuality in the Ukrainian-speaking population.

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ANNEX A

The MSQ-UA item distributions (N=1113)

MSQ item	M	SD	Skewness	Kurtosis
1.	3.57	1.06	-0.59	-0.32
2.	2.50	1.07	0.30	-0.75
3.	3.73	0.98	-0.71	0.24
4.	3.68	1.02	-0.72	0.03
5.	3.35	1.21	-0.40	-0.78
6.	2.19	1.17	0.75	-0.44
7.	3.36	1.25	-0.30	-1.00
8.	2.17	1.23	0.79	-0.50
9.	1.67	1.04	1.52	1.39
10.	1.48	0.92	2.10	3.93
11.	2.41	1.49	0.59	-1.14
12.	3.46	1.24	-0.49	-0.76
13.	3.61	1.07	-0.59	-0.18
14.	1.77	0.93	1.25	1.25
15.	3.23	1.10	-0.43	-0.43
16.	3.85	1.01	-0.92	0.54
17.	2.99	1.24	-0.13	-1.01
18.	2.87	1.25	-0.02	-1.09
19.	3.35	1.25	-0.24	-1.03
20.	2.30	1.32	0.66	-0.80
21.	1.87	1.07	1.12	0.42
22.	1.41	0.81	2.40	6.07
23.	1.71	1.11	1.55	1.43
24.	3.57	1.26	-0.54	-0.79
25.	2.98	1.15	-0.17	-0.55
26.	2.17	1.11	0.74	-0.28
27.	3.21	1.18	-0.35	-0.77
28.	3.16	1.25	-0.27	-0.97
29.	3.72	1.13	-0.86	0.06
30.	2.04	1.13	0.94	-0.00
31.	3.38	1.29	-0.24	-1.13
32.	1.87	1.17	1.21	0.43
33.	1.65	0.99	1.51	1.60
34.	1.57	0.92	1.64	2.11
35.	1.69	1.12	1.64	1.68
36.	3.41	1.20	-0.47	-0.71
37.	3.77	1.09	-0.81	0.03
38.	1.91	1.04	0.98	0.20
39.	3.13	1.15	-0.31	-0.72

MSQ item	M	SD	Skewness	Kurtosis
40.	3.38	1.15	-0.54	-0.54
41.	3.44	1.22	-0.55	-0.66
42.	2.82	1.28	0.01	-1.15
43.	3.34	1.28	-0.37	-1.00
44.	1.89	1.20	1.15	0.17
45.	2.02	1.15	0.78	-0.46
46.	1.55	0.94	1.81	2.73
47.	2.13	1.32	0.98	-0.28
48.	3.40	1.20	-0.40	-0.67
49.	3.75	1.12	-0.83	-0.04
50.	1.84	1.00	1.09	0.48
51.	3.61	1.09	-0.76	0.08
52.	3.95	1.06	-1.10	0.82
53.	3.59	1.18	-0.69	-0.38
54.	1.96	1.10	1.00	0.10
55.	3.39	1.26	-0.43	-0.88
56.	2.03	1.23	1.00	-0.11
57.	2.02	1.28	0.95	-0.36
58.	1.57	0.90	1.68	2.45
59.	2.36	1.32	0.74	-0.62
60.	3.60	1.25	-0.57	-0.71

ANNEX B

Багатовимірний опитувальник сексуальності (MSQ-UA)

Інструкція. Перед Вами твердження, які стосуються різних аспектів сексуальності людини. Оцініть кожне з них за шкалою від 1 до 5, в залежності від того наскільки воно описує саме Вас. Відповідайте про свій досвід з останнім сексуальним партнером. Якщо у Вас ніколи не було сексуальних стосунків, відповідайте про те, як Ви собі їх уявляєте. Немає правильних чи неправильних варіантів, відповідайте щиро, «важко відповісти» обирайте лише тоді, коли дійсно не можете визначитися. Під час оцінки використовуйте таку шкалу

- 1 – зовсім не властиво мені
- 2 – більше ні, аніж так
- 3 – і так, і ні/ важко відповісти
- 4 – більше так, аніж ні
- 5 – це точно властиво мені

1. Як сексуальний (-а) партнер (-ка), я в собі впевнений (-а).
2. Я постійно думаю про секс.
3. Моя сексуальність - це те, за що в першу чергу відповідаю я.

