

本論文中での使用尺度は、著作権者からのインターネット公表許諾が得られなかったため、東京大学学術機関リポジトリ掲載にあたっては、以下のページの一部を非公開としております。

非公開箇所のあるページ：

pp. 18-19

p. 32

pp. 50-51

pp. 99-100

pp. 102-103

**Marital Violence and Access to Health Care:
How Does Socioeconomic Status Affect the Association?**

配偶者間暴力と医療アクセス：
社会経済的要因の交互作用に焦点を当てて

梅田麻希

CONTENTS

Abstract		1
Introduction		
1.	Background	2
2.	Purpose and structure of the thesis	4
Section I	Development of the Japanese Version of Revised Conflict Tactics Scales Short Form	
Chapter I	Measurement of Intimate Partner Violence	
1.1	Scales of intimate partner violence in screening and research	9
1.2	The Revised Conflict Tactics Scales (CTS2)	10
1.3	The Revised Conflict Tactics Scales Short Form (CTS2SF)	12
1.4	Other scales for use in research	13
1.5	Aims of the study	15
Chapter II	Methods	
2.1	Translation of the CTS2SF	16
2.2	Internet survey on the reliability and validity of the Japanese version of CTS2SF (J-CTS2SF)	16
Chapter III	Results	
3.1	Sample characteristics and score distribution of the J-CTS2SF	24
3.2	Reliability of the J-CTS2SF	27
3.3	Validity of the J-CTS2SF	28
Chapter IV	Discussion	33
Section II	Secondary Analysis on the Japanese Study of Stratification, Health, Income, and Neighborhood (J-SHINE)	
Chapter V	Marital Violence and Health Care Utilization	
5.1	Marital violence and health care	38
5.2	Effect of socioeconomic conditions on the health care utilization in marital violence	40

5.3	Roles of psychosocial resources in care-seeking in marital violence	45
5.4	Aims of study and research hypotheses	46
Chapter VI Methods		
6.1	Study design and sample	49
6.2	Measures	50
6.3	Statistical analysis	57
Chapter VII Results		
7.1	Prevalence and socio-demographic correlates of health care utilization and marital violence	63
7.2	Association of marital violence with health care utilization	66
7.3	Moderating effects of socioeconomic conditions on the association between marital violence and health care utilization	70
7.4	The role of psychosocial resources in the moderation of association between marital violence and health care utilization	77
Chapter VIII Discussion		
8.1	Marital violence and health care utilization	87
8.2	Effect of socioeconomic conditions on the association between marital violence and health care utilization	87
8.3	Gender difference	90
8.4	Strengths and limitations	92
Conclusion		96
List of tables		
Table 1.	Sample characteristics of the internet survey	25
Table 2.	Distributions of the J-CTS2SF items at the first survey	26
Table 3.	Cronbach's alpha coefficients for the subscales of J-CTS2SF at the first survey	27
Table 4.	Yule's Q statistics for test-retest reliability of the J-CTS2SF between the first and the second survey	28

Table 5.	Logistic regression on the cross-sectional association of the J-CTS2SF with the BAQ	29
Table 6.	Logistic regression on the cross-sectional association of the J-CTS2SF with the VAW	29
Table 7.	Generalized Estimating Equation on the association between the J-CTS2SF at the first survey and K6 at the second survey	30
Table 8.	Eigenvalues of the reduced correlation matrix of the J-CTS2SF based on the data from the first survey	31
Table 9.	Rotated factor pattern of the J-CTS2SF based on the data from the first survey	32
Table 10.	Characteristics of respondents who were in marital relationships by health care utilization and by marital violence in the past 12 months	64
Table 11.	Associations of marital violence and socioeconomic conditions with health care utilization in the past 12 months in the total sample	68
Table 12.	Associations of marital violence and socioeconomic conditions with health care utilization in the past 12 months in the male and female samples	69
Table 13.	Moderating effect of socioeconomic conditions on the association between marital violence and health care utilization in the past 12 months in the total sample	73
Table 14.	Moderating effect of socioeconomic conditions on the association between marital violence and health care utilization in the male and female samples	75
Table 15.	Effect of psychosocial resources on the moderating effect of socioeconomic conditions on the association between marital violence and health care utilization in the total sample	79
Table 16.	Effect of psychosocial resources on the moderating effect of socioeconomic conditions on the association between marital violence and health care utilization in men	81
Table 17.	Effect of psychosocial resources on the moderating effect of socioeconomic conditions on the association between marital violence and health care utilization in women	83
Table 18.	Indirect effect of the moderated association between marital violence and health care utilization by socioeconomic conditions through psychosocial resources in the total sample	86

