

Brief Report: Turkish Validity and Reliability of the HITS Intimate Partner Violence Screening Tool With Women

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The current study examined the validity and reliability of the Turkish version of the HITS (Hurt-Insult-Threaten-Scream) tool which was developed to screen for intimate partner violence. 154 Turkish women participated and completed the Turkish version of the HITS (HITS-TR). The validity of the language and factor structure were evaluated. The internal consistency coefficient of the scale was .89. Confirmatory factor analysis (CFA), revealed a single factor structure consisting of four items that explained 76% of the total variance. A CFA was performed with a modified model upon a second sample indicating high compatibility for the revised model with $\chi^2/df = 1.262$, a root mean square error of approximation .036, goodness of fit index of .996, adjusted goodness of

fit index.998, root mean square residual of.006 and standardized root mean square residual of.008. It is concluded that the HITS-TR can be used as a valid and reliable screening tool for intimate partner violence in Turkish women.

Keywords: intimate partner violence; domestic violence; validity and reliability; HITS; Turkish

Intimate partner violence (IPV) is defined as physical, sexual and, emotional abuse with control behaviors applied by the spouse or partner. In IPV, victims are exposed one or more of the violent behaviors (sexual, physical, and psychological) (Arkinset et al., 2016; Campbell, 2002; World Health Organization [WHO], 2013). IPV leads to serious psychological, physical, and costconsequences for victims, their families, healthcare service, and society (Arkins et al., 2016; Coker et al., 2002; Tjaden & Thoennes, 1998, Symes et al., 2014). It is the most common type of violence against women. Violence adversely affects women's physical, mental, sexual, and reproductive health (WHO, 2017). The WHO reported that about a third of women in worldwide have been subjected to both physical and sexual violence by their spouses and/or partners throughout their lives. In the United States, approximately one in three women are subjected to sexual abuse, physical violence and/or persistent pursuit by their spouses or partners for some part of their lives (Smith et al., 2015).

IPV is a major public health problem that is often not recognized by doctors. Health care providers play a major role in determining and reducing IPV; however, only 2% to 50% of healthcare practitioners routinely screen the patient for IPV (Clark et al., 2017; Coker et al., 2002; Sherin et al., 1998; Sprague et al., 2018; Tjaden & Thoennes, 1998). Most major medical organizations recommend routine IPV screening as a part of standard patient care (American College of Emergency Physicians, 2007; Dicola & Spaar, 2016; Obstetricians & Gynecologists, 2012).

In determining IPV in the world there are many validated scales (Arkins et al., 2016; Rabin et al., 2009). One of these is a four-item screening tool for Hurt, Insult, Threat, and Scream (HITS), which evaluates current physical and psychological abuse (Chen et al., 2005; Chen et al., 2007; Mills et al., 2006; Sherin et al., 1998). Another scale is the Woman Abuse Screening Tool (WAST) which is a 10-item questionnaire or face-to-face interview that screens for physical, sexual, and psychological abuse among women and men. The Women's Abuse Screening Tool Short Form (WAST-SF) is based on the first two questions of WAST and measures how tensions and arguments are settled in a current IPV (Brown et al., 2000; Chen et al., 2007; Fogarty & Brown, 2002; MacMillan et al., 2006). The Partner Violence Screen (PVS) is one of the IPV scales which is a three-item scale and it is used to screen men and women in IPV relationships (Halpern et al., 2006; Halpern et al., 2005; Houry et al., 2004; MacMillan et al., 2006; Mills et al., 2006). The Abuse Assessment Screen (AAS) is a three-item screening scale conducted by face-to-face interview or a questionnaire to identify current or previous physical, sexual, and psychological abuse for women or men over the past 12 months (McFarlane et al., 2001; Moonesinghe et al., 2004; Weiss et al., 2003). Humiliation, Fear, Rape and Kick (HARK), which is a four-items tool, which has been used to measure physical, sexual, and psychological abuse in women through face-to-face interviews in the past one year (Sohal et al., 2007). The Partner Abuse Interview assess physical, sexual, and psychological abuse in women over

the past one year with face-to-face interviews and is an IPV screen consisting of 11 items (Pan et al., 1997). The STaT is a three-item IPV screening tool that measures lifetime physical and psychological abuse by face-to-face interviews (Paranjape & Liebschutz, 2003). The SAFE-T screen is a five-item questionnaire that measures whether there are problems with IPV relationships in women over the past year using indirect questions (Fulfer et al., 2007).

