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How Valid is the Question of Fear of a Partner in Identifying Intimate Partner Abuse? A Cross-Sectional Analysis of Four Studies

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Abstract

Intimate partner abuse (IPA) affects women's health, requiring accurate questions to identify the abuse. We investigated the accuracy of three questions about fear of an intimate partner in identifying exposure to IPA. We compared the sensitivity and specificity of these questions with the Composite Abuse Scale (CAS) using secondary data analysis of four existing studies. All studies recruited adult women from clinical settings, with sample sizes ranging from 1,257 to 5,871. We examined associations between demographic factors and fear through multivariate logistic regression, and

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analysis of the sensitivity and specificity of the questions about fear and IPA (CAS), generating a receiver operating curve (ROC). The prevalence of lifetime fear of a partner ranged from 9.5% to 26.7%; 14.0% of women reported fear in the past 12 months; and current fear ranged from 1.3% to 3.3%. Comparing the three questions, the question "afraid of a partner in the past 12 months" was considered the best question to identify IPA. This question had the greatest area under the ROC (0.80, 95% confidence interval (CI) = [0.78–0.81]) compared with "are you currently afraid" (range 0.57–0.61) or "have you ever been afraid" (range 0.66–0.77); and demonstrated better sensitivity (64.8%) and specificity (94.8%). Demographic factors associated with "fear of a partner in the past 12 months" included being divorced/separated (odds ratio [OR] = 8.49, 95% CI = [6.70–10.76]); having a low income (OR = 4.21, 95% CI = [3.46–5.13]); and having less than 12 years of education (OR = 2.48, 95% CI = [2.04–3.02]). The question "In the last 12 months did you ever feel frightened by what your partner says or does?" has potential to identify a majority of women experiencing IPA, supporting its utilization where more comprehensive measures are not possible.

Keywords
intimate partner abuse, violence against women, fear, health care, health care professionals

Introduction

Intimate partner abuse (IPA) is a global public health problem, with multifaceted impacts on women's health (Clark et al., 2014; Garcia-Moreno et al., 2014; Halim et al., 2018; World Health Organization [WHO], 2013a). Compared with non-abused women, those experiencing IPA have more negative health outcomes (Sugg, 2015; WHO, 2013a) such as injuries, sexually transmitted infections (STI), depression, anxiety, posttraumatic stress disorder (PTSD), alcohol and drug abuse, and suicide (Bacchus, Ranganathan, Watts & Devries, 2018; Devries et al., 2014; Hegarty et al., 2013; Trevillion, Oram, Feder & Howard, 2012).

The World Health Organization (WHO, 2013a) estimates that one in three women experience physical or sexual IPA during their lifetime. Abused women are known to attend health care settings more frequently than non-abused women (Hamberger, Rhodes & Brown, 2015; Hoelle et al., 2015). The health systems and health care professionals therefore have a frontline role in recognizing IPA and providing support to abused women presenting in

clinical settings (Garcia-Moreno et al., 2015; Spangaro, 2017; WHO, 2013a). While physical or sexual abuse can be associated with physical signs indicating injury, psychological abuse can be more difficult to identify.

In addition to the range of mental health conditions associated with women experiencing IPA, women describe an inability to trust others, and other feelings, like fear of an intimate partner (Cheng & Lo, 2019; Debono, Borg-Xuereb, Scerri & Camilleri, 2017; Lutwak, 2018; Preiser & Assari, 2017; Stewart & Vigod, 2017). Fear of an intimate partner could present a specific area of future research focus for the identification of IPA. Questions about fear of a partner could be a less confronting and acceptable question to include when asking women about their exposure to IPA.

Recent studies describe instilling fear as a strategy that abusive partners may use to establish control (Clements & Holtzworth-Munroe, 2009; Thompson, Basile, Hertz & Sitterle, 2006; Wilson, Graham, & Taft, 2017). Fear is one of the primary mechanisms through which abusive partners seek to control their partner—fear of actual or threatened injury, death or other consequences—to the women and her children (Jaquier & Sullivan, 2014). Fear of a partner is usually present in abusive relationships and can be a precursor and consequence of violence, including physical or sexual abuse (Cheng & Lo, 2019; Olson et al., 2008; Sanz-Barbero, Otero-Garcia & Vives-Cases, 2018). Fear of the partner is also reported in the recent literature as a way that women exposed to frequent IPA may anticipate violence, particularly when associated with their partners' alcohol abuse (Wilson et al., 2017).

