

# Intimate Partner Violence Screening Tools

## A Systematic Review

Rebecca F. Rabin, MD, MHS, Jacky M. Jennings, PhD, MPH, Jacquelyn C. Campbell, PhD, RN,  
Megan H. Bair-Merritt, MD, MSCE

- Context:** Intimate partner violence (IPV) screening remains controversial. Major medical organizations mandate screening, whereas the U.S. Preventive Services Task Force (USPSTF) cautions that there is insufficient evidence to recommend for or against screening. An effective IPV screening program must include a screening tool with sound psychometric properties. A systematic review was conducted to summarize IPV screening tools tested in healthcare settings, providing a discussion of existing psychometric data and an assessment of study quality.
- Evidence acquisition:** From the end of 2007 through 2008, three published literature databases were searched from their start through December 2007; this search was augmented with a bibliography search and expert consultation. Eligible studies included English-language publications describing the psychometric testing of an IPV screening tool in a healthcare setting. Study quality was judged using USPSTF criteria for diagnostic studies.
- Evidence synthesis:** Of 210 potentially eligible studies, 33 met inclusion criteria. The most studied tools were the Hurt, Insult, Threaten, and Scream (HITS, sensitivity 30%–100%, specificity 86%–99%); the Woman Abuse Screening Tool (WAST, sensitivity 47%, specificity 96%); the Partner Violence Screen (PVS, sensitivity 35%–71%, specificity 80%–94%); and the Abuse Assessment Screen (AAS, sensitivity 93%–94%, specificity 55%–99%). Internal reliability (HITS, WAST); test–retest reliability (AAS); concurrent validity (HITS, WAST); discriminant validity (WAST); and predictive validity (PVS) were also assessed. Overall study quality was fair to good.
- Conclusions:** No single IPV screening tool had well-established psychometric properties. Even the most common tools were evaluated in only a small number of studies. Sensitivities and specificities varied widely within and between screening tools. Further testing and validation are critically needed.

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### Context

Intimate partner violence (IPV) is a major public health problem associated with adverse health consequences for victims.<sup>1–3</sup> Healthcare settings represent important sites for IPV screening and intervention. In 2004, however, the U.S. Preventive Services Task Force (USPSTF) concluded that there was “insufficient evidence to recommend for or against routine screening of women for IPV.”<sup>4</sup> This recommendation reflects limited empirical data about the potential harms of

screening and about effective interventions that decrease IPV. Conducting rigorous research is critical to determine the potential harms of screening and to establish effective interventions. In order to conduct this research, however, investigators need psychometrically sound IPV screening tools.

Clinicians also should be aware of the psychometric properties of empirically tested IPV screening tools. Despite the USPSTF recommendation, most major medical organizations (including the American Medical Association [AMA], the American Academy of Pediatrics [AAP], the American Academy of Family Physicians, the American College of Obstetricians and Gynecologists, and the American College of Emergency Physicians) recommend routine IPV screening as a part of standard patient care.<sup>5–8</sup> With their recommendation for routine IPV screening, leaders of the AMA and the AAP acknowledged that the state of the art for measuring behavioral-health outcomes is relatively undeveloped, but they cautioned that waiting for empiri-

From the University of Pennsylvania School of Medicine (Rabin), Philadelphia, Pennsylvania; the Department of Pediatrics Residency Program (Rabin); Division of General Pediatrics and Adolescent Medicine, Johns Hopkins School of Medicine (Jennings, Bair-Merritt); Department of Epidemiology, Johns Hopkins School of Public Health (Jennings); and Johns Hopkins School of Nursing, The Johns Hopkins University (Campbell), Baltimore, Maryland

Address correspondence and reprint requests to: Megan H. Bair-Merritt, MD, MSCE, 200 North Wolfe Street, Office 2021, Johns Hopkins School of Medicine, Division of General Pediatrics, Baltimore MD 21287. E-mail: mbairme1@jhmi.edu.

cal evidence of improved outcomes jeopardizes the health of millions of victims.<sup>8</sup>

Within the past 5 years, researchers have developed and tested a wide variety of IPV screening tools. Comprehensive reviews of IPV screening tools, however, are limited, and there has been no synthesis of the psychometric data from existing tools.<sup>9–11</sup> In 2002, Fogarty et al.<sup>9</sup> summarized IPV screening tools, based on a search of studies published between 1966 and 2001; much of the extant research was published subsequent to their review. Additionally, the CDC recently conducted a systematic review and published a compilation of IPV screening instruments for healthcare providers.<sup>12</sup> The CDC publication includes a table of published and unpublished screening tools, and it contains the instruments themselves. Neither the reviews to date, nor the CDC publication, however, discussed the strength of the published psychometric data or evaluated study quality. Therefore, the current review was designed to accomplish these objectives through systematically summarizing IPV screening tools tested in healthcare settings.