From the IPV screening scales, only AAS, HARK, Partner Abuse Interview, and WAST screening tools assess all three abuse areas (physical, sexual, and psychological). Of these scales, HITS, WAST, AAS and PVS are used to screen IPV in both women and men.

The HITS is a scoring system that may take several minutes to implement to score. Although the HITS as an IPV screening tool is brief and easy to use in clinical practice, there are only four studies conducted with the HITS to screen IPV in the healthcare settings (Rabin et al., 2009; Sherin et al., 1998). In Turkey, 38% of the married women reported experiences of physical and/or sexual violence at any time in their lives (T.C. Ministry of Family and Social Policies, 2014). For this reason, primary health care institutions play an important role in screening IPV in women. In primary health care, clinicians can reach more people for IPV screening. In this regard, HITS seems to be more applicable in primary health care and easier to remember by the clinician. While screening and exposing IPV is of great importance, to authors knowledge there is no scale of IPV in Turkey that has been demonstrated as valid and reliable in Turkish.

The objective of this study was to translate and linguistically validate the HITS scale and then to analyze Turkish version's (HITS-TR) validity and also test-retest its reliability in Turkish women.

METHOD

Study Design and Participants

The present study was conducted between April-June 2018 at Ataturk University, Department of Family Medicine, Erzurum, Turkey as a methodological study. The Standard multilingual translation and validation methodology were used for the HITS-TR. The participants in this study were randomly selected among the registered people of Ataturk University Department of Family Medicine's five Training Family Health Center, and consisted of 154 women. The inclusion criteria were; being aged older than 18 years; to be being volunteer to participate in the study; currently having a spouse/partner or had a spouse/partner in the past year; and being a Turkish native speaker. The reason for excluding men from this study was that men in the eastern region of Turkey might hide or didn't say about their violence status in a relationship. Written consents were obtained from all respondents before they commenced the questionnaire. All questionnaires were answered anonymously. Participants' ages ranged from 18 to 61 ($M = 36.0$, $SD = 9.09$) years. Sample size was calculated using Cronbach's alpha value. Based on articles about HITS (Chan et al., 2010; Chen et al., 2005; Sherin et al., 1998), it was calculated that in order to find the Cronbach's alpha value of .80 for HITS, 160 patients should be included in our study at a 95% confidence interval and at 80% power. We invited 180 women to our study by calculating a 10% drop out rate. And 170 women agreed to participate in this study (6 participant refused the study, 4 participant didn't have any relationship in the last 1 year). 16 (9,4%) of the participants were left unanswered or did not complete question-

naire packets. Of these, 154 wome (90.6%) completed the measures and were included in the analyses. The participants completed the Turkish version of the instrument privately in

TABLE 1. Demographic Charecteritics of Participants

		<i>n</i>
Total number of subjects		180
Not included in analysis		26
	Incomplete data	16
	Refused to participate	6
	Not in relationship in the last 1 year	4
Included in analysis		154
		Mean (<i>SD</i>)
Age		36.08(9.09)
Duration of marriage/relationship		13.40(9.17)
		<i>n</i> (%)
Marital status	Married	151(98.1)
	Single	3(1.9)
Employment status	Employed	70(45.5)
	Unemployed	78(50.6)
	Retired	6(3.9)
Partner's Employment status	Employed	137(89.0)
	Unemployed	6(3.9)
	Retired	11(7.1)
Educational attainment	Illiterate	6(3.9)
	Primary school	26(16.9)
	Secondary school	23(14.9)
	High school	50(32.5)
	Universty	49(31.8)
Partner's Educational attainment	Illiterate	1(.6)
	Primary school	18(11.7)
	Secondary school	27(17.5)
	High school	44(28.6)
	Universty	64(41.6)
Monthly Household Income (*TL)	Very low income	17(11.0)
	Low income	53 (34.4)
	Medium income	46(29.9)
	High income	38(24.7)