List of figures

Figure 1.	Structure of the thesis	6
Figure 2.	Conceptual frameworks for key findings	7
Figure 3.	Indirect effect of the moderated association between marital violence and health care utilization by socioeconomic conditions (XW) through psychosocial resources (M)	61

Appendixes

Appendix A.	The Revised Conflict Tactic Scales Short Form (the original English version)	99
Appendix B.	Five subscales of the CTS2SF and corresponding items	101
Appendix C.	The Japanese version of Revised Conflict Tactic Scales Short Form	102
Appendix D.	Association between socioeconomic conditions and health care utilization among those who experienced marital violence in the past 12 months in the total, male, and female samples	104
Appendix E.	Indirect effect of the moderated association between marital violence and health care utilization by socioeconomic conditions through psychosocial resources in men	105
Appendix F.	Indirect effect of the moderated association between marital violence and health care utilization by socioeconomic conditions through psychosocial resources in women	106
Appendix G.	Prevalence of perpetration/victimization status by types of violence among men and women who experienced marital violence in the past 12 months	107
Appendix H.	Association between victimization/perpetration status and health care utilization in men and women	108

Reference		109
------------------	--	-----

ABSTRACT

This study exploratorily examined the socioeconomic conditions that affect the health care utilization in marital violence. As a part of this study, the scales that measure intimate partner violence (IPV), the Revised Conflict Tactics Scales Short Form (CTS2SF), was translated into Japanese and its reliability and validity were examined by an internet survey. The internal consistency of the Japanese version of CTS2 Short Form (J-CTS2SF) was generally low because of the small number of items that measure different levels/types of IPV. The test-retest reliability was high, and the concurrent validity indicated the good ability of J-CTS2SF to capture the incidences of IPV. Secondary analysis was conducted on the data derived from the Japanese Study of Stratification, Health, Income, and Neighborhood (J-SHINE). Multiple logistic regression and mediation analysis were conducted on the data of 2,984 male and female community residents aged 25 to 50 years. The likelihood of using health care among those experiencing marital violence was 1.36 higher than that among those without marital violence ($p = 0.002$). The likelihood of health care utilization in the presence of marital violence to the absence of marital violence was lower among those out of employment compared to among those in employment at the 0.10 level ($OR = 0.66$, $p = 0.086$). Mastery, health literacy, instrumental support, and informational support did not account for the moderation by the socioeconomic conditions. Gender difference was found in the moderating effect of employment. Factors that explain the moderating effect of employment and its gender difference need to be explored in future studies.

INTRODUCTION

1. Background

Intimate partner violence (IPV) in a marital relationship, “marital violence”, is an intentional act that harms the psychological, physical, sexual and social well-being of his/her spouse (Saltzman, Fanslow, McMahon, & Shelley, 2002). It includes physical assault, psychological aggression, threat of harm, and sexual coercion. The prevalence of IPV varies across countries: the life time prevalence of IPV against women ranged from 15% to 71% in a multinational study across ten countries (García-Moreno, Jansen, Ellsberg, Heise, & Watts, 2006), which implies the complex nature of causes, where individual and interpersonal properties interacts with social norms and structures to increase the risk of IPV (Rani, Bonu, & Diop-Sidibe, 2004; Tang & Lai, 2008; Boyle, Georgiades, Cullen, & Racine, 2009; Mogford, 2011). Negative consequences of IPV were well documented covering all areas of women, men, and children’s lives; increased risk for injury and homicide, chronic physical symptoms, negative pregnancy outcomes, depression, substance abuse, suicidal thoughts/attempts, child maltreatment, unemployment, and social isolation internationally (Campbell & Lewandowski, 1997; Campbell, 2002; Campbell et al., 2002; Staggs, Long, Mason, Krishnan, & Riger, 2007; Ellsberg, Jansen, Heise, Watts, & García-Moreno, 2008; Sarkar, 2008; Taylor, Guterma, Lee, & Rathouz, 2009) and in Japan (Yoshihama, Horrocks, & Kamano, 2007; Yoshihama, Horrocks, & Kamano, 2009; Fujiwara, Okuyama, & Izumi,