## Evidence Acquisition

### Study Eligibility Criteria

For the current review, IPV was defined as physical, sexual, or emotional abuse or battering (including fear and coercive control) between intimate partners. For inclusion, studies had to (1) determine the psychometric properties of IPV screening questions; (2) test the IPV screening tool in a medical setting such as internal medicine, family practice, obstetrics–gynecology, the emergency department, or pediatrics; (3) be written in English, and (4) be published in a peer-reviewed journal. The IPV screening questions could be part of a larger screening questionnaire provided that the authors tested and reported the psychometric properties of the IPV questions specifically.

Studies focusing on the following subjects were excluded: (1) elder abuse or child abuse; (2) IPV perpetration; (3) assessment of different screening methods (such as verbal versus written); (4) IPV prevalence; and (5) IPV severity or frequency using longer, established tools intended for research (including the Conflict Tactics Scale [CTS], the Index of Spousal Abuse [ISA], the Composite Abuse Scale [CAS], and the Abuse Behavior Inventory [ABI]).

### Data Sources

Three published literature databases (MEDLINE via PubMed, CINAHL Plus, and PsycINFO) were searched from their start through December 2007. The following search terms were used: *domestic violence* or *intimate partner violence* or *spouse abuse* or *battered women* and *questionnaires* or *measure* or *instrument* or *screening*. The names of identified screening questionnaires (such as

the Abuse Assessment Screen [AAS]) also were used as search terms. The reference sections of all included studies and related review articles were searched for potentially relevant articles. An author and senior investigator in the field of IPV research (JC) reviewed the eligible studies and made suggestions about additional relevant articles.

### Study Selection and Data Extraction

Data extraction and synthesis were conducted from the end of 2007 through 2008. The initial literature search yielded a total of 2420 articles in PubMed, 1218 articles in CINAHL Plus, and 868 articles in PsycINFO. Eight additional articles were located through the IPV screening tool name-based searches. Titles of articles were reviewed to screen for eligibility and duplication among online databases. Because the initial search was purposefully broad, many titles reflected studies that were not relevant. Abstracts of the articles were examined if eligibility was not evident from the title alone.

After completing the initial screen for eligible articles and eliminating duplicates across databases, 210 potentially eligible articles remained. These articles were then abstracted using a pre-specified form to record relevant study content and to determine whether the study met inclusion criteria. Final review narrowed the initial set of 210 articles down to 33 articles<sup>13–45</sup> that met all the inclusion criteria. Reasons for exclusion are detailed in Figure 1.

The quality of each of the remaining 33 articles was evaluated based on a 14-point scale developed for this systematic review. Items on the quality scale were derived from standards used by the USPSTF for diagnostic studies and from previously published work<sup>46,47</sup> evaluating the quality of observational studies. Specifically, the following USPSTF criteria for evaluating the internal validity of diagnostic accuracy studies were applied: credible reference standard (CTS, ISA, CAS, ABI) performed regardless of screening test results; spectrum of IPV risk for participants; and sample

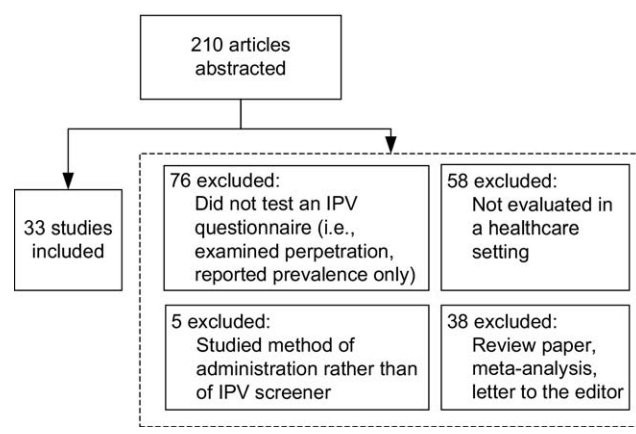


Figure 1. Reasons for exclusion of articles

size. Three additional factors also were considered: (1) external validity/generalizability (including number of study sites, and provision of demographic and SES data); (2) study description of consenting versus nonconsenting patients; and (3) appropriate description and conduct of statistics. Inter-reviewer agreement was high overall (Pearson correlation  $r = 0.77$ ). Papers with scores of 13–14 were considered excellent, 10–12 good, 7–9 fair, and  $\leq 6$  poor.

## Evidence Synthesis

### Common IPV Screening Tools

The most studied IPV screening tools were the Hurt, Insult, Threaten, and Scream (HITS),<sup>13–15,24,43</sup> the Woman Abuse Screening Tool/Woman Abuse Screening Tool-Short Form (WAST/WAST-SF),<sup>15–17,25,26,44</sup> the Partner Violence Screen (PVS),<sup>22–26,44</sup> and the AAS.<sup>30,35–37</sup> These screening instruments are summarized in Table 1, which includes the specific questions and scoring for each screening tool, demographics of the populations on whom the screening tool has been tested, and a summary of the screening tools' psychometric properties.