Asking about fear of an intimate partner is a question that has been shown acceptable to both women and health practitioners (Hegarty, O'Doherty, Astbury, & Gunn, 2012). Questions about fearing an intimate partner are included in a number of existing screening tools, for example, the Women Abuse Screening Tool (WAST) (Brown et al., 1996; Brown, Lent, Schmidt & Sas, 2000), the Abuse Assessment Scale (AAS) (McFarlane, Parker, Soeken, & Bullock, 1992), and HARK (acronym for humiliation, afraid, rape, and kick) (Sohal, Eldridge, & Feder,2007).

The Composite Abuse Scale (CAS) (Hegarty, Bush, & Sheehan, 2005) has been recognized as a criterion standard research tool to measure IPA and has recently been revised to a short form version (Ford-Gilboe et al., 2016). It has been shown to have content, construct, criterion, and factorial validity (Hegarty et al., 2005). The CAS is preceded by three questions about fear of partner. However, the capacity of questions about fear to identify exposure to IPA has not been systematically examined.

There are potential advantages to using a one- or two-item approach. This study used secondary data from four large studies to compare three different items about fear of an intimate partner against a longer research measure of

IPA (the CAS) to (a) report the sensitivity and specificity of the fear questions in identifying IPA and (b) establish which of the three questions most accurately identifies IPA.

Method

The current study is based on secondary data analysis of four existing studies, selected for this analysis using the following criteria: robust sample sizes of adult women; recruitment in healthcare settings; including the CAS and one or two questions about fear of an intimate partner at different time frames. In addition, these studies were developed in Australia and Canada by members of our collaborative research group. The four studies are summarized in Table 1 and detailed information about each study is described in the following sections: "Study Design," "Participants," and "Materials and Procedures." The final section provides information about the measures and analysis of the current study.

Study Design

Study 1. Randomized controlled trial (RCT) of IPA screening (MacMillan et al., 2009) conducted by the Violence Against Women (VAW) Research Group in Ontario, Canada with recruitment occurring from 2005 to 2006.

Study 2. The Women's Emotional and Wellbeing (WEB) Study (Hegarty, Gunn, Chondros, & Small, 2004) was a cross-sectional survey conducted in Victoria, Australia in 2000.

Study 3. The "Improving Maternal and Child Health for Vulnerable Mothers" (MOVE) study (Taft et al., 2015) was a cluster randomized controlled trial of an enhanced model of nurse family violence screening and supportive care in Victoria, Australia, with recruitment occurring in 2011. The intervention was jointly designed based on a participatory research process with Maternal and Child Health nurses from primary healthcare settings.

Study 4. The Maternal Health Study (MHS) (Brown et al., 2006) is an Australian prospective mother and child cohort study. First-time mothers were recruited to the study in Melbourne, Australia, between 2003 and 2005.

Table 1. Studies and Participants' Characteristics.

	Study 1—VAW Study		Study 2—WEB		Study 3—MOVE		Study 4—MHS	
Characteristics	*n*	%	*n*	%	*n*	%	*n*	%
Age	*n* = 5,558		*n* = 1,246		*n* = 2,581		*n* = 1,353	
16–24	1,095	19.7	187	15.0	75	2.9	123	9.1
25–34	1,882	33.9	383	30.7	1,411	54.7	895	66.1
35–44	1,367	24.6	454	36.4	1,088	42.1	268	19.8
45+	1,214	21.8	222	17.8	7	0.3	67	5.0
Relationship status	*n* = 5,559		*n* = 1,248		*n* = 2,603		*n* = 1,352	
Married	2,746	49.4	721	57.8	2041	78.4	892	66.0
Living with partner	852	15.3	130	10.4	463	17.8	380	28.1
Divorced/separated	555	10.0	126	10.1	28	1.1	23	1.7
Single	1,380	24.8	263	21.1	70	2.7	57	4.2
Widowed	26	0.5	8	0.6	1	0.1	0	0
Income[a]	*n* = 5,607		*n* = 1,183		*n* = 2,515		*n* = 1,250 (at enrolment)	
Low	2,346	41.8	371	31.4	354	14.1	656	52.5
Middle	1,079	19.2	812	68.7	325	12.9	412	33.0
High	2,182	38.9			1,836	73.0	182	14.6
Education	*n* = 5,607		*n* = 1,245		*n* = 2,599		*n* = 1,345 (at enrolment)	
≥12 years of education	4,947	88.2	880	70.7	2,350	90.4	1,238	92.0
Fear of partner	*n* = 5,825		*n* = 1,007[b] (current); *n* = 1,197 (ever)		*n* = 2,621 (currently); *n* = 2,588 (ever)		*n* = 1,278 (currently); *n* = 1,341 (ever)	
Yes (ever)			320	26.7	247	9.5	202	15.1
Yes (currently)			33	3.3[b]	43	1.6	17	1.3
Yes (past 12 months)	813	14.0						
Abuse	*n* = 5,865		*n* = 1,147		*n* = 2,596		*n* = 1,346	
CAS ≥ 7	876	14.9	184	16.0	168	6.5	101	7.5

