

## Validation of the HITS Domestic Violence Screening Tool With Males

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**Background and Objectives:** *To date, screening tools for domestic violence have been validated only for use with female patients. A four-item HITS (Hurt-Insult-Threaten-Scream) screening tool is one of those instruments. The purpose of the current research was to validate the HITS screening tool in a population of male patients. Methods:* *In Phase I of the study, 78 non-victim male subjects from an ambulatory clinic, a Human Immunodeficiency Virus (HIV) clinic, or emergency room completed the HITS and the Conflict Tactics Scale to establish the concurrent validity of the HITS. In Phase II, Optimal Data Analysis® (ODA) was used to establish the construct validity of the HITS by identifying the score that reliably differentiated Phase I non-victims from 17 self-identified male victims of domestic violence. Results:* *Concurrent validity of the HITS was good. ODA found that the score of 11 on the HITS differentiated between non-victims and victims. Sensitivity and specificity were 88% and 97%, respectively. Predictive values were 97% for non-victims and 88% for victims. The positive and negative likelihood ratios were 34.41 and 0.12, respectively. Conclusions:* *HITS differentiated between male victimized respondents from non-victims in clinical settings.*

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HITS<sup>1,2</sup> (Hurt-Insult-Threaten-Scream) is a domestic violence screening tool developed and tested in a female population at Christ Hospital in Chicago. This tool was developed as a simple, brief instrument for use in clinical settings to identify victims of domestic violence (Table 1). According to Robert et al, there are a significant number of cases of domestic violence that are not recognized by physicians and nurses.<sup>3</sup> Lo Vechio et al found that simply having emergency triage personnel ask about domestic violence is not sufficient.<sup>4</sup>

Family and intimate partner violence (IPV) continue to be a serious public health concern, with well-documented medical and psychosocial effects on its victims. Violent acts against family members and spousal assault acts continue to be among the most frequently committed crimes.<sup>5</sup> Incidence of IPV among hetero-

sexual couples has been estimated to be 25%–33%, with a range of 12% to more than 50%.<sup>6</sup> While most of these cases are of male partners abusing an intimate female partner, more recent research suggests that violence against males is also experienced, in bisexual as well as in homosexual relationships.<sup>6</sup> IPV in these relations shows a pattern similar to that among heterosexual relationships, with a tendency to recur, escalate over time, and become increasingly violent, often resulting in physical injuries.<sup>6</sup>

According to the telephone survey of 8,000 men ages 18 or older conducted by the Centers for Disease Control and Prevention and the National Institute of Justice, 834,700 men reported being physically assaulted or raped by an intimate partner during the last 12 months.<sup>5</sup> A population-based, cross-sectional survey by Coker et al<sup>7</sup> published in 2000 assessed the lifetime victimization of IPV among men to be 13.2%, with estimates ranging from 6.2% to 18.2%.<sup>8,9</sup> Men were as likely as women to report perceived abuse as emotional abuse as well as physical or sexual IPV.

The present study was designed to extend the application of HITS to a male population. This instrument has been previously validated only in female populations.

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Table 1

## HITS Instrument

Over the last 12 months, how often did your partner:	Never 1	Rarely 2	Sometimes 3	Fairly Often 4	Frequently 5
Physically <b>HURT</b> you					
<b>INSULT</b> you or talk down to you					
<b>THREATEN</b> you with physical harm					
<b>SCREAM</b> or curse at you					

Total Score:

**Methods**

This study was approved by the Institutional Review Board of the University of Texas Southwestern Medical Center and was completed in two phases. In Phase I, English-speaking or bilingual adult males ages 18 or older attending an ambulatory care clinic, a Human Immunodeficiency Virus (HIV) clinic, and an emergency room were asked to complete the HITS and the Conflict Tactics Scale (CTS) if they had been living with a female or a male partner for the preceding 12 months and were presenting for acute health problems or health maintenance visits. Phase II of the study was conducted with 17 males who identified themselves as victims of domestic violence. These men were clients at the Center for Violence Intervention and Prevention who came for treatment of physical injuries and counseling. The inclusion criteria for Phase II was the same as for Phase I.