**The HITS.** Initial development and testing of the four-item HITS involved family physicians and family practice offices, although the screening tool since has been evaluated in diverse outpatient settings. Two<sup>24,43</sup> of the five studies<sup>13–15,24,43</sup> investigating the psychometric properties of the HITS enrolled men, and one investigated a Spanish-language version.<sup>13</sup> Four studies<sup>13,14,24,43</sup> tested the sensitivity and specificity of the HITS. The range of sensitivities varied widely depending on population, with sensitivities lower in men than women. Internal reliability and concurrent validity also were tested and found to be acceptable.<sup>13–15,43</sup>

**The WAST/WAST-SF.** Like the HITS, the eight-item WAST was originally developed for family physicians, but subsequently it has been tested in the emergency department. The WAST has been evaluated in Spanish-speaking patients.<sup>17</sup> A two-item short-form version uses the first two questions, which ask general relationship questions as opposed to specific questions about violence. Only one study tested the sensitivity and specificity of the eight-item WAST;<sup>44</sup> two studies tested the WAST-SF in combination with other screens and/or physical signs;<sup>25,26</sup> and one study compared the eight-item version to the short form.<sup>17</sup> Two studies<sup>16,17</sup> found that the WAST has good internal reliability. One study<sup>16</sup> documented acceptable concurrent validity, and one study<sup>17</sup> found that the WAST differentiated abused and non-abused women.

**The PVS.** The three-item PVS was developed as a brief instrument for the emergency department. The authors conducted the primary development and testing

of the tool exclusively with women, although Mills et al.<sup>24</sup> later tested the instrument with men. Three studies<sup>22,24,44</sup> assessed the sensitivity and specificity of the PVS, reporting a wide range of sensitivities. Two additional studies<sup>25,26</sup> examined the sensitivity and specificity of an "augmented" PVS. Houry et al.<sup>23</sup> established the predictive validity of the PVS plus three additional questions. The authors found that women positive for IPV on the initial augmented PVS were 11 times more likely to report having experienced physical abuse at a 4-month follow-up assessment than women who were negative on the initial screen.

**The AAS.** The five-item AAS was created to detect abuse perpetrated against pregnant women. The screening tool has been tested predominantly with young, poor women. Two<sup>36,37</sup> of four studies<sup>30,35–37</sup> evaluating the AAS enrolled women in countries other than the U.S. (Brazil and Sri Lanka). Two studies<sup>30,37</sup> calculated the sensitivity and specificity of the complete AAS; a third<sup>36</sup> evaluated the sensitivity and specificity of the pregnancy question only. Test-retest reliability was acceptable in one study.<sup>37</sup>

### Overall Summary of Included Studies

See Appendix A, available online at [www.ajpm-online.net](http://www.ajpm-online.net), for a summary of the content and quality of the 33 included studies.<sup>13–45</sup> The 33 articles evaluated a total of 21 IPV screening tools. This number reflects the fact that some sets of IPV screening questions were tested in multiple papers. For example, five papers studied the psychometric properties of the HITS.<sup>13–15,24,43</sup>

### Study Quality

The majority of studies were categorized as either fair (15) or good (14). Two studies were rated as excellent, and two were rated as poor.

### Screening Tool Content

Of the 21 IPV screening tools, 16 assessed for physical violence and five did not (Women's Experiences with Battering [WEB]<sup>18</sup>; one-item screening tool by Peralta et al.<sup>20</sup>; SAFE-T<sup>31</sup>; two-item screening tool by Webster et al.<sup>39</sup>; and five-item screening tool by Zink et al.<sup>42</sup>). Seventy-one percent (15/21) of screening tools assessed threats or fear. Only approximately half (11/21) asked respondents about emotional abuse. Finally, just one third (7/21) included items about sexual abuse.

The time period about which screening tools inquired ranged from *current* to *ever*. For example, the Ongoing Violence Assessment Tool and the Ongoing Abuse Screen asked about abuse at *the present time* or *presently*, whereas the HITS asked about the past 12 months. Some screening tools, such as the WAST, asked patients if they have *ever* been abused.