2010; Yoshihama, Horrocks, & Bybee, 2010). Because of the significant magnitude of IPV with serious health consequences, an international community including the Japanese government has clearly acknowledged that IPV is a public policy concern that is crucial for the health and human rights of their citizens (Krug, Dahlberg, Merey, Zwi, & Lozano, 2002; World Health Organization, 2005; Cabinet Office Government of Japan, 2011).

In Japan, the Act on the Prevention of Spousal Violence and the Protection of Victims was enforced in 2001, and national and local governments are obligated to implement the policies that enhance the prevention and identification of marital violence and the support for the victims (Cabinet Office Government of Japan, 2001). As the awareness on IPV is increasing since the implementation of the act, the number of IPV reports to the police has been increasing from 3,608 in 2001 to 34,329 in 2012. Seventy three percent of the reports were on marital violence and the police intervened in one third of them under the act. In 2011, 2,424 people were arrested for IPV. The majority of charges, 2,117, were for physical assault and injury, and 46 cases were for murder (National Police Agency Japan, 2012).

National survey in Japan found that 32.9% of women and 18.3% of men experienced physical, psychological, and/or sexual violence repeatedly by their spouses or ex-spouses in their lifetime, and over 70% of them reported that the violence started after their marriage (Cabinet office Government of Japan, 2012a). A marital relationship is often accompanied by cohabitation, sharing of financial properties, dependency on partner's income, having

children, and public decency against divorce. These properties of marital relationships may develop unique courses of IPV and reactions to it (Kurz, 1989; Cabinet Office Government of Japan, 2012a), while the level of violence and its health consequences may not necessarily be more severe in marital violence than in non-marital violence (Bergman & Brismar, 1991; Hathaway et al., 2000; Vest, Catlin, Chen, & Brownson, 2002; Cabinet Office Government of Japan, 2012a).

The large body of existing research examined the risks and consequences of IPV and identified socioeconomic conditions as its key determinants (Andersson, Ho-Foster, Mitchell, Scheepers, & Goldstein, 2007; Obi & Ozumba, 2007; Stöckl, Heise, & Watts, 2011; Koenig, Stephenson, Ahmed, Jejeebhoy, & Campbell, 2006; Shobe & Dienemann, 2007; Ackerson, Kawachi, Barbeau, & Subramanian, 2008). On the other hand, fewer studies were conducted on the effect of socioeconomic condition on the problem-solving behaviors of those experiencing marital violence, especially in the context of health care utilization. In addition, the previous studies were heavily relied on the data collected from female victims, and how gender would effect on their problem-solving behaviors had been unexplored.

2. Purpose and structure of the thesis

The purpose of this study is to examine the socioeconomic conditions that affect the health care utilization in marital violence. To measure incidents of marital violence among men and women, the author and her supervisor developed the Japanese version of scales that

measure IPV perpetration and victimization of both genders, and conducted an internet survey to examine its reliability and validity. The developed scale was applied in a multidisciplinary community survey that collected data from male and female community residents in Japan. The author took part in the development of questionnaire of this survey and conducted secondary analysis on the data to examine how socioeconomic conditions interact with marital violence and affect the use of health care.