Note. VAW = violence against women; WEB = women's emotional and wellbeing; MOVE = improving maternal and child health for vulnerable mothers; MHS = Maternal Health Study; CAS = Composite Abuse Scale.

[a]Income was grouped into three limited categories (low, middle, and high), according to data available in each study. Data available from Study 2 only allowed grouping into two categories.

[b]Included only women with partners.

Participants and Settings

The participants of the current study were adult women enrolled in one of the four studies described above ($n = 1{,}507$ to $n = 5{,}871$). All were recruited from clinical settings, including primary (general practice (GP) clinics and community health centers), secondary (obstetrics/gynecology clinics), and tertiary (public maternity hospitals) settings. All the participants had

sufficient English to complete the questionnaires and ranged in age from 18 to 64 years at enrolment. Detailed information about participants in each study is provided below (see Table 1):

Study 1. The sample included adult women ($n = 5,871$) aged 18–64 years, attending emergency departments, family practices, community health centers, and obstetrics/gynecology clinics. Inclusion criteria were women who had a male partner at some time in the last 12 months, presented for their own health care visit, were able to separate themselves from those accompanying them, were living within 120 km of the site, and were able to speak and read English.

Study 2. This study was conducted with 1,257 women (aged 16–50 years) attending 30 GP settings.

Study 3. The participants were postpartum women ($n = 2,621$) ranging in age from 16 to 50 years, attending community-based Maternal and Child Health Centers with sufficient English to complete the questionnaire.

Study 4. The sample comprised 1,507 first-time mothers (aged 18–50 years) recruited in early pregnancy through six public hospitals with maternity services. Inclusion criteria included nulliparous, ≥24 weeks gestation, ≥18 years of age, with sufficient English to complete the questionnaire

Materials and Procedures

Study 1. Paper hand-delivered questionnaires were completed at the time of recruitment of the RCT (baseline) and included the CAS and a question about fear of an intimate partner in the past 12 months ("*In the last 12 months did you ever feel frightened by what your partner says or does?*"). This study was approved by the Research Ethics Board of McMaster University/Hamilton Health Sciences and where applicable, the site-specific research ethics board. Prior to enrolment in the trial, written informed consent was obtained from each participant.

Study 2. Data were collected via hand-delivered questionnaires administered in the waiting room of GP clinics by trained research assistants and included the CAS and two fear items asking about lifetime fear ("*Have you ever been afraid of any partner?*") and current fear of an intimate partner *(*"*Are you afraid of your current partner?*"). The study was approved by the Human Ethics Committee, University of Melbourne.

Study 3. The baseline data were collected via mailed maternal questionnaires completed at the time of recruitment and included the CAS and two items asking about lifetime fear ("*Have you ever been afraid of any partner?*") and current fear of a partner or ex-partner ("*Are you currently afraid of your partner or ex-partner?*"). The study was approved by the Human Ethics Committee, La Trobe University (UHEC 08-142), and by the University of Melbourne and the Victorian Government Department of Education and Early Childhood Development (ADD/07/6733).

Study 4. In this longitudinal cohort study, women were recruited in early pregnancy and followed up intensively to 18 months postpartum and at 4 and 10 years. For the purposes of this study, data collected via the mailed 12 months postpartum questionnaire were used and included the CAS and two fear items asking about *lifetime* fear of an intimate partner ("*Have you ever been afraid of any partner?*") and fear of your *current* partner ("*Are you afraid of your current partner?*"). The study was approved by ethics committees at the Royal Women's Hospital, Melbourne (2002/23), Southern Health, Melbourne (2002-099B), Angliss Hospital, Melbourne, La Trobe University (2002/38), and the Royal Children's Hospital, Melbourne (27056A).