**Table 1.** Common IPV screening tools

Screener name and questions	Scoring	Clinical settings and populations	Sensitivity and specificity	Additional psychometric testing
<b>HITS</b> <sup>13–15,24,43</sup> How often does your partner: (1) Physically hurt you? (2) Insult you or talk down to you? (3) Threaten you with harm? (4) Scream or curse at you?	5-point Likert scale: never (1 point) rarely (2) sometimes (3) fairly often (4) frequently (5) Scores $\geq 10.5$ are positive For Spanish version, cutoff score=5.5 <sup>13</sup>	Tested in women and men Tested in Hispanic and African-American women Spanish version tested	Sensitivity and specificity tested with optimal data analysis <sup>14,43</sup> and also compared to CTS <sup>24</sup> and ISA <sup>13</sup> Sensitivity: 30%–100% (30% in study with men) Specificity: 86%–99%	Cronbach's $\alpha^{13–15}=0.61–0.8$ Concurrent validity <sup>13,14,43</sup> : Correlation with CTS=0.85–0.86 Correlation with ISA=0.76–0.81
<b>WAST</b> <sup>15–17,25,26,44</sup> (1) In general, how would you describe your relationship—a lot of tension, some tension, no tension? (2) Do you and your partner work out arguments with great difficulty, some difficulty, or no difficulty? (#3–#7 response options: often, sometimes, never) (3) Do arguments ever result in you feeling down or bad about yourself? (4) Do arguments ever result in hitting, kicking, or pushing? (5) Do you ever feel frightened by what your partner says or does? (6) Has your partner ever abused you physically? (7) Has your partner ever abused you emotionally? (8) Has your partner ever abused you sexually?	WAST-SF consists of the first two questions only; positive if “a lot of tension” and/or “great difficulty” WAST scoring: cutoff for what constitutes a positive score not available	Tested in white, African-American and Latina women Spanish version tested <sup>17</sup>	WAST compared to CAS <sup>44</sup> Sensitivity: 47% Specificity: 96% WAST-SF plus injury location compared to self-report of IPV <sup>25</sup> Sensitivity: 92% Specificity: 56% One study tested sensitivity and specificity of the WAST-SF plus the PVS, plus injury location <sup>26</sup> WAST-SF vs WAST <sup>17</sup> Sensitivity: 93% Specificity: 68%	Cronbach's $\alpha^{16–17}=0.75–0.91$ Concurrent validity <sup>16</sup> : correlation with abuse risk inventory=0.69 Discriminant validity <sup>17</sup> : significantly different (16 vs 9.6; $p<0.001$ ) scores for abused vs non-abused women
<b>PVS</b> <sup>22–26,44</sup> (1) Have you been hit, kicked, punched, or otherwise hurt by someone in the past year? If so, by whom? (2) Do you feel safe in your current relationship? (3) Is there a partner from a previous relationship who is making you feel unsafe now?	Positive response to any question denotes abuse	Women and men with a range of ethnicities and SES	Sensitivity and compared to the CTS, ISA, and CAS <sup>22,24,44</sup> : Sensitivity: 35%–71% Specificity: 80%–94% PVS plus injury location compared to self-report of IPV <sup>25</sup> : Sensitivity: 79% Specificity: 80% One additional study by the same authors tested sensitivity and specificity of the WAST-SF plus the PVS plus injury location <sup>26</sup>	Predictive validity <sup>23</sup> : Women positive for IPV at baseline on PVS significantly more likely than IPV negative women to continue to be IPV positive after 4 months
<b>AAS</b> <sup>30,35–37</sup> (1) Have you ever been emotionally or physically abused by your partner or someone important to you? (2) Within the last year, have you been hit, slapped, kicked, or otherwise physically hurt by someone? If yes, by whom? How many times? (3) Since you have been pregnant, have you been hit, slapped, kicked, or otherwise physically hurt by someone? If yes, by whom? How many times and where? (4) In the last year, has anyone forced you to have sexual activities? If so, whom? How many times? (5) Are you afraid of your partner or anyone you listed above?	Positive response to any question denotes abuse	Tested in obstetrics–gynecology outpatient practices Women with a range of ethnicities, but most commonly tested in populations of low-income, uninsured women Tested internationally in Brazil and Sri Lanka	Compared to the provider interview and the ISA <sup>30,37</sup> : Sensitivity: 93%–94% Specificity: 55%–99% Only one question of the AAS compared to the CTS (minor and severe subscales) <sup>37</sup> : Sensitivity: 32%–61% Specificity: 98%–99%	Cronbach's $\alpha^{30}=0.56$ Test–retest reliability <sup>37</sup> : 0.91 Increased relative risk of abuse with AAS compared to provider interview <sup>35</sup>

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AAS, Abuse Assessment Screen; CAS, Composite Abuse Scale; CTS, Conflict Tactics Scale; HITS, Hurt, Insult, Threaten, and Scream; IPV, Intimate Partner Violence; ISA, Index of Spousal Abuse; PVS, Partner Violence Screen; WAST, Woman Abuse Screening Tool; WAST-SF, Woman Abuse Screening Tool-Short Form

## Screening Tool Length

Of the 21 sets of IPV questions, the mean number of items was 4.2 (range 1–11, SD=2.8), with only four (WEB, WAST, Partner Abuse Interview, and the PVS plus three additional questions of Houry et al.<sup>23</sup>) containing more than five questions.<sup>18,21,23</sup> Four screening tools used a single item to screen for IPV.<sup>20,38,40,45</sup> The single items

performed inconsistently in their ability to identify IPV victims.

## Screening Men for IPV

Two studies<sup>24,43</sup> tested IPV screening tools with exclusively male populations. Shakil et al.<sup>43</sup> determined that the HITS had acceptable sensitivity (88%) and specific-



ity (97%) in men recruited from an ambulatory care clinic, an HIV clinic, and an emergency department. In contrast, Mills et al.<sup>24</sup> found significantly lower sensitivities of the HITS (30%–46%) and the PVS (35%–46%) in a population of predominantly African-American men.

## Comments

Authors of a 1968 WHO report, *The Principles and Practice of Screening for Disease*, commented that “in theory, screening is an admirable method of combating disease . . . in practice, there are snags.”<sup>48</sup> The current review highlights a number of “snags” that preclude drawing definitive conclusions about the effectiveness of IPV screening tools tested in healthcare settings. First, even the most *common* screening tools (the HITS, the WAST, the PVS, and the AAS) were evaluated in only a small number of studies (three to six) in healthcare settings. Consequently, all of the included IPV screening tools need additional reliability and validity testing. For example, test–retest reliability of the HITS, the WAST, and the PVS has not been studied. No studies reported the internal reliability of the PVS. One study documented the discriminant validity of the WAST, but further validation in other populations would be helpful.

