

## **Validation of the Intimate Bonds Measure for women who are pregnant or have recently given birth in Vietnam**

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## **Abstract**

*Introduction:* Sensitive, valid measures to assess the quality of the intimate partner relationship are relevant and valuable for both clinical practice and research. The aim of this study was to examine the validity of the Intimate Bonds Measure (IBM) in women who were pregnant or had recently given birth in Viet Nam.

*Methods:* The IBM was translated and culturally verified in a step-by-step process with Vietnamese health workers, researchers and community members. The validation study was located within two larger community-based cross-sectional investigations: the first in 2006, which recruited 199 pregnant women and 165 mothers of newborns, and the second in 2010, which recruited 419 pregnant women. Internal structure was assessed by factor analysis and Cronbach's alpha and construct validity by comparison with relevant factors.

*Results:* Exploratory factor analyses revealed an identical factor structure to the one reported by the measure's developers in an Anglophone Australian population more than twenty years ago. The two factors replicate exactly the Care and Control subscales and Cronbach's alpha (from 0.68 to 0.83) indicates high internal consistency in both sub-scales. Mean scores of the Care-V and Control-V sub-scales were associated significantly and in expected directions with whether the woman could confide in, felt supported by or was frightened of her partner, or had experienced intimate partner violence and measures of mental health status.

*Conclusion:* The Vietnamese version of the IBM (IBM-V) is comprehensible, meaningful and appears to be a valid measure the construct of quality of intimate relationships among women in this setting.

*Key words:* Intimate bonds, intimate partner violence, validation, Vietnam

## Introduction

A heterosexual woman's relationship with her intimate partner has been shown consistently to govern perinatal mental health {Mamun, 2009 #10559}{Coker, 2002 #10558}{Scottish Intercollegiate Guidelines Network, 2002 #2647}. A relationship characterized by trust, affection and kindness, in which a woman experiences her partner as committed to the pregnancy or infant and as willing to suspend his personal ambitions and activities in service of family life is protective of mental health. In contrast if a partner is experienced as holding rigid gender stereotypes about the division of household work and infant care; being unavailable for and uninvolved in domestic life because of pursuing personal interests, or, critical, coercive or intimidating, risk of mental health problems is increased. It has been found that the quality of relationship with the intimate partner is associated with the severity and duration of symptoms of depression in women in the postpartum period {Matthey, 2000 #10296;Fisher, 2010 #10050;Fisher, 2012 #10499}, the quality of parent-child relationships {Erel, 1995 #10298} and emotional and behavioural disorders in children {Fincham, 1994 #10299;Gable, 1992 #10300;Zimet, 2002 #10301}. The quality of intimate partner relationship may be a mediator, a confounder, or an outcome in social, public health, psychology or cross-disciplinary research. It is also a promising target for interventions to promote optimal mental health and family functioning. Reliable sensitive methods to assess quality of the intimate partner relationship are therefore relevant and valuable for both clinical practice and research {Pritchett, 2011 #10295}.

Current methods to assess quality of relationships are direct observation, clinical assessment, structured interviews or self-report questionnaires. The latter method is preferred for large-scale research and primary health care {Pritchett, 2011 #10295}. A recent review of brief, comprehensible measures of quality of intimate relationship revealed that most tools have been developed in Anglophone high-income countries {Pritchett, 2011 #10295}. Their acceptability, validity and reliability in different cultural settings and languages is mostly unknown {Bullinger, 1993 #10302}.

Wilhelm and Parker {1988 #68} developed the Intimate Bonds Measure (IBM) as a means of quantifying the perception of the central elements of intimate relationships. It emerged from detailed critical analysis of theories of the nature of intimate relationships and prior attempts to measure them. The development and psychometric properties of the IBM were established using standard techniques. Principal components analysis of the responses of 148 women and 96 men to a pool of 83 items revealed two interpretable factors. The "Care" factor reflected perceived sensitivity, warmth, emotional responsiveness, trust, physical and capacity for companionship. The other dimension, labeled "Control" reflected perceived coerciveness, exertion of power or dominance and extent of criticism. The two factors were negatively associated ( $r = - 0.36$ ), interpreted as indicating that high Care is intrinsically linked to low Control.