Note. *TL = Turkish Lira.

an examination room in the family health center. Participants answered the scale in a few minutes. Demographic characteristics of participants were shown in Table 1.

Data Collection Instrument

We collected demographic data from all participants as follows: participant's age, marital status, length of marriage or relationship, participant and her spouse/partner's employment status, household income based on Turkey's economical standards, <1500 Turkish Lira was categorized as very low, 1500 to 3000 Turkish Lira as low, 3000 to 5000 Turkish Lira as medium, and >5000 Turkish Lira as high, and the participant and her spouse/partner's level of educational attainment.

Sherin et al developed a brief IPV screening tool called the HITS tool, (Sherin et al., 1998) covering four parameters of IPV. The original scale consists of HITS acronym with the first letter of each parameter. HITS is comprised of the following four items: (1) "How often does your partner physically hurt you?" (2) "How often does your partner insult you or talk down to you?" (3) "How often does your partner threaten you with harm?" and (4) "How often does your partner scream or curse at you?" There are five options to indicate the frequency of emotion for the four parameters on the scale: 1 (never), 2 (rarely), 3 (sometimes), 4 (fairly/often), and 5 (frequently). The total score is obtained by collecting the score from each indicator on the scale. The scores can range from 4 to 20 and a score above 10.5 indicates that the woman is at risk for IPV.

Translation and Transcultural Adaptation

This method includes two forward translations, one reconciliation of the two forward translations, a back translation into English, a review of the back translation, harmonization, and preparing the final version. The permission of the corresponding author who devised the original HITS tool was obtained via e-mail before translating it into Turkish. Two Turkish native speakers who are fluent in English made the forward translation separately. In the reconciliation phase, we decided which Turkish translation was the most suitable. When necessary, we altered forward translation in order to make each item be more appropriate. Back translation of the tool was obtained, after the back translation version of the tool was compared to the original English instrument in order for eliminating any inconsistency. At the end of the harmonization of each item in terms of conceptual equivalence, final version was prepared as HITS-TR.

Data Analysis

Following to translation, the HITS-TR was evaluated for reliability using a test of internal consistency (Cronbach's alpha) and item analysis. Test-retest reliability was conducted with 30 women within 2 weeks after the first interview.

Kaiser-Meyer-Olkin (KMO) and Bartlett Sphericity tests were used to determine the sample size and suitability for factor analysis. Then, exploratory factor analysis (EFA) was applied for determining the reliability and similarities between the variables. EFA can give information to the researcher about the factors to be measured. Factor loads in EFA evaluations are considered to be at least .30 (Tabachnick et al., 2007). In EFA, the necessary applications should be made to the factors with eigenvalues greater than 1. Therefore, the factors whose eigenvalues were less than one were not considered.

Confirmatory factor analysis (CFA) was performed to confirm the data obtained as a result of the last application of the scale. In order to verify the EFA-obtained data with CFA, some basic values must be calculated. In this study, RMSEA (Root Mean Square Error of Approximation), SRMR (Standardized Root Mean Square Residual), GFI (Goodness of Fit Index), AGFI (Adjusted Goodness of Fit Index), NFI (Normed Fit Index), χ^2/df , TLI (Tucker-Levis Index) and CFI (Comparative Fit Index) were measured. In CFA, values greater than .90 are acceptable for CFI, GFI, AGFI, NFI, and TLI, whereas values above .95 are considered very good. The acceptable value for SRMR and RMSEA is less than .80, while values below .50 are considered extremely good. Besides, the value of χ^2/df in CFA should be less than five (Hu & Bentler, 1999; Kline, 2014; Marcoulides & Schumacker, 2001; Schumacker & Lomax, 2004). The reference values of the appropriate indices are shown in Table 2.