Second, there is a lack of consensus about the most appropriate comparison measure for testing the sensitivity and specificity of IPV screening tools. Traditionally, sensitivity and specificity are determined by comparing a screening test to a gold standard. Because of the complexity of IPV, no gold standard exists, and decisions about the most appropriate comparison measure are conceptually difficult. However, the lack of consensus about the most appropriate comparison measure limits synthesizing data across multiple studies and determining the value of any one IPV screening tool.

Finally, in part because of the variability in comparison measures, each of the four screening tools tested in three or more papers (the HITS, the WAST, the PVS, and the AAS) had sensitivities and specificities that varied widely. For example, the sensitivities of the PVS ranged from 35% to 71%. A reported sensitivity of 35% is concerning because most screening tests maximize sensitivity to avoid missing affected patients; maximum sensitivity should be the goal for IPV screening tools also.

In addition to having sound psychometric properties, IPV screening tools used in healthcare settings ideally should be brief, comprehensive, and tested in diverse populations. Of the most studied IPV screening tools, the three-item PVS is the shortest, and the eight-item WAST is longest. The HITS has a scoring system that may take several minutes to calculate. Thus, the HITS

and the WAST may be difficult to implement in a busy clinical practice.

Individual providers must determine the optimal balance between brevity and comprehensiveness. Inquiring about different forms of abuse may be important for a number of reasons. First, emotional abuse often precedes physical abuse, so detection of emotional abuse allows for early intervention.<sup>49</sup> Second, sexually abused women are at higher risk for adverse health outcomes than physically or emotionally abused women.<sup>50</sup> Finally, some abusive relationships involve only threats and coercive control tactics.<sup>18</sup>

The WAST and the AAS conceptualized IPV most broadly, including physical, emotional, and sexual violence as well as threats/fear. The AAS, however, was the only screening tool that asked specifically about abuse during pregnancy and therefore potentially represents an important screening tool for obstetric populations. The HITS included questions about physical abuse, emotional abuse, and threats, but excluded sexual abuse. The PVS used a narrower underlying definition of IPV, asking only about physical violence and safety.

Two papers<sup>24,43</sup> tested the PVS and/or the HITS exclusively on men. Recent literature documents that rates of female-perpetrated violence are high, and the screening of men for victimization has increased.<sup>51,52</sup> It is unclear whether IPV screening tools, such as the PVS, that were originally designed to screen women are the most appropriate tools for men. The etiology of violence may be different in situations in which women are violent.<sup>53</sup> If this is the case, then screening questions likewise may need to be adjusted. Also, given social desirability bias, male patients may respond to brief IPV screening questions differently than female patients. Continued study in this area is clearly warranted.

The findings of this review should be interpreted in light of several limitations. First, despite attempts to conduct a systematic search, it is possible that relevant papers were missed. Searching multiple databases and bibliographies and seeking expert opinion likely minimized exclusion of eligible papers.

Second, determining paper eligibility and assessing study quality are inherently subject to bias. In order to address this potential bias, eligibility and study quality were determined independently by two reviewers, and disagreements were handled through consensus with a third reviewer. Third, IPV screening tools tested in mental health settings were excluded because these settings were felt to be qualitatively different from other healthcare settings. Separate reviews of IPV screening tools used in mental health settings would be helpful.

Intimate partner violence is a prevalent public health problem requiring urgent attention from researchers and clinicians. Both clinical practice and research are hindered by the lack of comprehensive evaluation of the psychometric properties of existing IPV screening tools. Many of the current screening tools are promis-

ing, but further testing and validation in diverse populations using a universally accepted comparison measure is critically needed.

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## Appendix A. Studies of IPV screening instruments