The structure of this thesis is illustrated in Figure 1. The thesis consists of two sections. The first section is on the development of the Japanese Version of Revised Conflict Tactics Scales Short Form (J-CTS2SF). This section reports the results of scale translation and internet survey on its reliability and validity. The second section is on the secondary analysis of the Japanese Study of Stratification, Health, Income, and Neighborhood (J-SHINE), in which the J-CTS2SF was used to measure marital violence. This section reports the following major findings: 1) the association between marital violence and health care utilization, 2) the moderating effects of socioeconomic conditions on the association, and 3) the mechanisms of the moderating effects of socioeconomic conditions (Figure 2). After these sections, I will conclude the thesis with the implication for future research and public health practices, with the special focus on the application of the J-CTS2SF in epidemiological studies.

Figure 1. Structure of the thesis

SECTION 1: Scale Development

1. Translation of the Japanese Version of Revised Conflict Tactics Scales Short Form (J-CTS2SF) : Appendix C



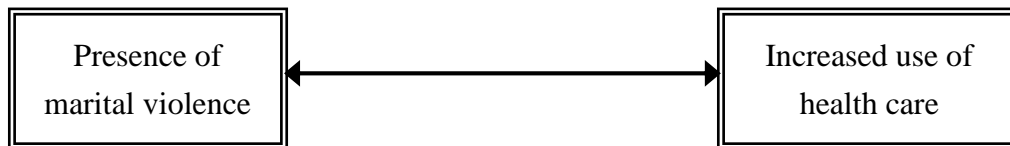
2. Internet Survey
Purpose: To examine the reliability and validity of the J-CTS2SF
Participants: Registrants of an internet survey company in Japan
Men and women aged 18 years' old or older (N = 393)
Results: 1) Distribution of the J-CTS2SF items: Table 2
2) Reliability: Table 3 & Table 4
3) Validity: Table 5 to Table 9

SECTION 2: Secondary Analysis

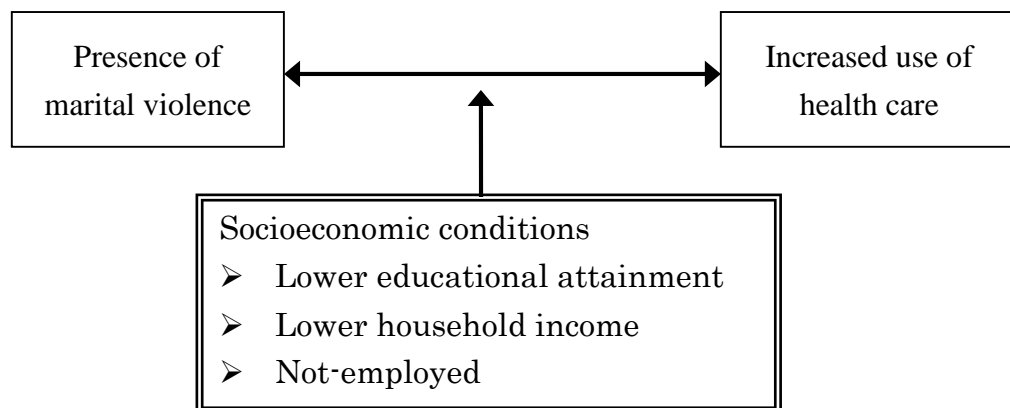
3. Secondary analysis on the Japanese Study of Stratification, Health, Income, and Neighborhood
Purpose: To examine the moderating effect of socioeconomic conditions on the association between marital violence and health care utilization
Participants: Random community sample from 4 municipalities in Kanto area, Japan
Men and women aged 20 to 50 years' old in marital relationships (N = 2,984)
Results: 1) Association between marital violence and health care utilization : Table 11 (total sample) & Table 12 (gender sub-groups)
2) Moderating effect of socioeconomic conditions on the association
(1) Interaction between marital violence and socioeconomic conditions : Table 13 (total sample) & Table 14 (gender sub-groups)
(2) Sub-group analysis among those who experienced marital violence : Appendix D
3) Mechanisms of moderating effects (the effect of psychosocial resources on the moderation)
(1) Hierarchical logistic regression : Table 15 (total sample) & Table 16 & 17 (gender sub-groups)
(2) Mediation analysis : Table 18 (total sample) & Appendix E & F (gender sub-groups)