Cronbach's alpha coefficients were calculated to compute the internal consistency of the scale. The Cronbach's Alpha value should be between 0 and 1. The closer this interval is to 1, the higher the reliability and internal consistency of the scale. The Cronbach's Alpha coefficient is less than .40, indicating that it is not reliable, from .40 to .59, is very reliable from .60 to .79, and between .80 to 1.00 is highly reliable (Gözüm & Aksayan, 2003).

Also, Split-Half method was used to determine the reliability of the scale. In this method, when the test is halved, it is assumed that both halves of the test are parallel. In other words, the mean and variance of the divided half are considered equal. If a scale is perfectly reliable, it is stated that the correlation coefficient between two variables obtained from the sum of the items in both halves will be 1 or very close to 1. Statistical significance level was accepted as $p < .05$. SPSS 23 package program was used for data analysis.

TABLE 2. The Fit Indexes of the CFA

Indexes	Reference Value		Measurement	Result
	Good fit	Acceptable fit		
CMIN/DF	$0 < \chi^2/SD \leq 3$	$3 < \chi^2/SD \leq 5$	1.238	Good fit
TLI	$.95 < TLI \leq 1$	$.90 < TLI \leq .94$	.996	Good fit
RMSEA	$0 \leq RMSEA \leq .05$	$.05 < RMSEA \leq .08$	.039	Good fit
SRMR	$0 \leq SRMR \leq .05$	$.05 < SRMR \leq .10$	.008	Good fit
CFI	$.95 < CFI \leq 1$	$.90 < CFI \leq .94$	.999	Good fit
GFI	$.95 < GFI \leq 1$	$.90 < GFI \leq .94$	.996	Good fit
AGFI	$.95 < AGFI \leq 1$	$.90 < AGFI \leq .94$	.998	Good fit
NFI	$.95 < NFI \leq 1$	$.90 < NFI \leq .94$	.997	Good fit
SD			1.238	

RESULTS

Translation and Transcultural Adaptation

The final version of the standard multilingual translation of the HITS scale was performed with 20 women to assess if they experienced any difficulty understanding translated items. In this stage, no changes needed to be made to any item. The final version of the HITS-TR is presented in Table 3.

Reliability

The first method used to measure the reliability of the HITS-TR scale is the test-retest method. For this purpose, HITS-TR was applied to 30 participants twice at 15 days intervals and the correlation between the scores obtained from the scale was found to be .918 ($p < .001$). The internal consistency of the items was examined as another method to measure the reliability of the scale. Cronbach's Alpha value, which indicates internal consistency in studies using HITS scale, have ranged from .61 to .90 (Chan et al., 2010; Chen et al., 2005; Sherin et al., 1998). In our study, Cronbach's Alpha value was found to be .88.

Results of Exploratory Factor Analysis

Although the value found in KMO test is close to perfect as it approaches 1, it is considered invalid under .50. In our study, KMO coefficient was found to be .818 and Barlett Sphericity test was found to be $p < .001$, and the data were found to be suitable for factor analysis.

TABLE 3. HITS-TR

Item Number	Questions How often does your partner; (Eşiniz ne sıklıkta;)	Questions				
		Never (Hiçbir zaman)	Rarely (Nadiren)	Sometimes (Ara sıra)	Often (Sık sık)	Frequently (Oldukça sık)
1	Physically hurt you (Size fiziksel olarak zarar veriyor)	1	2	3	4	5
2	Insult or talk down to you (Size hakaret ediyor ya da sizi aşağılıyor)	1	2	3	4	5
3	Threaten you with harm (Sizi şiddet uygulamakla tehdit ediyor)	1	2	3	4	5
4	Scream or curse at you (Size bağıyor ya da küfrediyor)	1	2	3	4	5

We performed factor analysis to verify whether the structure that was intended to be measured in the reliability has really been measured. In item analysis, item properties of the scale were determined and correlations of items with total scores were calculated (Table 4). Item-total correlations in HITS-TR ranged between .779 and .864.