Study	Screening tool and type of IPV screened for	Number of items	Comparison measure	Study population	Psychometric data	Study quality
Chen (2005) <sup>1</sup>	HITS: physical, emotional, threats/fear	Four	ISA-P WAST	202 women, mean age 36 years 72% Hispanic 59% ≥high school education 13% pregnant	Cronbach's $\alpha$ : HITS: 0.76 (English); 0.61 (Spanish) Correlations: HITS and ISA-P: 0.76 (English); 0.81 (Spanish) HITS and WAST: 0.75 (English); 0.78 (Spanish) English HITS vs ISA-P: cutoff score=10.5, sensitivity 86%, specificity 99%, PPV 86%, NPV 99% Spanish HITS vs WAST: cutoff score=5.5, sensitivity 100%, specificity 86%, PPV 45%, NPV 100%	Good
Sherin (1998) <sup>2</sup>	HITS	Four	CTS	160 women aged >21 years	Cronbach's $\alpha$ =0.80 Correlation: HITS and CTS: 0.85 Optimal data analysis: sensitivity 96%, specificity 91%	Fair
Shakil (2005) <sup>3</sup>	HITS	Four	CTS	78 men, mean age 42 years 59% white	Correlation: HITS and CTS: 0.86 Optimal data analysis: sensitivity 88%, specificity 97%	Fair
Mills (2006) <sup>4</sup>	HITS PVS: physical, threats/fear	Four Three	Revised CTS	53 men, mean age 40 years 75% black	HITS vs CTS-psychological: sensitivity 30%, specificity 88% HITS vs CTS-physical: sensitivity 46%, specificity 88% PVS vs CTS-psychological: sensitivity 35%, specificity 85% PVS vs CTS-physical: sensitivity 46%, specificity 83%	Fair
Chen (2007) <sup>5</sup>	HITS WAST-SF: tension and disagreement	Four Two	WAST	523 women, mean age 36 years 71% black 14% Hispanic 73% employed 52% Medicaid	Cronbach's $\alpha$ : HITS 0.79; WAST-SF 0.80 Correlation: HITS and WAST: 0.77; WAST-SF and WAST: 0.81 WAST-SF IPV prevalence 12.5% vs HITS 6.3%	Good
Brown (2000) <sup>6</sup>	WAST-SF WAST: physical, emotional threats/fear, sexual	Two Eight	ARI	307 women, mean age 46 years 98% white 45% ≥high school education 59% employed	Cronbach's $\alpha$ WAST=0.75 Correlation: WAST and ARI: 0.69 WAST score for women positive by WAST-SF 14.9 and WAST score for women negative by WAST-SF 9.7 ( $p<0.001$ )	Good
Fogarty (2002) <sup>7</sup>	WAST (Spanish)	Eight	WAST-SF (Spanish)	33 women from healthcare setting vs 28 women in IPV shelter, mean age 29 years 97% Spanish-speaking 22% ≥high school education 55% employed	Cronbach's $\alpha$ =0.91 Discriminant validity: WAST score for abused women 16 and for non-abused women 9.2 ( $p<0.001$ ) Spanish WAST-SF vs WAST: sensitivity 93%, specificity 68%	Poor
Halpern (2005) <sup>8</sup>	WAST-SF plus high-risk injury location	Two Three	Self report of IPV related injuries	100 women, mean age 41 years 69% white 68% >high school education 100 women, mean age 43 years 76% white 54% >high school education	WAST-SF + injury location: sensitivity 92%, specificity 56%, PPV 22%, NPV 98% PVS + injury location: sensitivity 79%, specificity 80%, PPV 29%, NPV 97%	Good
Halpern (2006) <sup>9</sup>	WAST-SF plus PVS plus high-risk injury location	Two Three	Self report of IPV related injuries	400 women in two hospitals Hospital 1: mean age 37 years 89% black Hospital 2: mean age 42 years 83% white	Positive response to any question on PVS or WAST-SF + high-risk injury: Hospital 1: sensitivity 90%, specificity 96%, PPV 92%, NPV 95% Hospital 2: sensitivity 74%, specificity 88%, PPV 39%, NPV 92%	Good
MacMillan (2006) <sup>10</sup>	WAST PVS	Eight Three	CAS	2461 Canadian women, mean age 37 years 18% with income in lowest quintile 52% >14 years education 47% employed	WAST vs CAS: sensitivity 47%, specificity 96%, PPV 55%, NPV 94% PVS vs CAS: sensitivity 49%, specificity 94%, PPV 47%, NPV 94%	Good

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## Appendix A. (continued)