Figure 2. Conceptual frameworks for key findings

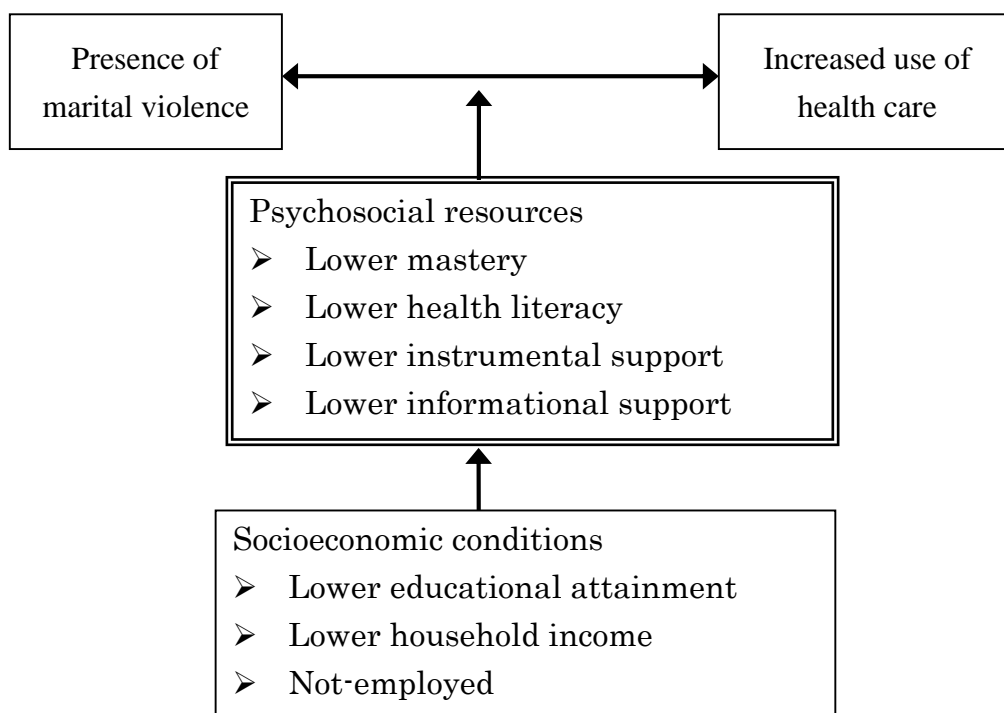
1. Association between marital violence and health care utilization



2. Moderating effect of socioeconomic status on the association between marital violence and health care utilization



3. Indirect effect of moderation through psychosocial resources



SECTION I

Development of the Japanese Version of Revised Conflict Tactics Scales Short Form

(J-CTS2SF)

Chapter I

Measurement of Intimate Partner Violence

1. 1 Scales of intimate partner violence in screening and research

About thirty scales for screening victims of intimate partner violence (IPV) were developed in English for the use in healthcare settings, and some of them were used for measuring IPV in research (Gerberding, Falk, Arias, & Hammond, 2007). Aiming at screening current IPV cases, these scales focusing on on-going IPV victimization, mainly that of women (Parker & McFarlane, 1991; Brown, Lent, Schmidt, & Sas, 2000). Some screening instruments have fewer items using all-inclusive wordings, such as being “physically hurt” or “abused emotionally”, so that medical staffs and community workers can easily remember and administer (Sherin, Sinacore, Li, Zitter, & Shakil, 1998; Brown et al., 2000).

On the other hand, scales used in research often need to measure IPV incidents in a considerable time interval regardless of the presence or absence of current threat and violence at the time of data collection. A shorter referent period would make the prevalence distribution extremely screwed for conducting statistical analysis especially in the case of physical and sexual violence (Straus, Hamby, & Warren, 2003). In addition, respondents’ subjective definitions of violence, which are largely influenced by personal beliefs and collective norms of the time, make it difficult to compare the prevalence and correlates of IPV among different groups and eras. The scales that measure specific acts or incidents related to

IPV are preferable in such cases.