*Phase I: Concurrent Validity*

Volunteers who agreed to participate in Phase I completed both the CTS and the HITS. They completed these instruments privately in examination rooms before leaving the office.

**The CTS.** The CTS contains 19 items that measure perception of verbal and physical violence. To keep our methodologies comparable to studies done in female populations, the four "reasoning" items on the CTS were not included because they are not directly related to domestic violence, but we retained the 15 items directly related to domestic violence. The CTS was selected because of its strong validity and reliability, as well as its ability to measure the severity and chronicity of interpersonal violence.

Using the response format of the original instrument, patients were asked to estimate during the previous 12 months how often they thought that their partner had

committed the following acts: insulted or swore at me; sulked and/or refused to talk; stomped out of the room or house; did or said something to spite me; threatened to hit or throw something at me; threw or smashed or hit or kicked something; threw something at me; pushed, grabbed, or shoved me; slapped me; kicked, bit, or hit me with a fist; hit or tried to hit me with something; beat me up; choked me; threatened me with a knife or gun; used a knife or fired a gun. Respondents made their estimates using a 7-point frequency scale of never, once,

twice, 3–5 times, 6–10 times, 11–20 times, and more than 20 times. Score values could range from a minimum of 0 to a maximum of 75.

**HITS.** HITS consists of the following four screening questions: "Over the last 12 months, how often did your partner: physically hurt you, insult you or talk down to you, threaten you with physical harm, and scream or curse at you?" Patients responded to each of these items with a 5-point frequency format: never, rarely, sometimes, fairly often, and frequently. Score values could range from a minimum of 4 to a maximum of 20.

**Survey Methods.** The CTS and HITS were each printed on separate pages and stapled together. To control for presentation effects, the sequencing of the scales was varied so that half of the participants completed the CTS followed by the HITS, and the other half completed the instruments in the reverse order.

**Data Analysis.** We first constructed frequency distributions for the HITS and the CTS. Next, the concurrent validity of the HITS was assessed by correlating the scores on both instruments. This was accomplished with the Pearson correlation coefficient. As a subanalysis, the HITS/CTS correlation was computed separately for patients who had female and male partners, respectively.

An order effect for both instruments was tested. HITS scores for respondents who completed that instrument first were compared with those who completed it last. The same was done for scores on the CTS. These comparisons were made with Student's *t* test for independent samples.

*Phase II: Construct Validity*

In this part of the study, only the HITS was completed. The HITS was administered to self-identified

victims of domestic violence who were seeking help at the Center for Violence Intervention and Prevention.

**Data Analysis.** The construct validity of the HITS was established by comparing the HITS scores of the 78 participants in Phase I with those of the 17 self-identified victims of domestic violence. We used Student's *t* test for independent samples for this analysis. Similar subanalyses were done separately for patients with female and male partners, respectively. If the HITS has construct validity among males, one would expect to see that the scores of victims would be higher than that of non-victims.

In addition, Optimal Data Analysis<sup>®</sup> (ODA) (ODA 1.0. Optimal data analysis for DOS. Chicago, Optimal Data Analysis, Inc, 1993) was used to find a cut score that could reliably differentiate self-identified victims of violence (n=17) from the non-victims (n=78). To evaluate the usefulness of the cut score, a leave-one-out validation method was used. To do this, one subject's score was held out while the other 94 (ie, 17 victims of violence plus 78 non-victims minus 1) were used to find the cut score. This cut score was used to classify the holdout score in terms of it belonging to the clinic or victimized group. The results (of all 95 scores) were merged to examine the overall percentage accuracy classification. The leave-one-out methodology allows one to classify HITS scores that are not used to derive the cut score, thus providing a more realistic assessment of classification accuracy. This analysis was conducted separately for those subjects who had female and male partners, respectively.