The final IBM comprises 24 items (12 on each subscale) selected on the basis of factor loadings from the original item pool, which are completed on a 4-point Likert scale from "very" to "not at all" true. Items are scored from 0 to 3 and

added to derive separate scores ranging from 0 to 36 on each dimension. Univariate analyses revealed no significant effects of age, sex or socioeconomic status on response patterns. The test has high internal consistency with Cronbach's alpha being 0.94 for the Care scale and 0.89 for the Control scale. Test re-test over three and six week periods revealed minimal change in mean scores and high reliability (0.89 and 0.80,  $p < 0.001$ ) {Wilhelm, 1990 #1700}. Further reliability examination of a depressed population prior to and following treatment revealed that there was no change in Care score, but a modest change in Control score {Wilhelm, 2000 #3922}. Validity was assessed by correlation with structured interviews scored on 6-point ordinal scales for the two dimensions by two clinicians. Inter-rater reliability was 0.66 ( $p < 0.001$ ) for the Care and 0.70 ( $p < 0.001$ ) for the Control dimension. Correlations between ratings and actual scores were: Care: 0.43 and 0.68 and Control: 0.55 and 0.74. The range was interpreted as reflecting different degrees of familiarity with the constructs. Further validity data was derived from correlation of therapists' ratings with test scores for 25 couples in marital therapy. Therapist raters' judgments correlated significantly with actual scores: 0.48,  $p < 0.01$  and 0.42,  $p < 0.05$  on Care and 0.51,  $p < 0.005$  and 0.35,  $p < 0.05$  on Control (Wilhelm and Parker, 1988). The scale is relatively free of the state dependent effects of depression in English-speaking population {Wilhelm, 2000 #3922}

We translated the IBM into Vietnamese and found that it was meaningful to study participants in rural and urban settings and that scores are associated in the expected direction with mental health in Vietnamese women {Fisher, 2010

#10050;Fisher, 2007 #8489}, but it had not been locally validated. The aim of this study was to validate the IBM in women during pregnancy and after giving birth in Viet Nam.

## **Methods**

The study was located within two larger investigations: the first in 2006 (hereafter called Study 2006) and the second in 2010 (hereafter called Study 2010) of the prevalence, determinants and course of common perinatal mental disorders in women in Viet Nam.

### ***Setting***

The studies were conducted in two provinces in northern Viet Nam. Hanoi is the relatively well-resourced national capital with a population of 6.1 million people and an average annual per capita income of USD1,900.{GSO, 2009 #10053} Ha Nam is a Red River delta province about 50 km south of Hanoi with a population of 0.8 million inhabitants most of whom rely on subsistence agriculture, principally rice farming. In 2010 the average annual per capita income was USD800 and about 7.5% of people lived below the international poverty line of USD1.25 per day.{GSO, 2009 #10053}.

### ***Translation and cultural verification of the Intimate Bonds Measure in Vietnam***

The IBM was first translated from English into Vietnamese. It was then reviewed item-by-item in a consultative process by a group of psychologists and health

research workers, some bilingual and some monolingual in each language, for meaning, comprehensibility and cultural appropriateness. It was then back translated to English for verification {Laungani, 2000 #2149}. The Vietnamese translation was then pilot tested with a group of male and female research officers who were partnered and 20 married women at the study sites. During the pilot testing, participants completed the scale and discussed their understandings of the questions with Vietnamese researchers. The results of the pilot testing were used to reword and amend the scales before use in the two studies.

## ***Study 2006***

### *Participants and recruitment*

This study recruited women in Hanoi and Ha Nam through a two-stage sampling procedure {Fisher, 2010 #10050}. First, four communes in Hanoi and six communes Ha Nam were selected randomly as study sites. In each selected commune, all women registered with the commune health centre in the previous month as being either at least 7 months pregnant or between the fourth and eighth week postpartum were eligible and invited to participate in the study.