As a result of the analysis, it was seen that a single factor structure was formed and the single factor structure explained 76% of the total variance. The scree plot of HITS-TR factor analysis is shown in Figure 1.

The correlation between the two halves of the HITS-TR was found to be .847 in the split-up procedure, which is another method used in reliability studies. The Cronbach's alpha coefficient of the first half was .79 and the Cronbach's alpha coefficient of the second half was .75 (Table 5).

Tukey nonadditivity value, which indicates the probability of nonadditivity, was found to be $p < .001$ (Table 6). Again, the Hotelling t-test, indicating that the scale is perceived

TABLE 4. Total Correlation of the Items

Items	Item-Total Correlation
1	.824
2	.851
3	.864
4	.779

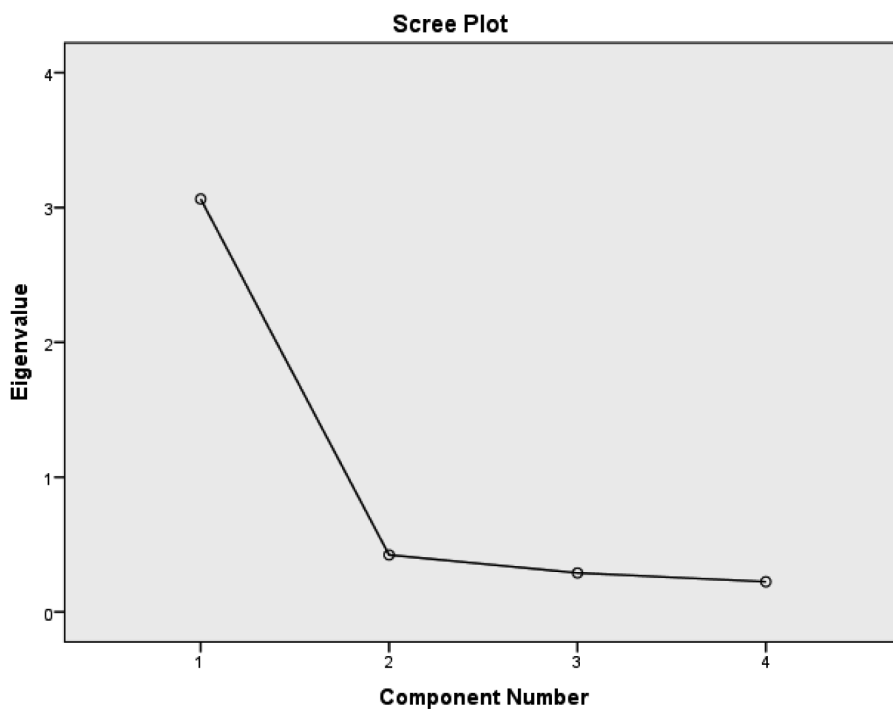


FIGURE 1. Scree plot (HITS-TR).

TABLE 5. The Split-Half Test Values for Pre-application of the Scale

Split half	Cronbach alfa
1st part	.799
2nd part	.754

TABLE 6. Tukey's Test for Nonadditivity

		Sum of squares	df	Mean square	F	p
Between People		319.385	153	2.087		
Within People	Between Items	17.239	3	5.746	24.880	0.000
	Residual	6.078 ^a	1	6.078	27.855	0.000
Nonavidity						
	Balance	99.934	458	.218		
	Total	106.011	459	.231		
		123.250				
	Total	442.635	462	.267		
Total			615	.720		

Grand mean = 1.45

^aTukey's estimate of power to which observations must be raised to achieve additivity = -.198

differently by readers and is heterogeneous, was found to be $p < .001$, in our study. The fact that the nonadditivity probability value is significant, indicates that the scores obtained from the questions are not summable and the readers are heterogeneous. In the assessment of the scale, Hotelling t-test shows that the readers are heterogeneous and the scale is perceived differently by the readers. These results also indicate that the scale is available for use.