To compare HITS performance for males and females, we computed the sensitivity, specificity, positive and negative likelihood ratios, and the positive and negative predictive values for the HITS in our study and compared these values with those reported by Sherin et al.<sup>1</sup>

**Results**

Of the 148 male subjects who were approached in Phase I, 15 (10%) declined to participate, 23 (16%) did not complete all of the data collection forms, and 32 (22%) were not in current relationships. Hence, the data from 78 (53%) subjects were available for analysis in Phase I. The ages of these men ranged from 21 to 86, with a mean of 41.6 (standard deviation [SD]=13.38).

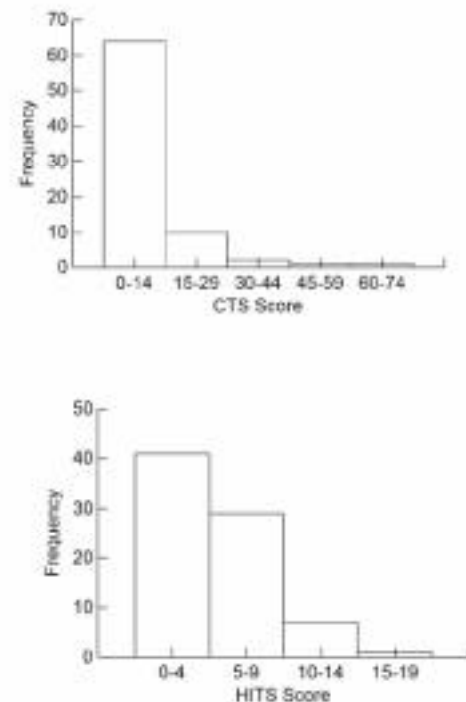
All subjects invited to participate in Phase II agreed to do so. The ages of Phase II subjects ranged from 19 to 47, with a mean of 33.59 (SD=7.74). Demographic characteristics of subjects from each phase are shown in Table 2.

*Phase I*

The frequency distributions of the HITS and CTS scores for all subjects are displayed in Figure 1. The L-shaped distributions indicate that data were obtained

		Phase I	Phase II
<b>Total number of subjects</b>	165	148	17
<b>Not included in analysis</b>	70	70	0
Refused to participate	15	15	0
Incomplete data	23	23	0
Not in relationship in the last 12 months	32	32	0
<b>Included in analysis</b>	95	78	17
Average age		40 (18-86)	33.6 (19-47)
<b>Race</b>			
White	46 (58.98%)	8 (47.06%)	
African American	17 (21.80%)	4 (23.53%)	
Hispanic	13 (16.67%)	3 (17.65%)	
Others	2 (2.57%)	2 (11.77%)	
<b>Partner gender</b>			
Female	59 (75.64%)	7 (41.18%)	
Male	19 (24.36%)	10 (58.82%)	

Figure 1  
Frequency Distributions of HITS and Conflict Tactics Scale (CTS) Scores for All Phase I Patients (n=78)



from subjects who tended to score on the low end of both scales. The Pearson correlation coefficient was 0.86 for the two measures,  $P < .0005$ . This indicates that scores on the HITS and CTS are correlated. The scatter plot of the HITS and CTS scores shows the linear relationship between the two measures (Figure 2).

The good concurrent validity observed with all Phase I subjects was maintained when we considered patients with female and male partners separately. The Pearson correlation coefficients for these two groups were .80 ( $P < .0005$ ) and .94 ( $P < .0005$ ), respectively.

No order effect was found. Among all Phase I patients, the mean HITS score for those who completed the instrument first (5.31) was not significantly different from those who completed it second (5.69) ( $t = 0.74$ ,  $df = 76$ ,  $P = .462$ ). Likewise, the mean CTS score for those who completed that instrument first (6.47) was not significantly different from those who completed it second (8.40) ( $t = 0.74$ ,  $df = 76$ ,  $P = .460$ ).