### *Measures*

In addition to the Vietnamese version of the IBM, a study-specific questionnaire was used to collect socio-demographic characteristics including women's age, marital, educational and occupational status {Tran, 2004 #9697}. Data on experiences of practical and emotional support from the husband were

assessed by four study-specific questions: (1) whether he intended to (pregnant women) or actually participated in care of the baby during the day, (2) or at night, (3) whether he contributed to household work, and (4) whether the woman felt able to talk to her husband if she had worries. Experiences of past or current violence from the husband were assessed by two study-specific questions including current fear of (an indicator of emotional abuse) and any experience of being hit, slapped, kicked, dragged, choked or punched (physical abuse) during the previous year. All participants completed individual psychiatrist-administered Structured Clinical Interviews for DSM IV Axis 1 Diagnoses (SCID) modules for the common mental disorders of depression, generalised anxiety, and panic disorder. This interview, based on the American Psychiatric Association's Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV), is the international gold standard for the diagnosis of common mental disorders.

## ***Study 2010***

### *Participants and recruitment*

This prospective cohort study was undertaken in Ha Nam to investigate the course of perinatal CMD in rural-dwelling women. Participants were recruited in a two-stage sampling procedure: (1) 50 of the 116 communes in the province were selected randomly and (2) all eligible pregnant women in the selected communes were invited to participate in the study.

### *Measures*

The same questions were used in this study to assess women's capacity to confide in their partners and perceptions of his involvement in infant care and household work. Experiences of intimate partner violence were however assessed by the pregnancy section of the WHO Multi-country study on Domestic Violence survey {WHO, 2005 #10287;Garcia-Moreno, 2006 #10304}. It assesses experiences of specific behaviours during the previous year. Physically violent behaviours included being slapped, pushed or shoved, hit with a fist or something else that could hurt, kicked, dragged, beaten up, choked or burned on purpose, having objects that could hurt thrown at them, being threatened with a gun, knife or other weapon of having these used against them. Sexually violent behaviours included being physically forced to have sexual intercourse when the woman did not want to or being forced to do something sexual that she found degrading or humiliating.

Symptoms of the common mental disorders of depression and anxiety were assessed by the Edinburgh Postnatal Depression Scale-Viet Nam Validation (EPDS-V), which had been validated against psychiatrist administered Structured Clinical Interviews for DSM Diagnoses for local use {Cox, 1987 #66;Tran, 2011 #10452}.

### ***Procedure***

In Viet Nam self-report questionnaire completion is unfamiliar and data were collected in individual structured interviews which are preferred {Fisher, 2004 #3553}. In both studies, interviews were conducted privately at commune

health centres by Vietnamese health research workers from the Research and Training Centre for Community Development (RTCCD).

### ***Evidence of validity***

In addition to establishing content validity, we investigated the internal structure and consistency and the construct validity of the IBM-V.

#### *Internal structure and consistency*

Exploratory factor analyses (EFAs) were performed to investigate the internal structure of the whole scale. All 24 items of IBM-V were included in the EFAs utilizing Varimax rotation to examine the underlying factor structure. The criterion chosen to determine that an extracted factor accounted for a reasonably large proportion of the total variance was based on an eigenvalue greater than one. The significance of an item factor loading was set at a coefficient level of 0.30 or greater. Cronbach's alpha statistics of the significant factors were calculated with a cut-off 0.7 used to indicate high internal reliability.

#### *Construct validation*

The construct validity of the IBM-V was investigated through comparison of scores with relevant local indicators of quality of intimate partner relationship. These included responses to study-specific questions ascertaining trust and affection in the relationship; whether or not a woman felt able to talk to her husband if she had worries and his intended or actual involvement in infant care.

We also compared scores to self-reported experiences of intimate partner abuse: current fear of the husband (an indicator of emotional abuse) and any experience of being hit, slapped, kicked, dragged, choked or punched (physical abuse) during the previous year in Study 2006. In Study 2010 comparisons were with the responses to WHO Multi-country study on Domestic Violence survey.