Results of Confirmatory Factor Analysis

EFA and CFA are used to explore the main purpose of a research. In intercultural scale adaptation studies, it is recommended to start the tool directly with CFA for the factor pattern in the target culture. For this reason, CFA was used for the validity study of HITS-TR and the obtained diagram is given in Figure 2.

Chi-square (χ^2), χ^2/df , RMSEA, RMR, SRMR, GFI, and AGFI values are used most frequently in model-data correlation. For high model-data fit, the χ^2/df ratio should be less than 3, GFI and AGFI values should be higher than .90 and RMR, SRMR and RMSEA values should be lower than .05 (Jöreskog & Sörbom, 1993; Marsh & Hocevar, 1988). Acceptable lower and upper limits for model-data fit are 1.0 for GFI, .99 for AGFI, and RMR and RMSEA values are accepted as 0.0 (Anderson & Gerbing, 1984; Cole, 1987; Marsh et al., 1988).

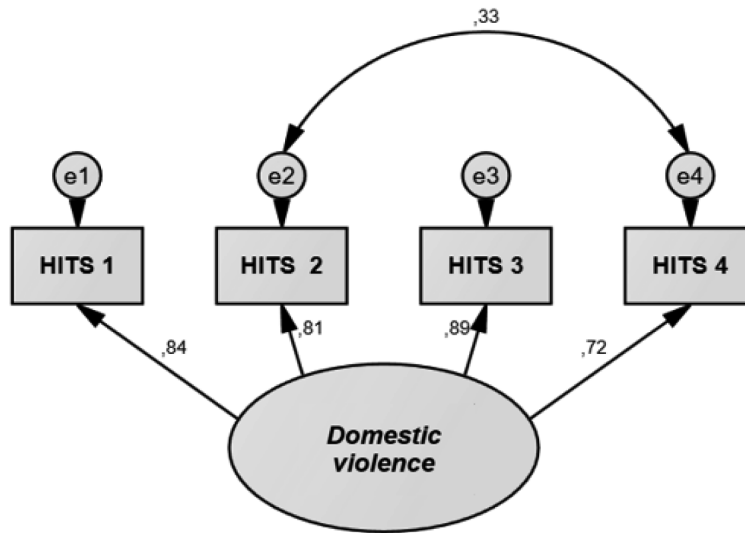


FIGURE 2. CFA results (HITS-TR).

In our research, the single-factor structure formed with the first data set was tested with CFA and the fit indices showed that the fit of the model was not sufficient ($\chi^2 = 11.3$; $\chi^2/df = 5.65$ and $RMSEA = .176$). When the modification suggestions obtained as a result of the analysis were examined, it was found that the relationship between Item 2 and Item 4 had a significant negative effect on the goodness of fit indices of the model. The model was re-analyzed by correlating the errors of the indicated items. When the fit indexes of the second data set were examined, we observed that there was a high correlation between the model and the data ($\chi^2 = 1.26$; $\chi^2/df = 1.226$ and $RMSEA = .039$). According to the obtained indices, χ^2/df ratio was less than 3, NFI, GFI, and AGFI values were higher than .95, RMR and SRMR values were lower than .08 and RMSEA value was less than .05. Statistics on the compliance of HITS-TR's CFA results are given in Table 2.

DISCUSSION

The present study supports the use of the HITS-TR as a reliable and valid screening tool for IPV for Turkish speaking women in clinical settings. Although the HITS has been adapted in other languages (Chan et al., 2010; Chen et al., 2005; Sherin et al., 1998), to the best of our knowledge, this is the first report of transcultural adaptation of an IPV screening tool for use in Turkey.