4. Я добре розумію свої сексуальні переживання.
5. Мені важливо бути сексуально активним (-ою).
6. Я відчуваю тривогу, коли думаю про моє сексуальне життя.
7. Я можу впевнено та спокійно висловити свої сексуальні бажання.
8. Почуваюся пригнічено щодо сексуальної сфери мого життя.
9. Мій сексуальний досвід здебільшого визначається випадком.
10. Мені цікаво, що інші думають про сексуальну сферу мого життя.
11. Я боюся вступати в сексуальні стосунки з іншою людиною.
12. Я задоволений (-а) тим, як задовольняються мої сексуальні потреби
13. Я досить хороший (-а) сексуальний (-а) партнер (-ка).
14. Я думаю про секс більше, ніж про будь-що інше.
15. Сексуальні аспекти мого життя залежать від моїх дій.
16. Я добре усвідомлюю свої сексуальні бажання.
17. Мені важливо присвячувати час та зусилля сексу.
18. Мене турбують сексуальні аспекти мого життя.
19. Я не висловлюю напряду свої сексуальні вподобання.
20. Я розчарований (-на) якістю свого сексуального життя.
21. Більшість з того, що має вплив на моє сексуальне життя, трапляється випадково.
22. Мене турбує те, як інші оцінюють сексуальну сферу мого життя.
23. Я маю страх сексуальних стосунків.
24. Я задоволений (-на) своїми сексуальними стосунками.
25. У порівнянні з іншими, я кращий (-а) сексуальний (-а) партнер (-ка).
26. Я багато думаю про секс.
27. Я контролюю різні аспекти свого сексуального життя.
28. Я обдумую свої сексуальні переживання.
29. В мене є бажання бути сексуально активним (-ою).
30. Роздуми про сексуальні аспекти мого життя залишають чимало неприємних переживань .
31. Я досить пасивно висловлюю свої сексуальні бажання.
32. Я зневірений (-а) у власному сексуальному житті.
33. Удача - це головний чинник мого сексуального життя.
34. Я добре знаю, що думають інші про сексуальні аспекти мого життя.
35. Я боюся сексуальних стосунків .
36. Мої сексуальні стосунки відповідають моїм очікуванням.
37. Я позитивно оцінюю себе як сексуального (-у) партнера (-ку).
38. Я постійно думаю про те, як би зайнятися сексом.
39. Саме мої дії визначають різні аспекти мого сексуального життя.
40. Я уважний (-а) до змін у власних сексуальних бажаннях.
41. Для мене важливо бути сексуально активним (-ою).
42. Я хвилююся про сексуальну сферу свого життя.
43. У сексуальних стосунках я не соромлюся просити те, чого хочу.
44. Я нещасливий (-а) у сексуальних стосунках.
45. У сексуальному житті мені часом щастить, а часом не щастить.

46. Мене непокоїть, як інші сприймають мою сексуальність.
47. Я не боюся займатися сексом.
48. Порівняно з більшістю інших людей, мої сексуальні стосунки дуже добрі.
49. Під час сексуального контакту я почуваюся / почувався (-лася) б впевнено.
50. Я думаю про секс більшість часу.
51. Відчуваю відповідальність за власну сексуальність.
52. Я добре усвідомлюю свої сексуальні нахили.
53. Я прагну бути сексуально активним (-ою).
54. Я нервую, коли думаю про сексуальну сферу свого життя.
55. Коли мова йде про секс, я можу попросити про те, чого хочу.
56. Мені сумно, коли думаю про свій сексуальний досвід.
57. Думаю, що моє сексуальне життя вже визначене долею.
58. Я враховую те, що інші думають про сексуальні аспекти мого життя.
59. Мені не страшно бути / стати сексуально активним (-ою).
60. Я задоволений (-на) своїм сексуальним життям.
61. Я відповів (-ла) на вищеперераховані питання на основі:
- (А) Актуальних сексуальних стосунків
- (В) Минулих сексуальних стосунків
- (С) Уявних сексуальних стосунків

	Назва шкали	Твердження, що їй відповідають
1	Сексуальна впевненість – загальна тенденція людини позитивно оцінювати свою здатність до сексуальних стосунків.	1, 13, 25, 37, 49
2	Сексуальна одержимість – тенденція людини бути поглиненою та занепокоюеною думками про різні аспекти свого сексуального життя.	2, 14, 26, 38, 50
3	Інтернальний сексуальний контроль – впевненість людини у тому, що різні аспекти її сексуального життя більше залежать від неї самої.	3, 15, 27, 39, 51
4	Сексуальне самоусвідомлення – здатність людини зауважувати та задумуватися над різними проявами своєї сексуальності.	4, 16, 28, 40, 52
5	Сексуальна мотивація – бажання людини залучитися у сексуальні стосунки.	5, 17, 29, 41, 53
6	Сексуальна тривога – переживання людиною напруги, дискомфорту та неспокою щодо сексуальної сфери свого життя.	6, 18, 30, 42, 54
7	Сексуальна асертивність – тенденція людини проявляти асертивність у сексуальних стосунках.	7, 19 (обернене), 31(обернене), 43, 55

	Назва шкали	Твердження, що їй відповідають
8	Сексуальна депресія - переживання людиною пригнічення щодо сексуальної сфери свого життя	8, 20, 32, 44, 56
9	Екстернальний сексуальний контроль - переконання людини у тому, що різні аспекти її сексуального життя більше залежать від зовнішніх обставин.	9, 21, 33, 45, 57
10	Сексуальний моніторинг - інтерес людини до того, як інші сприймають різні аспекти її сексуального життя.	10, 22, 34, 46, 58
11	Страх сексуальних стосунків - страх людини вступати у сексуальні стосунки.	11, 23, 35, 47 (обернене), 59 (обернене)
12	Сексуальне задоволення - схильність людини переживати задоволення у своїх сексуальних стосунках.	12, 24, 36, 48, 60