As women's perinatal mental health is known to be governed by the quality of the intimate partner relationship, we also compared scores with indicators of common mental disorders (CMD). In Study 2006, CMD were defined as having any SCID diagnosis of depression, generalised anxiety, or panic disorders diagnosed. In study 2010, CMD were defined as an EPDS-V score  $\geq 4$  {Tran, 2011 #10452}.

Data were analyzed in STATA version 11. All of the statistical analyses were performed separately in each of the two datasets, Study 2006 and study 2010, to check the agreements.

### ***Ethics approval***

Approval to conduct the studies was provided by the Ha Nam Provincial Health Department Ethics Committee, the Vietnam Medical Association Ethics and Scientific Committee and the University of Melbourne's Human Research Ethics Committee.

## **Results**

### **Participant characteristics**

In total, 364 of 392 eligible women (93%) (199 pregnant women and 165 who had recently given birth) in Study 2006 and 419 of 494 eligible pregnant women (95%) in Study 2010 provided completed data. Apart from level of education, the socio-demographic characteristics of the samples are not significantly different between the two studies (see Table 1). Study 2010 only involved rural-dwelling participants who are significantly less well educated than those who live in urban areas. However, the proportion of women who reported violence from the intimate partner was significantly higher among participants in Study 2010 than in Study 2006. This is likely to be because we used the now internationally recognized instrument from the WHO Multi-Country study on Domestic Violence survey in Study 2010. It ascertains specific behaviours rather than asking about experiences of abuse in single questions and yields higher (and more accurate) estimates of exposure to intimate partner violence. In contrast a higher proportion of husband's were reported to participate in daytime infant care and household work in 2010 than in 2006. This might reflect differences between a rural compared to a mixed urban and rural group, but might also reflect social changes over time in which Vietnamese people are now adopting more egalitarian and less traditional gender roles.

### **Content validity**

As it is a low literacy setting in which test-taking is unfamiliar, the IBM was administered as a structured interview rather than a self-completed measure. It emerged that distinguishing between the response options "Moderately true" and

“Somewhat true” was difficult in Vietnamese. We therefore provided an answer card with the four possible responses written on it and arrows from “Very true” to “Moderately true” to “Somewhat true” to “Not at all” to help participants conceptualise the difference. During pilot testing, amendments to language were required for some items in order to maximize clarity (see Table 2). Items assessing care, affection and kindness were generally found to be easier to understand and respond to. Minor changes were made to Items 1 and 13 to make it clear for respondents that the first item regarded to the emotional dimension of care and the other regarded to the physical dimension. There were no exact linguistic equivalents for the constructs of criticism, coercion and control and items assessing these experiences were less easily comprehended. Style of administration was modified slightly to permit the interviewer to provide a more elaborated explanation if the participant could not understand the question (see Table 2). With these changes the measure was comprehensible and meaningful to participants and almost all provided complete data.

### **Internal structure**

The results of the exploratory factor analyses are shown in Tables 3 and 4. In both studies, only the first two factors were significant (eigenvalues > 1). The two factors accounted for 91% of the total variance in Study 2006 and 86% in Study 2010. The two factor solution was identical to that found in the development of the measure. The twelve items from the original Care subscale were the only ones to load on Factor 1; all were significant and loaded only on

this factor in both studies. Similarly all 12 items from the original Control scale loaded on Factor 2 and again, all were significant and loaded only on this factor in both studies. Therefore, we conclude that Factor 1 constitutes a Care subscale and Factor 2 a Control sub-scale.

Cronbach's alpha statistics of overall internal consistency were high for the Care sub-scale in both studies (0.83 in Study 2006 and 0.79 in Study 2010) while those for Control were slightly lower but still satisfactory (0.79 in Study 2006 and 0.68 in Study 2010). Correlation between the two factors (Care and Control) was - 0.30 in Study 2006 and - 0.42 in Study 2010 indicating that the scales were performing in a similar way to the original study and were tapping independent dimensions of quality of intimate partner relationship.