In our study, the Cronbach's alpha value for HITS-TR was found to be .88. Based on these results, the HITS-TR was considered to be highly reliable. The test-retest method is one of the sensitivity tests to change over time and repeats measurements on the same person. The results from the measurements are expected to be consistent. The degree of this consistency is used as an indicator of the reliability of the measuring instrument (Gözüm & Aksayan, 2003). In this study, there was a high consistency between the scores obtained by applying the HITS-TR at different times. Previous studies have reported internal consistency scores between .61 and .90 for the HITS with a variety of samples (Chan

et al., 2010; Chen et al., 2005; Sherin et al., 1998). In our study, HITS-TR demonstrated good reliability (Chronbach alpha =.88) for screening IPV in Turkish women. There was also a high level of consistency between the scores obtained by applying the HITS-TR at different times.

Item discrimination index is the correlation between an item and the scale. Item discrimination index must be at least .20. If the item discrimination index value is 0.40 and above, it can be concluded that the discriminating effect of the item is high. In our study, the item discrimination index for HITS-TR ranged between .779 and .824 (Tabachnick et al., 2007). This result shows that HITS-TR has very high level item discrimination index.

According to the model of HITS-TR's theoretical structure and the fit index collected from the CFA on the suitability of this model, we observed that the compatibility between the model and the data was high. Chi-square value, which is one of the indices of fit and to correct the dependence of the chi-square value on the degree of freedom, the value obtained when this value is divided by the degree of freedom indicates model-data fit. When CFI, NFI, and AGFI values, which are other indicators of model-data fit, are above .90, they indicate that model and data fit are high. Furthermore, it can be concluded that the model-data fit is good since the IFI value of the fit index is .999, which gives the probability of the SRMR value independent of the sample. The fact that the SRMR value which gives the model fit for the standardized errors of the model is less than .08 can also be considered as a strong indicator of model-data fit (Hu & Bentler, 1999). The RMSEA value of .036 shows that the model-data fit is high. When all the values related to model-data fit are examined, it can be said that the established model fits close to perfect with the data and therefore the scale has reliability. It can be assumed that the items that make up the scale can measure the variables.

In our study, we found that the scores obtained from HITS-TR were not summable and the readers were heterogeneous. The statistically significant correlation coefficients were found to be sufficient for the discrimination of each item in HITS-TR.

While the present study advances measurement of IPV in Turkish samples, we were not able to establish concurrent validity for the measure. This was due to a lack of other measures specifically validated for IPV in the Turkish setting. As longer and more thorough measures are developed, the HITS-TR should be a useful index for this purpose. Moreover, the present study only included women who admitted to a family health center. There is a need to study its utility in more varied settings.

Available research suggests HITS may also be a valid screening tool in male populations (Shakil et al., 2005). Such research would be useful, as the present study included only women as it remains unclear whether HITS-TR would have similar psychometric properties when applied with men.

Finally, research that has provided assessment of risk for severe forms of IPV suggests that the detection of sexual forms of violence may also be an important priority (Symes et al., 2014). As it stands, there is not an item in either HITS or HITS-TR for reporting such experiences. The addition of such an item may further improve its utility as a rapid screening measure in clinical settings.

Despite these limitations, our study makes an important contribution to screen IPV on women who speak Turkish. HITS-TR is the first validated screening tool for IPV for Turkish women. In order to compare international data and to make policy about IPV, we need to collect more information from different nations. HITS-TR can contribute to provide more valuable data in relation to IPV among women. Furthermore, HITS-TR can be

used for concurrent validity in future studies for further examination of the new developed IPV tools.

CONCLUSION

In accordance with our results, HITS-TR was determined to be a reliable and valid screening tool to be used for screening IPV among Turkish-speaking women.

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