1.2 The Revised Conflict Tactics Scales (CTS2)

The Revised Conflict Tactics Scales (CTS2) has been the dominant instrument that measures IPV related acts and events in research, which has been validated in over 17 countries including Japan (Straus, 1979; Straus, Hamby, Boney-McCoy, & Sugarman, 1996; Ishii, Asukai, Kimura, Nagasue, & Kurosaki, 2002; Moraes & Reichenheim, 2002; Straus et al., 2003; Straus, 2004). This instrument was designed for community surveys and clinical evaluation studies to assess the frequency of specific acts/events (conflict tactics) during couple conflicts in the past twelve months. The CTS2 has five factors, each of which corresponds to each of the five sub-scales: negotiation, psychological aggression, physical assault, injury and sexual coercion. Each subscale has two different levels or types of conflict tactics; cognitive and emotional negotiation tactics (6 items), minor and severe psychological aggression (8 items), minor and severe physical assault (12 items), minor and severe injury (6 items), and minor and severe sexual coercion (7 items). Those items are asked for the acts of respondents (39 items) and those of partners (39 items), which makes seventy eight items in total.

One of the notable features of CTS2 is to assess the perpetration and victimization of both respondents and their partners and can be used to measure men-to-women and women-to-men violence. In spite that the items ask highly deviant behaviors, community surveys that

used the CTS2 items achieved typical response rates in other community surveys (Straus et al., 2003). The acceptability of CTS2 is achieved largely by its conceptual framework, where acts/events measured by the scales were conceptualized as the ways of conflict resolution and disagreement that are inevitable in any human relationship (Straus et al., 2003). Another characteristic of the CTS2 is that it asks predefined sets of acts/events. The list of specific acts/events is expected to assist respondents with recalling the events that could be forgotten in open-ended questions that ask the personally-defined violence (Straus et al., 2003). Major criticism against the CTS2 was the lack of assessment on the context and meaning of violence, such as who initiated violence, how threatening the violence was to the victim, and the sequence of events. Supplemental instruments should be included to assess these aspects of IPV (Straus et al., 2003).

The CTS2 was translated into Japanese, and its reliability and validity were examined in a Japanese female population (Ishii et al., 2002). The Japanese version of CTS2 was found to high internal consistency (Cronbach's $\alpha = 0.85-0.95$) and high test-retest reliability (correlation coefficient = $0.76-0.94$) (Ishii et al., 2002). The evidence for good validity was also found: the mean score of CTS2 was higher among women in shelters than women without current IPV victimization ($p < 0.001$). The item-clusters of the Japanese version generally corresponded to each of the five original subscales (Ishii et al., 2002). Ishii et al. (2003) developed a screening tool that has 15 items that measure IPV victimization from

the Japanese version of CTS2, Domestic Violence Screening Inventory (DVSI). This instrument assesses physical, psychological, and sexual IPV victimization among men and women, but it was validated only in women.

1.3 The Revised Conflict Tactics Scales Short Form (CTS2SF)

The authors of original scales developed a shorter version of the CTS2, the Revised Conflict Tactics Scales Short Form (CTS2SF), for use in surveys where only a limited amount of time was available for investigating violence in couples (Straus & Douglas, 2004) (appendix A). The CTS2SF consists of twenty items, ten items each for the acts of respondents and those of their partners. In developing CTS2SF out of the full CTS2, two items were selected from each of the five subscales on the bases of correlation with the total scale score or higher prevalence rate. Each of the two items in the subscale corresponds to a different type/level; either minor or severe, or cognitive or emotional (negotiation) (appendix B). The items of the original CTS2 measure one specific act/event. However, constructing each level/type of subscales with only one specific act/event would most likely result in low detective power. Thus, the acts/events in unselected items were added to the selected items to increase sensitivity, although double-barreled questions should be avoided in many other cases.