### **Construct validity**

Mean scores of the Care and Control sub-scales differed significantly between groups in expected ways. Women who could confide worries in their partners had higher Care and lower Control scores than women who could not. In contrast women who were frightened of or had experienced violence from their intimate partners had higher Control and lower Care scores than women who did not report these experiences. As in Wilhelm and Parker's (1988) original study women with common mental disorders had lower Care and higher Control scores than women who did not have mental health problems (see Table 5). The directions and significance of these relationships were consistent between the two studies. In this setting in which men's participation in household work and

infant care remains uncommon, it appears that these are not clear indicators of quality of intimate partner relationship as there were no between group differences in Care and Control scores on these variables.

## Discussion

This is to our knowledge the first study to validate the Intimate Bonds Measure in a language other than English for use in a low-income setting. Consistent with the findings about the psychometric properties of this instrument in the original study {Wilhelm, 1988 #68; Wilhelm, 1990 #1700}, our results provide evidence that the content, internal structure and relationships to locally relevant indicators are valid for both Care and Control sub-scales in the IBM-V.

Overall the translated and culturally verified items were found to be comprehensible and meaningful to participants. However, women's understanding of the Control subscale items was less consistent than the Care items. This finding was similar to an existing study on the IBM in English {Wilhelm, 2000 #3922} in which the authors found that perceptions of control in the intimate partner relationship were not consistent with observations provided by an adult son or daughter who shared a household with the informant. In the Vietnamese translation, language in some items of the Control sub-scale was not familiar to participants. It is possible that the Control sub-scale taps a less robust construct, but it is also possible that the content is more sensitive than the content of the Care subscale and therefore more difficult to disclose. The items might arouse shame and therefore be more difficult to acknowledge to a

**Commented [JF1]:** Thach I am not quite sure that I understand this point – perhaps I have re-framed it inaccurately , but I think we could actually take it out.

stranger. This could explain why the internal consistency of the Control scale in Study 2010, which was conducted only in rural areas, was lower than that in Study 2006, which was conducted in both rural and urban areas.

Low quality of intimate relationship has been reported as a significant factor of depression and anxiety in women {Lancaster, 2010 #10297;Matthey, 2000 #10296}. In these studies both Care and Control sub-scales were strongly associated with mental health status in expected directions: high Care appeared protective and high Control increased risk. In a meta-analysis and systematic review, Stith et al. {2008 #10381} concluded that intimate partner violence was associated with decreased marital satisfaction and increased marital conflict. Intimate partner violence is a predictor of relationship dissolution {DeMaris, 2000 #10380}. In these studies higher Control scores were associated with experiences of fear of or actual violence from the intimate partner, and higher Care with whether or not a woman felt able to confide in her husband, a probable indicator of trust and warmth. These data suggest that experiencing violence from or being able to confide in the intimate partner are suitable indicators of the quality of a couple relationship in this setting.

This paper presents the results from two studies conducted five years apart using similar methods that together provide robust evidence of the validity of the IBM-V. As the validation studies were conducted within larger projects, all participants were women who were pregnant or had recently given birth. This might limit generalizability to the general population of women, but nevertheless these data indicate that the IBM-V Care and Control scales are valid indicators of

quality of intimate partner relationship and suitable for use in assessing this dimension in research and clinical practice in Viet Nam.

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**Competing interests:** None declared.

**Contributions:** All authors contributed to the design and conduct of the study. TDT undertook the statistical analyses. JF and TDT wrote the first draft of the manuscript, and all authors approved the final manuscript.

## References

Table 1 Characteristics of the participants in studies 2006 and 2010

Characteristic	Study 2006 N=364	Study 2010 N=419	p-value
Age in year – mean (SD)	26.8(5.3)	26.2 (4.8)	0.10
Occupation – n (%)			
Farmer	147 (40.4)	191 (45.6)	0.5
Factory, handcraft worker or retailer	128 (35.2)	132 (31.5)	
Government or private officers	44 (12.1)	50 (11.9)	
Housewife, not employed	45 (12.3)	46 (11.0)	
Education – n (%)			
Some or complete primary school	86 (23.6)	79 (18.9)	0.005
Secondary school (Year 6 – 9)	146 (40.1)	222 (52.9)	
High school (Year 10 – 12)	55 (15.1)	50 (11.9)	
Above	77 (21.2)	68 (16.2)	
Common mental disorders – n (%)	109 (30.1)	118 (28.2)	0.58
Intimate partner physical violence last 12 months – n (%)	12 (3.3)	72 (17.4)	<0.001
Able to confide in husband when worried	251 (69.0)	335 (80.1)	<0.001
Anticipating or having husband's participation in daytime infant care	186 (51.1)	263 (64.2)	0.001
Anticipating or having husband's participation in nighttime infant care	157 (43.1)	176 (42.9)	0.7
Husband participates in household work	182 (50.0)	243 (59.3)	0.025