Study	Screening tool and type of IPV screened for	Number of items	Comparison measure	Study population	Psychometric data	Study quality
Feldhaus (1997) <sup>11</sup>	PVS	Three	ISA CTS	322 women, mean age 36 years 45% white 19% black 30% Hispanic 56% uninsured	PVS vs ISA: sensitivity 65%, specificity 80%, PPV 51%, NPV 88% PVS vs CTS: sensitivity 71%, specificity 84%, PPV 63%, NPV 89%	Excellent
Houry (2004) <sup>12</sup>	PVS plus: (1) Are you in an intimate relationship? (2) Have police been called due to IPV? (3) Are you here for IPV injuries?	Six	CTS	215 women, mean age 37 years 43% white 40% Hispanic 33% Medicaid	Predictive validity: 96/215 women contacted at 4 months; women who screened + on initial PVS 11.3 times more likely to experience physical abuse and 7.3 times more likely to experience verbal abuse than women negative on baseline PVS	Good
Norton (1995) <sup>13</sup>	AAS: physical, emotional, threats/fear, sexual	Five	Social work interviews	334 pregnant women, mean age 23 years 50% white 92% public insurance/uninsured 58% unemployed	AAS vs interview for any IPV detection: RR 3 (95% CI 2.0, 4.5) AAS vs interview for past-year IPV: RR 5.6 (95% CI 2.2, 14.5) AAS vs interview for violence during pregnancy: RR 9.3 (95% CI 2.2, 40.5)	Fair
Moonesinghe (2004) <sup>14</sup>	AAS	Five	Psychologist interview	10 pregnant Sri Lankan women for test-retest 432 women given AAS and interview	Test-retest intraclass correlation coefficient: 0.91 AAS vs interview for ever abuse: sensitivity 94%, specificity 99%, PPV 98%, NPV 97%	Fair
Reichenheim (2004) <sup>15</sup>	Pregnancy question from AAS: physical	One	Revised CTS	748 postpartum Brazilian women, mean age 24 years 57% <8 years schooling	AAS vs CTS2 for minor violence: sensitivity 32%, specificity 99% AAS vs CTS2 for severe violence: sensitivity 61%, specificity 98%	Fair
Weiss (2003) <sup>16</sup>	AAS OAS: physical, emotional, threats/fear, sexual OVAT: physical, emotional, threats/fear	Five Four (plus one if pregnant) Four	ISA	856 men and women 62% women, mean age 36 years 51% white 21% black 15% Hispanic	Cronbach's $\alpha$ AAS=0.56 AAS vs ISA: sensitivity 93%, specificity 55%, PPV 33%, NPV 97% Cronbach's $\alpha$ OAS=0.59 OAS vs ISA: sensitivity 60%, specificity 90%, PPV 58%, NPV 91% Cronbach's $\alpha$ OVAT=0.72 OVAT vs ISA: sensitivity 93%, specificity 86%, PPV 75%, NPV 97%	Good
Ernst (2002) <sup>17</sup>	OAS	Four (plus one if pregnant)	AAS and "Are you a victim of IPV?"	488 men and women 61% women, median age 36 years 47% white 26% black	OAS vs AAS: sensitivity 30%, specificity 100%, PPV 100%, NPV 56% Correlation: CAS and AAS: 0.28 OAS vs single question: 14 cases both positive; 410 cases both negative; 64 cases with positive OAS and negative single question; 0 cases with positive single question and negative OAS	Fair
Ernst (2004) <sup>18</sup>	OVAT	Four	ISA	306 men and women 69% women, mean age 34 years 49% white 16% African American 20% Hispanic	Cronbach's $\alpha$ =0.6 OVAT vs ISA: sensitivity 86%, specificity 83%, PPV 56%, NPV 96% Correlation: OVAT and ISA: 0.58	Good
Paranjape (2003) <sup>19</sup>	STaT: physical, emotional, threats/fear	Three	Semi-structured interview	75 women, mean age 36 years 34% white 40% black 81% uninsured/Medicaid	Began with 43 items; narrowed to 8 with sensitivities and specificities $\geq 70\%$ ; then extracted three questions with highest area under a receiver operating curve For 3-item STaT: Score $\geq 1$ sensitivity 96%, specificity 75%; Score $\geq 2$ sensitivity 89%, specificity 100%; Score $\geq 3$ sensitivity 64%, specificity 100%	Fair
Paranjape (2006) <sup>20</sup>	STaT	Three	ISA	240 women, mean age 38 years 91% black 66% uninsured 46% employed	Score $\geq 1$ sensitivity 95%, specificity 37%, PPV 42%, NPV 94% Score $\geq 2$ sensitivity 85%, specificity 54%, PPV 48%, NPV 88% Score $\geq 3$ sensitivity 62%, specificity 66%, PPV 47%, NPV 78%	Good

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## Appendix A. (continued)