Measures

The CAS includes questions asking about four different types of IPA (severe combined abuse, emotional abuse, physical abuse, and harassment). Women are asked to report on how often a range of actions by an intimate partner happened to them in the previous 12 months. Response options are *never, only once, several times, once per month, once per week*, and *daily* and are scored from 0 to 5, respectively. Each subscale has internal reliability of .90 or more, and an all item-total score correlations of .6 or above (Hegarty et al., 2005). Women with CAS of 3 or more were categorized as probably experiencing IPA and scores of $\geq$7 as definite IPA (Hegarty et al., 2005).

The CAS is preceded by questions asking women about fear of an intimate partner: "Have you ever felt afraid of an intimate partner?" and "Are you currently afraid of an intimate partner?." Some minor differences in the wording of the items was observed, and Study 1 limited the item to feeling afraid of a partner in the previous 12 months (see Table 1).

Analysis

Demographic and study data were extracted and analyzed using Stata Version 15.0. As the four studies included slightly different versions of the

fear questions, all analyses are presented in relation to a specific item (i.e., lifetime fear, fear in the past 12 months, or currently afraid). Data sets were not combined as the fear questions differed, with only two of the four studies asking identical questions (Study 2 WEB and Study 4 MHS). Furthermore, the capacity to compare the effectiveness of the fear questions in identifying women reporting IPV across the four studies (recruited in different settings and populations) adds weight to the findings.

Multivariate logistic regression was used to identify associations between lifetime report of fearing an intimate partner and demographic characteristics in each of the four studies, except for Study 1, where only "fear experienced in the past 12 months" was collected.

The sensitivity, specificity, positive predictive value, and negative predictive values were calculated for each fear item, with "fear" used as the diagnostic test against the CAS as a criterion standard measure of IPA. Receiver operating curve (ROC) analysis (Swets, Dawes, & Monahan, 2000) was used to explore the accuracy of the fear items in correctly classifying exposure to IPA. ROC analysis can be used to select the optimal threshold under a variety of clinical circumstances, balancing the inherent tradeoffs that exist between sensitivity and specificity (Zou, O'Malley, & Mauri, 2007). We compared two different cutoff scores of the CAS (CAS $\geq$ 3 and CAS $\geq$ 7) and generated an ROC curve by plotting the true positive rate (TPR) against the false positive rate (FPR) at various threshold settings.

Results

Table 1 summarizes the main demographic characteristics of each study. Studies 3 and 4 recruited women during or after a recent pregnancy and consequently had fewer women who were more than 45 years of age (0.3% and 5%, respectively) compared with the clinical samples in Studies 1 and 2. Women classified as experiencing IPA (CAS $\geq$ 7) ranged from 6.5% (Study 3) to 16% (Study 2).

The four studies included one or two fear questions asking women if they ever felt afraid (lifetime prevalence), had felt afraid in the previous 12 months (period prevalence), and/or were currently afraid (present prevalence) of an intimate partner (see Table 1). Three studies asked about lifetime experience of fear of an intimate partner, with prevalence rates ranging from 9.5% (Study 3) to 26.7% (Study 2). Only Study 1 asked women about fear in the previous 12 months, with 14.0% of women responding positively. The proportion of women who reported being "afraid of your current partner" was 3.3% (Study 2) and 1.3% (Study 4), with 1.6% reporting being "currently afraid of a partner or ex-partner" (Study 3).

Table 2 summarizes associations between sociodemographic characteristics and response to questions about fear of an intimate partner. The two items reported are "fear ever" and "fear in the past 12 months" as too few women reported "current fear" to justify these analyses.

Across all four studies, the proportion of women reporting fear of an intimate partner in the past 12 months (Study 1) or ever (Studies 2–4), was highest in the youngest age category (16–24 years). In Study 4, women aged 16–24 had higher odds of reporting fear compared with women in the median age group of 35–44 years (odds ratio [OR] = 1.88, 95% confidence interval [CI] = [1.06–3.30]). Relationship status and income ($p < .001$) were strongly associated with report of fear. Compared with married women, divorced or separated women showed an eightfold increase in reporting fear of their partner "in the last 12 months" (Study 1, OR = 8.49, 95% CI = [6.70–10.76]), and a fivefold to sixfold increase in reporting "ever being afraid" (Studies 2, 3, and 4, see Table 2). Compared with married women, single women were also more likely to report that they had "ever" been afraid of their partners, with odds ranging from almost three (OR = 2.60, 95% CI = [1.85–3.65]) to eight times higher (OR = 8.73, 95% CI = [5.17–14.76]) in Studies 2 and 3, respectively. Compared with women with a high income, women with a low income had a twofold to fourfold increase in reporting fear of their partner, both for "the past 12 months" (OR = 4.21, 95% CI = [3.46–5.13]) in Study 1 or "fear ever" (Studies 2, 3, and 4, see Table 2). In all studies, a higher proportion of women with fewer than 12 years' education reported fear of an intimate partner. Education was strongly associated with report of fear in Studies 1 and 3, where women with fewer than 12 years of education had twice the odds of reporting fear compared with women with 12 or more years of education (e.g., Study 1, OR = 2.48, 95% CI = [2.04–3.02]).