Table 2 Language modifications made to the IBM-V during content validation

Item	Problem	Amendment/explanation
1. Is very considerate of me, and 13 "Is physically gentle and considerate"	These items were not easily distinguished by participants	Item 1 was amended to read : "Is very emotionally considerate of me"
2. Wants me to take his side in argument	Participants often asked for clarification of whether an argument" was between the couple or between the couple and other people.	The explanation was that this item referred to both these situations.
9. Tends to criticize me over small issues, 20 Tends to control everything I do, and 22. Is critical of me in private	There were no exact commonly understood Vietnamese equivalents of the words "criticize", "critical", "dominate" and "control". "Small issues", "everything" and "in private" also appeared to be ambiguous and to lack clarity in translation.	Scale administrators were asked to read each of these items clearly, with a distinct emphasis on the difficult terms. An explanation was allowed if participants did not understand after the third repetition.
15. Wants me to change in small ways, and 19. Wants to change me in big ways	The constructs "change in small ways" and "change in big ways" were not easily distinguished by participants	Rewording was made to these two items so that they read : change in little things" and "change in many things"

Table 3 Exploratory factor analyses of IBM in Studies 2006 and 2010

	Study 2006		Study 2010	
	Eigenvalue	Proportion	Eigenvalue	Proportion
Factor 1	4.83	0.58	4.59	0.61
Factor 2	2.77	0.33	1.89	0.25
Factor 3	0.64	0.08	0.65	0.09
Factor 4	0.46	0.05	0.61	0.08
Factor 5	0.44	0.05	0.46	0.06

Table 4 Rotated Factor Patterns in exploratory factor analyses of IBM in Studies 2006 and 2010

IBM	Study 2006		Study 2010	
	Factor 1	Factor 2	Factor 1	Factor 2
<b>Care sub-scale item</b>				
1 Is very considerate of me	<b>0.62</b>	-0.10	<b>0.59</b>	-0.10
4 Is a good companion	<b>0.60</b>	-0.11	<b>0.62</b>	-0.12
5 Is affectionate to me	<b>0.64</b>	-0.06	<b>0.69</b>	-0.12
8 Confides closely in me	<b>0.52</b>	-0.28	<b>0.44</b>	-0.17
10 Understands my problems and worries	<b>0.60</b>	0.01	<b>0.52</b>	-0.12
13 Is physically gentle and considerate	<b>0.67</b>	-0.20	<b>0.63</b>	-0.08
14 Make me feel needed	<b>0.57</b>	0.07	<b>0.53</b>	-0.09
16 Is very loving to me	<b>0.63</b>	0.00	<b>0.46</b>	-0.10
18 Is fun to be with	<b>0.49</b>	-0.08	<b>0.43</b>	-0.22
21 Show his appreciation of me	<b>0.39</b>	0.13	<b>0.36</b>	0.04
23 Is gentle and kind to me	<b>0.59</b>	-0.20	<b>0.58</b>	-0.09
24 Speaks to me in a warm and friendly voice	<b>0.64</b>	-0.06	<b>0.53</b>	-0.11
<b>Control sub-scale item</b>				
2 Wants me to take his side in argument	0.16	<b>0.31</b>	0.22	<b>0.32</b>
3 Wants to know exactly what I'm doing and where I am	0.27	<b>0.32</b>	0.19	<b>0.33</b>
6 Is clearly hurt if I don't accept his views	0.21	<b>0.30</b>	0.06	<b>0.36</b>
7 Tends to try and change me	-0.14	<b>0.58</b>	-0.09	<b>0.61</b>
9 Tends to criticize me over small issues	-0.23	<b>0.63</b>	-0.23	<b>0.45</b>
11 Tends to order me about	-0.12	<b>0.55</b>	-0.28	<b>0.42</b>
12 Insists I do exactly as I'm told	-0.03	<b>0.51</b>	-0.19	<b>0.49</b>