**Phase II**

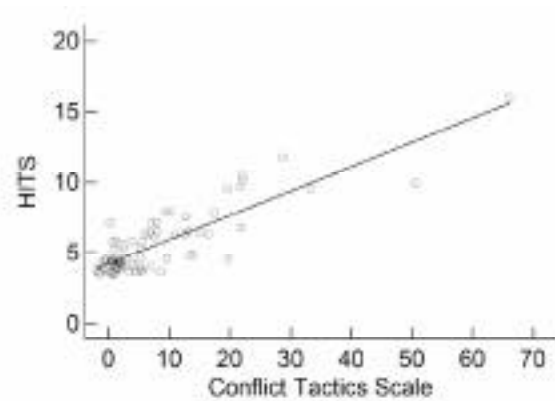
The mean HITS scores for Phase I clinic patients ( $n = 78$ ) and the self-identified victims of abuse ( $n = 17$ ) were 5.51 and 14.71, respectively. The difference in these means was found to be statistically significant ( $t = 12.79$ ,  $df = 93$ ,  $P < .0005$ ). Similar differences were found for patients who had female partners (5.19 versus 15.57,  $t = 12.15$ ,  $df = 64$ ,  $P < .0005$ ) and male partners (6.53 versus 14.10,  $t = 5.43$ ,  $df = 27$ ,  $P < .0005$ ).

ODA found that a HITS score of 11 maximally differentiated between the self-identified victims of abuse and the Phase I group of non-victims regardless of partner gender ( $P < .05$ ). The confusion matrix from the leave-one-out validation analysis shown in Figure 3 reveals that the sensitivity and specificity were 88% and 97%, respectively. The predictive value was 97% for clinic patients and 88% for self-identified victims.

Table 3 compares these findings with the findings from the optimal data analyses that were conducted for

Figure 2

Scatter Plot of HITS and the Conflict Tactics Scale for All Phase I Patients ( $n = 78$ )



patients who have female and male partners, respectively. As the table indicates, the cut scores for all analyses were statistically significant, and the classification statistics were very similar.

Table 4 shows the comparative results for the current study with Sherin et al.<sup>1</sup> The table indicates that the two studies have similar results.

**Discussion**

The results of this study suggest that the HITS, without any alteration of its content, can be used with male patients regardless of their partner's gender. In Phase I, we found that HITS completed by male patients visiting in an ambulatory setting or the emergency room had high concurrent validity based on correlations with the CTS. Although CTS is a well-established instrument that measures interpersonal aggression, it is a

Table 3

Results of the Cut Score Analysis

Partner Type	Number of Subjects		HITS Cut Score Differentiating Victims and Non-victims*	Sensitivity	Specificity	Predicted Values	
	Non-victims*	Victims				Non-victims	Victims
Male and female combined	78	17	11	88%	97%	97%	88%
Female only	59	7	11	100%	98%	100%	88%
Male only	19	10	12	80%	95%	90%	89%

\*  $P < .05$

Table 4

Comparative Results for HITS Studies

	Females (Sherin et al <sup>1</sup> ) 95% CI	Males (Current Study) 95% CI
Specificity	0.91 (0.87–0.96)	0.97 (0.94–1.01)
Sensitivity	0.96 (0.92–1.00)	0.88 (0.73–1.03)
Positive likelihood ratio	10.97 (6.64–18.12)	34.41 (8.67–136.64)
Negative likelihood ratio	0.04 (0.02–0.16)	0.12 (0.12–0.44)
Positive predictive value	0.87 (0.81–0.93)	0.88 (0.73–1.04)
Negative predictive value	0.97 (0.95–1.00)	0.97 (0.94–1.01)

lengthy tool not suitable for rapid screening in clinical settings.

In Phase II, we found that the mean HITS score of these non-victim subjects was statistically lower than that of a small group of males who identified themselves as being victims of domestic violence. Moreover, ODA revealed that non-victims and self-identified victims could be differentiated by HITS. Respondents with a score >11 were classified as victims, although partner gender had an effect; in the case of a male with male partner where a respondent with a score

of >12 was required to be classified as a victim. These cut scores yielded good sensitivity, specificity, and predictive values.