Table 3 shows the sensitivity and specificity for the three fear questions by each study against IPA identified using the CAS. As shown in Table 3, asking women if they had "ever" been afraid of an intimate partner showed reasonable specificity in correctly identifying IPA exposure. For example, in Study 2, 82% of women responding no to "ever" feeling afraid of a partner, were negative for IPA on the CAS (true negative rate). However, the question showed low-to-moderate sensitivity across the three studies (2, 3, and 4). For example, in Study 3, only 39.3% of women identified as experiencing IPA responded positively to "ever" being afraid of a partner (true positive rate).

Asking about "current" fear of a partner in Studies 2, 3, and 4 was the least accurate in identifying IPA exposure. The question showed low sensitivity, despite good specificity, and had the smallest area under the ROC curve (AUC) of the three questions (ranging from 0.57 to 0.61).

Table 2. Associations Between Fear and Sociodemographic Factors.

	Study 1—VAW Screening Fear in the Past 12 Months				Study 2—WEB Fear Ever				Study 3—MOVE Fear Ever				Study 4—MHS Fear Ever			
Characteristics	*n* (%)	OR	95% CI	*p* value	*n* (%)	OR	95% CI	*p* value	*n* (%)	OR	95% CI	*p* value	*n* (%)	OR	95% CI	*p* value
Age	*n* = 5,548			<0.001	*n* = 1,193			0.8832	*n* = 2,548			0.0085	*n* = 1,341			0.1509
16–24	178 (16.3)	1.04	[0.84, 1.29]		44 (29.0)	1.17	[0.78, 1.77]		12 (16.7)	1.59	[0.83, 3.04]		26 (21.7)	1.88	[1.06, 3.30]	
25–34	223 (11.9)	0.72	[0.59, 0.88]		101 (27.0)	1.07	[0.78, 1.46]		111 (7.9)	0.68	[0.52, 0.90]		131 (14.7)	1.17	[0.78, 1.76]	
35–44	214 (15.7)	1.00	[Ref]		115 (25.7)	1.00	[Ref]		120 (11.2)	1.00	[Ref]		34 (12.8)	1.00	[Ref]	
45+	141 (11.6)	0.70	[0.56, 0.89]		59 (26.9)	1.06	[0.74, 1.53]		1 (16.7)	1.59	[0.18, 13.72]		11 (16.9)	1.38	[0.65, 2.91]	
Relationship status	*n* = 5,549			<0.001	*n* = 1,196			<0.001	*n* = 2,570			<0.001	*n* = 1,340			<0.0e01
Married	161 (5.9)	1.00	[Ref]		122 (17.1)	1.00	[Ref]		143 (7.1)	1.00	[Ref]		88 (9.9)	1.00	[Ref]	
Living with partner	141 (16.6)	3.18	[2.50, 4.04]		54 (41.9)	3.48	[2.33, 5.20]		67 (14.6)	2.23	[1.63, 3.04]		78 (20.7)	2.36	[1.69, 3.29]	
Divorced/ separated	192 (34.7)	8.49	[6.70, 10.76]		62 (50.0)	4.84	[3.23, 7.24]		9 (33.3)	6.20	[2.75, 13.96]		9 (40.9)	6.27	[2.61, 15.09]	
Single	256 (18.6)	3.65	[2.96, 4.50]		78 (35.0)	2.60	[1.85, 3.65]		26 (40)	8.73	[5.17, 14.76]		27 (48.2)	8.43	[4.78, 14.89]	
Widowed	6 (23.1)	4.80	[1.90, 12.13]		3 (42.9)	3.63	[0.80, 16.43]		0 (0)				0 (0)			
Income	*n* = 5,597			<0.001	*n* = 1,139			<0.001	*n* = 2,484			<0.001	*n* = 1,240			<0.001
Low	525 (22.5)	4.21	[3.46, 5.13]		134 (39.3)	2.28	[1.73, 3.00]		55 (16.1)	2.13	[1.52, 2.97]		123 (19.0)	2.59	[1.48, 4.56]	
Middle	100 (9.3)	1.48	[1.13, 1.94]		176 (22.1)	1.00			34 (10.6)	1.31	[0.88, 1.94]		55 (13.4)	1.71	[0.94, 3.12]	
High	140 (6.4)	1.00	[Ref]				[Ref]		150 (8.2)	1.00	[Ref]		15 (8.3)	1.00	[Ref]	
Education	*n* = 5,597			<0.001	*n* = 1,194			0.0700	*n* = 2,566			<0.001	*n* = 1,333			0.0976
<12 years	168 (25.5)	2.48	[2.04, 3.02]		105 (30.1)	1.29	[0.97, 1.70]		39 (16.0)	1.96	[1.35, 2.84]		21 (19.8)	1.44	[0.87, 2.38]	
≥12 years	597 (12.1)	1.00	[Ref]		213 (25.1)	1.00	[Ref]		206 (8.9)	1.00	[Ref]		180 (14.7)	1.00	[Ref]	