15 Wants me to change in small ways	-0.04	<b>0.49</b>	-0.18	<b>0.56</b>
17 Seeks to dominate me	-0.17	<b>0.54</b>	-0.16	<b>0.48</b>
19 Wants to change me in big ways	-0.14	<b>0.55</b>	-0.15	<b>0.65</b>
20 Tends to control everything I do	-0.05	<b>0.54</b>	-0.02	<b>0.45</b>
22 Is critical of me in private	0.04	<b>0.56</b>	<0.01	<b>0.36</b>

Table 5 – Comparison of IBM-V Care and Control sub-scale scores with relevant indicators of quality of intimate partner relationship in studies 2006 and 2010

	Control sub-scale		Care sub-scale	
	Study 2006 Mean (95%CI)	Study 2010 Mean (95%CI)	Study 2006 Mean (95%CI)	Study 2010 Mean (95%CI)
Common mental disorders*				
• No	10.5 (9.7-11.3)	8.5 (7.9-9.1)	32.3 (31.8-32.8)	32.3 (31.9-32.7)
• Yes	12.7 (11.2-14.1)	11.7 (10.5-12.9)	30.1 (29.0-31.2)	30.7 (29.7-31.8)
Experience intimate physical violence				
• No	10.8 (10.1-12.6)	9.1 (8.6-9.8)	31.9 (31.4-32.4)	32.1 (31.7-32.4)
• Yes	18.9 (12.9-24.9)	15.5 (11.7-19.3)	23.5 (18.3-28.7)	27.0 (22.0-32.0)
Feel fear of husband				
• No	10.5 (9.7-11.2)	9.1 (8.5-9.6)	31.8 (31.2-32.3)	32.2 (31.8-32.6)
• Yes	14.3 (12.1-16.4)	14.2 (11.4-17.0)	30.9 (29.7-32.2)	27.4 (24.3-30.4)
Talk to husband when having worries				
• No	10.5 (9.8-11.1)	10.6 (9.0-12.1)	30.1 (29.0-31.1)	30.2 (28.7-31.6)
• Yes	14.2 (12.1-16.4)	9.1 (8.5-9.8)	32.3 (31.8-32.8)	32.3 (31.9-32.7)
Anticipating or having husband's participation in daytime infant care				
• No	10.9 (10.0-11.0)	9.5 (8.4-10.6)	31.2 (30.4-32.0)	31.7 (30.9-32.3)
• Yes	11.3 (10.3-12.3)	9.4 (8.7-10.1)	32.0 (31.4-32.7)	31.9 (31.4-32.5)
Anticipating or having husband's participation in nighttime infant care				
• No	11.1 (10.1-12.1)	9.4 (8.6-10.1)	31.4 (30.7-32.1)	31.8 (31.2-32.4)
• Yes	11.2 (10.2-12.3)	9.5 (8.6-10.4)	31.9 (31.1-32.6)	31.9 (31.4-32.6)
Husband participates in household work				
• No	11.1 (10.1-12.1)	9.3 (8.3-10.2)	32.3 (30.5-32.1)	31.9 (31.2-32.5)
• Yes	11.2 (10.2-12.2)	9.5 (8.7-10.3)	32.0 (31.2-32.6)	31.8 (31.2-32.4)

\*Common mental disorders: having any of depression, generalised anxiety, or panic disorders diagnosed by SCID modules in Study 2006 or an EPDS-V score  $\geq 4$  in study 2010.