Limitations

Our study was limited to English-speaking subjects as well as by willingness of the subjects to participate in the study, with a resultant decrease in total number of subjects. Despite the low number of self-identified victims in this study, we were able to replicate the results of the research conducted with female subjects. A greater number of subjects could have produced a stronger statistical analysis, but it took 2 years to find 17 men who would admit the fact that they were victims of domestic violence. Hopefully, HITS will help clinicians broach this subject with male patients who might otherwise forgo the topic.

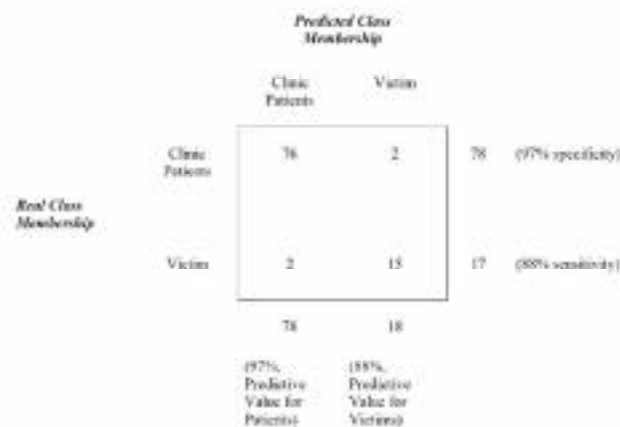
Implications

Domestic violence is a chronic and potentially life-threatening condition that is both preventable and treatable.<sup>10</sup> Research has shown that screening for domestic violence and providing information about safety plans and referrals to advocacy services improves prognosis in terms of reported quality of life and fewer violence-related injuries.<sup>10</sup> In 1996, however, the US Preventive Services Task Force (USPSTF) found that there is insufficient evidence to recommend for or against the use of specific screening instruments to detect family violence. At the same time, they recommended to include questions about physical abuse when taking histories from adult patients.<sup>11</sup> Updated recommendations in 2004 were similar: “USPSTF found insufficient evidence to recommend for or against routine screening of parents or guardians for physical abuse or neglect of children, of women for intimate partner violence, or of older adults or their caregivers for abuse (Recommendation I).”<sup>12</sup> This in part could be due to lack of uniform screening standards<sup>13</sup> in clinical settings, as well as lack of adequate clinical screening for family violence in all age groups and settings. Once a clinically applicable screening tool like HITS is established, future clinical research can provide more valid answers to these questions.

In contrast to statements from the USPSTF, the American Academy of Family Physicians, the American Medical Association, and the American College of Obstetricians and Gynecologists all recommend screening for domestic violence.<sup>11</sup> The Canadian Task Force on the Periodic Health Examination, on the other hand, concluded that there was insufficient evidence to recommend for or against routine screening for violence against women. Currently in the United States, reporting of child and elder abuse is mandatory in most states, and several states have laws requiring mandatory reporting of IPV.<sup>12</sup>

Figure 3

Cut Score Classification Performance Summary for All Patients



If screening for IPV is performed, it can be done by using either a questionnaire filled out by a patient or a direct interview by a health care provider. Two recent studies found that patient-filled questionnaires were better in detecting domestic violence than direct interviews.<sup>10</sup> With the results of the current study, there is now evidence to suggest that HITS can be used as a clinical screening tool for adults of both sexes. Females scoring greater than 10 and males scoring greater than 11 should be asked more specifically about domestic violence.

Although the performance of HITS under research conditions is notable, physicians should investigate domestic violence whenever they believe a patient is faced with this problem, irrespective of a score on a screening instrument. Neither HITS nor any other tool should be used in lieu of good clinical judgment. As always, clinical acumen should outweigh test scores if there appears to be a discrepancy between the two.

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