Note. Missing varied from 1.9% to 17.7%. Analyses were conducted using participants with complete data only. No imputation was performed. VAW = violence against women; WEB = women's emotional and wellbeing; MOVE = improving maternal and child health for vulnerable mothers; MHS = Maternal Health Study; OR = odds ratio.

Table 3. Report of Fear of an Intimate Partner to Identify Women Experiencing IPA.

	Fear Ever			Fear in the Past 12 Months	Fear Currently		
Study	2. WEB (n = 1,141) % [95% CI]	3. MOVE (n = 2,571) % [95% CI]	4. MHS (n = 1,337) % [95% CI]	1. VAW Screening (n = 5,819) % [95% CI]	2. WEB (n = 962) % [95% CI]	3. MOVE (n = 2,596) % [95% CI]	4. MHS (n = 1,278) % [95% CI]
Sensitivity (%)	72.3 [65.2, 78.6]	39.3 [31.9, 47.1]	54.6 [44.2, 64.6]	64.8 [61.3, 67.8]	22.1 [14.6, 31.3]	13.7 [8.88, 19.8]	15.1 [7.8, 25.4]
Specificity (%)	82.0 [79.4, 84.4]	92.6 [91.5, 93.6]	88.2 [86.3, 90.0]	94.8 [94.2, 95.4]	98.9 [98.0, 99.5]	99.3 [98.9, 99.6]	99.5 [98.9, 99.8]
Area under ROC curve	0.77 [0.74, 0.80]	0.66 [0.62, 0.70]	0.71 [0.66, 0.76]	0.80 [0.78, 0.81]	0.61 [0.57, 0.65]	0.57 [0.54, 0.59]	0.57 [0.53, 0.61]
Positive predictive value (%)	43.6 [38.0, 49.4]	27.0 [21.6, 33.1]	27.0 [21.0, 33.7]	68.5 [65.0, 71.5]	71.9 [53.3, 86.3]	57.5 [40.9, 73.0]	64.7 [38.3, 85.8]
Negative predictive value (%)	93.4 [92.1, 95.4]	95.6 [94.7, 96.4]	96.0 [94.7, 97.1]	93.9 [93.3, 94.6]	91.3 [89.3, 93.0]	94.3 [93.4, 95.2]	95.0 [93.7, 96,2]

Note. IPA = intimate partner abuse; WEB = women's emotional and wellbeing; MOVE = improving maternal and child health for vulnerable mothers; MHS = Maternal Health Study; VAW = violence against women; ROC = receiver operating curve.

Asking about fear of partner "in the last 12 months," Study 1 performed the best out of the three questions, demonstrating moderate sensitivity (64.8%) and high specificity (94.8%) in identifying exposure to IPA. A total of 65% of women reporting IPA (64.8%) also responded "yes" to fear of a partner in the last 12 months (true positive rate). Of the women not reporting IPA, 94.8% responded negatively to fearing a partner in the last 12 months. This question also had the greatest area under the ROC curve (AUC = 0.80, 95% CI = [0.78 to 0.81]) compared with questions about fear "currently" and "fear ever," which had, respectively, AUC varying from 0.57 to 0.61 and 0.71 to 0.77. The CAS cutoff score of 7 also resulted in better sensitivity and specificity compared with a cutoff score of 3 points. We calculated the areas under the ROC curve for both CAS cutoff scores (3 and 7) for each study aiming for an initial comparison, but we present only the CAS cutoff of 7 points, as recommended in the literature (Hegarty & Valpied, 2013), to minimize false positives.