**Commented [JF2]:** Thach this seems unexpected, and opposite to the 2010 finding, what do you think it might mean?

### Appendix 1 Intimate Bond Measure – Vietnamese Version

Chị hãy nghĩ đến mối quan hệ giữa chị và chồng chị cũng như thái độ và hành vi của anh đối với chị. Xin cho biết lựa chọn mô tả đúng nhất mối quan hệ của anh chị với mỗi nhận định dưới đây:

	Đúng	Tương đối đúng	Đôi khi đúng	Không đúng
1 Chồng chị <b>rất chu đáo</b> với chị	[ ] 1	[ ] 2	[ ] 3	[ ] 4
2 Chồng chị muốn chị <b>đứng về phía anh ấy</b> trong cuộc tranh luận (cả giữa hai người và với người khác)	[ ] 1	[ ] 2	[ ] 3	[ ] 4
3 Chồng chị muốn biết <b>chính xác</b> chị <b>đang làm gì</b> và <b>đang ở đâu</b>	[ ] 1	[ ] 2	[ ] 3	[ ] 4
4 Chồng chị là người <b>bạn đời tốt</b>	[ ] 1	[ ] 2	[ ] 3	[ ] 4
5 Chồng chị <b>rất tinh cảm</b> với chị	[ ] 1	[ ] 2	[ ] 3	[ ] 4
6 Chồng chị <b>bị tổn thương</b> nếu chị <b>không đồng ý quan điểm</b> của anh ấy	[ ] 1	[ ] 2	[ ] 3	[ ] 4
7 Đường như chồng chị <b>muốn</b> và <b>cố gắng thay đổi</b> chị	[ ] 1	[ ] 2	[ ] 3	[ ] 4
8 Chồng chị <b>hoàn toàn</b> tin tưởng chị	[ ] 1	[ ] 2	[ ] 3	[ ] 4
9 Chồng chị hay <b>soi mói</b> chị kể cả những <b>việc vặt vãnh</b>	[ ] 1	[ ] 2	[ ] 3	[ ] 4
10 Chồng chị <b>hiểu</b> những vấn đề và lo lắng của chị	[ ] 1	[ ] 2	[ ] 3	[ ] 4
11 Chồng chị có vẻ <b>thích sai khiến</b> chị	[ ] 1	[ ] 2	[ ] 3	[ ] 4
12 Chồng chị <b>khăng khăng</b> bắt chị làm <b>chính xác</b> những gì mà anh ấy <b>yêu cầu</b>	[ ] 1	[ ] 2	[ ] 3	[ ] 4
13 Chồng chị <b>nhẹ nhàng</b> và <b>chu đáo</b>	[ ] 1	[ ] 2	[ ] 3	[ ] 4
14 Chồng chị khiến chị cảm thấy <b>mình cần thiết đối với anh ấy</b>	[ ] 1	[ ] 2	[ ] 3	[ ] 4
15 Chồng chị <b>muốn</b> chị <b>thay đổi một chút</b>	[ ] 1	[ ] 2	[ ] 3	[ ] 4
16 Chồng chị <b>rất yêu</b> chị	[ ] 1	[ ] 2	[ ] 3	[ ] 4
17 Chồng chị <b>tim cách chế ngự</b> chị	[ ] 1	[ ] 2	[ ] 3	[ ] 4
18 Chồng chị là một <b>người vui vẻ</b>	[ ] 1	[ ] 2	[ ] 3	[ ] 4
19 Chồng chị <b>muốn thay đổi</b> chị <b>hiều</b>	[ ] 1	[ ] 2	[ ] 3	[ ] 4
20 Chồng chị <b>hay kiểm soát</b> tất cả những việc chị làm	[ ] 1	[ ] 2	[ ] 3	[ ] 4
21 Chồng chị <b>thể hiện sự đánh giá cao</b> với tất cả những việc chị làm	[ ] 1	[ ] 2	[ ] 3	[ ] 4
22 Chồng chị <b>chỉ trích</b> chị ở nơi riêng tư	[ ] 1	[ ] 2	[ ] 3	[ ] 4
23 Chồng chị <b>hiền lành và tử tế</b> với chị	[ ] 1	[ ] 2	[ ] 3	[ ] 4
24 Chồng chị nói với chị bằng giọng <b>ám áp</b> và <b>thân thiện</b>	[ ] 1	[ ] 2	[ ] 3	[ ] 4