Study	Screening tool and type of IPV screened for	Number of items	Comparison measure	Study population	Psychometric data	Study quality
Sohal (2007) <sup>21</sup>	HARK: physical, emotional, sexual	Four	CAS	232 women, mean age 35 years 40% white 25% black/African Caribbean 51% employed	For HARK scores $\geq 1$ sensitivity 81%, specificity 95%, PPV 83%, NPV 94%,	Good
Coker (2001) <sup>22</sup>	WEB: emotional, threats/fear	Ten	ISA-P	1152 women, mean age 38 years 62% black 89% $\geq$ high school education 22% Medicaid	Kappa correlation: WEB and ISA-P: 0.60; Pearson correlation: WEB and ISA-P: 0.67; 82% negative on both measures, 9% positive on both measures; 8% positive on WEB only; 1% positive on ISA-P only Cronbach's $\alpha=0.82$ Inter-rater reliability between interviewer for PAI and observer: kappa 0.88	Excellent
Pan (1997) <sup>23</sup>	PAI: physical, sexual, threats/fear	11	Dyadic Adjustment Scale	90 women, mean age 38 years 82% white 38% employed	Cronbach's $\alpha=0.79$ SAFE-T vs single question: sensitivity 54%, specificity 81%, PPV 19%, NPV 95% (IPV prevalence 8%)	Fair
Fulfer (2007) <sup>24</sup>	SAFE-T: general relationship questions	Five	"Have you been hit, kicked, punched or otherwise hurt by a partner or spouse in the last year?"	435 women aged $\geq 18$ years		Fair
Heron (2003) <sup>25</sup>	UVPSP: physical, emotional, threats/fear, sexual	Five	ISA	200 women, mean age 32 years 100% black 41% employed 56% $\geq$ high school education	UVPSP vs ISA-physical: sensitivities (for each question) range from 34% to 95%, PPV 71%–89% UVP vs ISA-nonphysical: sensitivities range from 31% to 95%, PPV 75%–92% AOR for three positive responses on UVPSP vs ISA: 3.7 (95% CI 1.43, 9.53)	Fair
Zink (2007) <sup>26</sup>	Five questions by author including first two questions of WAST-SF, how partner treats children, safety in past and current relationship	Five	Revised CTS	393 women, median age 31 years 76% in pediatrics clinic 49% white 51% black 68.8% income $< \$40,000$ /year 40% $>$ high school education	Cronbach's $\alpha=0.46$ Five questions vs CTS2: sensitivity 40%, specificity 91.4%, PPV 37.5%, NPV 92.4% Questions 1, 3, and 4 maximized area under ROC curve with sensitivity 45.5%, specificity 94.6%, PPV 51%, NPV 93%	Good
Dubowitz (2008) <sup>27</sup>	Three questions embedded in a parent questionnaire: (1) Have you ever been in a relationship in which you were threatened or physically hurt by your partner? (2) In the past year, have you been afraid of a partner? (3) In the past year, have you thought of getting a court order for protection?	Three	Revised CTS	200 parents (94% mothers) in a pediatrics clinic, median age 25 years 92% black 93% Medicaid 26% $>$ high school education	Positive on 1/3 questions vs CTS (physical assault ever): sensitivity 19%, specificity 93%, PPV 63%, NPV 63% Positive on 1/3 questions vs CTS (injury ever): sensitivity 29%, specificity 91%, PPV 38%, NPV 87% Positive on 1/3 questions vs CTS (psychological aggression): sensitivity 27%, specificity 92%, PPV 46%, NPV 83%	Good
McFarlane (1995) <sup>28</sup>	Two questions: (1) Have you ever been hit, slapped, kicked, or otherwise physically hurt by your male partner? (2) Have you ever been forced to have sexual activities?	Two	Danger assessment	416 women, aged 15–53 years 40% black 39% Hispanic	Discriminant (construct) validity: abused women scored higher than non-abused women on the DA ( $p<0.001$ )	Fair
Webster (2004) <sup>29</sup>	Two questions embedded in MSSS: (1) I feel controlled by my husband/partner (2) There is conflict with my husband/partner	Two	Domestic Violence Initiative (DVI) Questions	937 pregnant Australian women 86% white Overall clinic population low income and/or without insurance	Correlation: two questions and DVI: 0.34 107 women IPV+ on the MSSS and not on the DVI; 22 women IPV+ on the DVI and not the MSSS	Fair
Wasson (2000) <sup>30</sup>	During the past 4 weeks, how often have problems in your household led to insulting or swearing, yelling, threatening, hitting, or pushing?	One	Abusive Behavior Inventory	99 women (48 ob-gyn patients and 51 women in an IPV support group)	Discriminant (construct) validity: scores between abused women and clinic women significantly different ( $p<0.001$ ) Test-retest reliability: 0.6	Poor
Peralta (2003) <sup>31</sup>	Embedded in health risk questionnaire: In the past 3 months, did you feel safe at home?	One	CTS (six questions)	399 women 61% white 26% black 55% $>$ high school education	Single question vs CTS: sensitivity 9%, specificity 91%	Good

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## Appendix A. (continued)

Study	Screening tool and type of IPV screened for	Number of items	Comparison measure	Study population	Psychometric data	Study quality
Sagrestano (2002) <sup>32</sup>	Embedded in a general perinatal health survey: Are you suffering from mental or physical abuse now?	One	CTS	166 pregnant women, mean age 26 years 48% black 46% Hispanic 49% income <\$10,000/year	Single question not significantly correlated with the physical or emotional abuse questions from the CTS ( $r = -0.05$ ; $p$ value nonsignificant)	Fair
McIntyre (1999) <sup>33</sup>	Embedded into a trauma questionnaire: At any time, has a spouse or partner ever hit you, kicked you, or physically hurt you in any way?	One	Clinician interview	141 veteran women Demographics not provided	Correlation: single question vs interview: 0.84 IPV question vs interview: sensitivity 90%, specificity 94%	Fair

Note: Some percentages from the original articles have been rounded.

AAS, Abuse Assessment Screen; ARI, Abuse Risk Inventory; CAS, Composite Abuse Screen; CTS, Conflict Tactics Scale; DA, danger assessment; HARK, acronym for tool's questions; HITS, acronym for tool's questions (Hurt, Insult, Threaten, and Scream); IPV, intimate partner violence; ISA-P, Index of Spousal Abuse—Physical; MSSS, Maternity Social Support Scale; NPV, negative predictive value; OAS, Ongoing Abuse Screen; OVAT, Ongoing Violence Assessment Tool; PAL, partner abuse interview; PPV, positive predictive value; PVS, Partner Violence Screen; SAFE-T, acronym for tool's questions; STaT, acronym for keywords in tool's questions; UVPS, Universal Violence Prevention Screening Protocol; WAST/WAST-SF, Woman Abuse Screening Tool/Woman Abuse Screening Tool-Short Form; WEB, women's experiences with battering

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