Discussion

This study used secondary data analysis of four large existing studies to compare the performance of three questions asking about fear of an intimate partner (*ever*, in the *last 12 months* or *currently*) against IPA using the CAS measure to report the sensitivity and specificity of the fear questions; and to identify which of the three questions most accurately identifies IPA. We argue that a single question about fear of an intimate partner could be a simple and effective way to identify women experiencing IPA in research studies. Furthermore, the potential for use of this question in clinical settings could be tested in future research, when health professionals suspect abuse.

Examining the accuracy of single questions about fear in identifying IPA, sensitivity (%) of the three questions ranged from 13.7 to 72.3 and specificity (%) ranged from 82.0 to 99.5, depending on the study and the question asked. Asking about fear of an intimate partner "in the past 12 months" was the most accurate of the three fear questions with the largest AUC and strongest capacity to identify abused women while minimizing false positives. Asking about fear "ever" may be an intermediate option, while asking about fear "currently" was the least accurate, as judged by AUC values.

The AUC is an overall summary of diagnostic accuracy. Several studies (Amlung et al., 2015; Mossman, 1994; Swets et al., 2000) recommend the use of AUC as the preferred measure of predictive or diagnostic accuracy in non-medical diagnostic studies. AUC values are commonly interpreted as a good predictor, with accuracy increasing as values approach 1. Our findings indicate that among three fear questions, "fear in the past 12 months" was the

strongest in identifying women reporting IPA (AUC = 0.8 95%, CI = [0.78–0.81]). The interpretation of the AUC also depends on the context, for example, for a medical diagnosis, a very high AUC (0.95 or higher) is sought; however, in applied psychology and studies predicting future behavior, AUC values of 0.7 and higher would be considered reasonable (Mossman, 1994; Swets et al., 2000; Youngstrom, 2014).

In these four research studies, recruited from clinical settings and including two samples from the perinatal period, the three questions about fear of intimate partner accurately identified women experiencing IPA. The question about fear "in the past 12 months" demonstrated the best sensitivity and specificity. The other two questions may be too general ("ever" afraid) or too specific ("currently" afraid) in terms of their usefulness in identifying women with IPA. Asking about fear of an intimate partner in the past 12 months showed promise in identifying women reporting IPA across these four research studies.

However, further testing is required to explore how it might be applied in a clinical or health care setting. The fear questions analyzed in this study were asked in an anonymous (except for Study 4) and confidential way to women participants. Perhaps, if women were asked directly by their health professionals, in a face-to-face consultation, the results may be different, and thus use of the fear question needs further evaluation.

Previous studies have tested short screening tools to identify abused women in clinical settings, but they have limitations, such as small and unrepresentative samples (Sherin et al., 1998), not reporting sensitivity or specificity (Brown et al., 2000; Hegarty et al., 2013; Heron, Thompson, Jackson, & Kaslow, 2003), low sensitivity/specificity, and/or low positive/negative predictive values (Feldhaus, 1997; Peralta & Fleming, 2003). A previous study (MacMillan et al., 2006) compared the sensitivity and specificity of IPA measures—Partner Violence Screen (PVS) and the Woman Abuse Screening Tool (WAST)—and the CAS, considered the criterion standard. However, only one previous study (Sohal et al., 2007) analyzed short screening questions with the CAS, and despite demonstrating good sensitivity (81%, 95% CI = [69%–90%]), specificity (95%, 95% CI = [91%–98%]), positive predictive value (83%), and negative predictive value (94%), it adopted a CAS cutoff score of ≥3, less recommended for clinical settings (Hegarty & Valpied, 2013) and furthermore its sample size was low (232 women), compared with our study with more robust sample sizes and a cutoff score of ≥7.

Demographic analysis provided evidence that divorced/separated women reported higher likelihood of fear of their partner than married women—from fourfold to eightfold higher. These differences were also observed in the literature, where separated and divorced women were more than twice as likely

to report fear as those with partners (Olson et al., 2008). Separated/divorced women were up 9–10 times more likely to report abuse compared with married women/living with a partner (Zorrilla et al., 2010). These results draw attention to how the risk of IPA are not resolved simply by separating from an abusive partner.

The strengths of this study include the use of the criterion standard for measuring IPA (CAS) across four large and robust studies to compare three fear questions that differed in the time frame asked. Other strengths include the diverse samples, including women in the postpartum period, women from a wide range of ages recruited from diverse settings including community, tertiary hospitals, emergency departments, maternal and child health centers, and gynecologic clinics.

Limitations include the variations in sensitivity and specificity across studies, suggesting that it could be due to the sample and setting of each study. Another limitation is that only one of the four studies included the question about fear "in the past 12 months," making it impossible to compare this question across studies. However, this study (Study 1) did include over 5,000 women who were recruited from diverse clinical and community settings (the most diverse of all the studies), adding robustness to the findings. In addition, this study was the only study conducted outside Australia, which must be taken into consideration.

Both Australia and Canada share a number of similarities including colonization processes, English-speaking, being high-income countries, having structured public health systems, with similar IPA prevalence reported, and having public policies on IPA (WHO, 2013a, 2014a). Irrespective of these similarities, cultural differences will exist and may impact on the findings of this study. Our results would benefit from replication in further studies, across different countries and settings.

Nevertheless, our major interpretation about the differences in results is due to the time frame of the fear questions, rather than the settings where participants were recruited or the cultural aspects of countries.

Diversity was partially considered in this study. Our samples included women from two different countries, with different backgrounds regarding education, age, marital status, and income. Data were collected in diverse health settings. However, limitations concerning diversity included the fact that studies did not collect data about sexual diversity (except Study 4, but numbers were too small for comparisons), ability, religion, or ethnicity and also all four studies were conducted in high-income countries with structured public health systems, making it challenging to generalize the findings to other settings. Culturally inclusive methodology was not reported in any of the four studies. All the research

studies involved completion of a questionnaire in English, reducing diversity by excluding women with limited fluency in English or poor literacy. Further research would be needed to establish the efficacy of the fear question in different populations and settings.

Clinical/Policy Implications

The health system provides a unique opportunity to intervene to improve outcomes for women and children affected by IPA, but it is a role that remains unfulfilled in many health care settings. While routinely asking standard questions of all women about IPA (screening) has not demonstrated improved outcomes for women and is not recommended by the WHO (2013b), it is important that healthcare professionals have information about the usefulness of specific questions when asking about abuse during an assessment as part of case-finding.

A single item asking about "fear of partner in the past 12 months" to identify IPA is likely to be useful in many areas of research, where time, space, or trust limitations could make it more acceptable for participants. Perhaps a question about fear of a partner may be useful for healthcare providers to include when raising the topic of IPA with women who have symptoms or conditions that may be related to violence, pending further investigation.

With women's consent, once clinicians identify IPA, they will then be able to provide a first line response as recommended by WHO (2014b), which includes assessing safety and offering ongoing support and referral. Including questions that assist women who feel comfortable in disclosing IPA may provide an opportunity to discuss available services for women (and their children) with the aim of reducing impact of violence.

Conclusion

Across four studies, we analyzed the sensitivity and specificity of questions that ask women about fear of an intimate partner, against IPA as identified using the CAS. We found that including a question about "fear of partner in the past 12 months" may be useful to include in research surveys where knowledge or IPA exposure is desirable but limited time, space, or trust preclude the use of a more comprehensive measure. Use of this question in clinical settings should be considered when raising the topic with women who have symptoms or conditions that may be related to violence. Among three different fear questions, asking about "fear of an intimate partner in the past 12 months" was most accurate in identifying abused women. Having a single, uncomplicated question that identifies the majority of women experiencing

IPA may be extremely valuable in a range of research and clinical settings. It may be a valuable question for identifying women experiencing IPA in an acceptable and non-intrusive way; however, more research is required to establish how this would work best and for whom. The findings of this study need to be replicated in other studies, including in clinical settings and across different social and cultural contexts.

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Authorship

K.H. conceived the study and M.S., K.H., and A.T. designed the protocol. M.S. conducted the cross-sectional analysis of Studies 1, 2, and 3 and drafted the article. D.G. and S.B. conducted the cross-sectional analysis of Study 4. L.H. and A.T. conducted and contributed with analysis of Study 3. C.M. and H.M. contributed data from Study 1, which was conducted by H.M. and the VAW Research Group. K.H. conducted Study 2 and contributed with all analysis and interpretations. All the authors collectively contributed to the writing of the paper and approved the final version. M.S. is the guarantor of the paper. Each author who contributed data takes responsibility for the integrity of the data. M.S., A.T., and K.H. state that they have full access to all of the data in the study and can take responsibility for the integrity of the data and accuracy of the data analysis.

Declaration of Conflicting Interests

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