The CTS2SF can be scored in different ways depending on research objectives. All items were based on an eight-point scale (1 = *once*, 2 = *twice*, 3 = *3-5 times*, 4 = *6-10 times*, 5

= 11-20 times, 6= more than 20 times, 7 = not in the past year, but it did happen before, and 8 = never happened). The most common scoring method in epidemiological studies is to create a dummy variable by assigning a score of one in case of a respondent having experienced the described act once or more times, and a score of zero if no instances were experienced. A composite scale, such as “physical and/or psychological violence”, can be created by combining subscales; assigning a score of one if respondents experienced any one of the defined types of acts/events more than once, and a score of zero if they did not experience any. In order to assess the frequency of each act, response categories can be converted to the midpoint of the range of scores. Frequency-scores across subscales are not intended to be summed to obtain a total score (Straus et al., 2004).

1.4 Other scales for use in research

The Index of Spouse Abuse (ISA) was another scale which was often used in research. ISA was originally developed for monitoring and evaluating treatment progress in clinical settings (Hudson & McIntosh, 1981). It consists of thirty items that measure the magnitude of physical and nonphysical abuse as perceived by female victims. The strength of the ISA is that it measures controlling or abusive behaviors that often co-exist with psychological and physical aggression in couples, such as economic abuse, restriction of social contacts, and extreme jealousy. The ISA was translated into Japanese, and validated in Japanese pregnant women (Kataoka, Yajyu, Eto, & Horiuchi, 2005). Another scale in research

is the Severity of Violence Against Women Scale (SVAWS) (Marshall, 1992). The SVAWS focuses on the severity or impact of violence against women. It provides the list of forty six physically threatening acts of men against women. Each item has its' own weight to calculate the severity of female victimization in total. This instrument can be administered to men for assessing their perpetration of violence against female partners. Women's Experience with Battering (WEB) is a scale that inquires subjective experience of female victims rather than IPV related incidences or behaviors (Smith, Tessaro, & Earp, 1995; Smith, Smith, & Earp, 1999; Coker, Pope, Smith, Sanderson, & Hussey, 2001). This ten-item questionnaire measures the following five areas of women's experience with IPV: perceived threat, managing, altered identity, entrapment, and disempowerment. This instrument can be administered to both men and women by making the wordings gender-neutral, but it has not been validated with women-to-men or same-sex violence that may contain different subjective experience from men-to-women violence.

The CTS2SF have advantages over these other scales in use for community surveys. First, the CTS2SF is a short form of the CTS2, the most widely used international instrument. Many studies that adopted the CTS2 arbitrary chose and combined a few items from the full scales so that they could measure IPV with fewer items than the full CTS2. However, these measurements did not have information on the validity, and their accuracy was unknown. Second, the CTS2SF can reduce refusal and negative reactions to the survey, because it

presents the items in the context of couple conflicts, rather than abuse. This feature of the CTS2SF will make a great contribution especially to a large-scale multidisciplinary study. Respondents in such studies may not be well-motivated to answer the questions that ask highly personal experiences, compared to those in clinical studies. Third, the CTS2SF assesses both perpetration and victimization in couples, which enables researchers to inquire the interactive process of IPV and the factors associated with perpetration. Fourth, CTS2SF was one of the few scales that were validated for assessing both male-to-female and female-to-male violence. Measuring IPV experienced of both men and women is a ground for gender comparison to examine whether there will be a factor that makes a particular gender more vulnerable to IPV.

1.5 Aims of the study

The aim of this part of the study is to develop the Japanese version of CTS2SF (J-CTS2SF). The original English version was translated by the author and her supervisor, and the internet survey was conducted to examine the reliability and validity in Japanese men and women.

Chapter II

Methods

2.1 Translation of the CTS2SF

The author and her supervisor translated the original English version of CTS2SF into Japanese with the approval of the original author and the publisher of CTS2SF. The Japanese version was back-translated by an independent translator, and sent to the original author to assess the equivalence with the original English scale in terms of literal and general meaning. Consequently, the items on severe psychological aggression (No. 13 and No. 14) were modified (appendix C).

2.2 Internet survey on the reliability and validity of the Japanese version of CTS2SF (J-CTS2SF)

The reliability and validity of J-CTS2SF were tested using the data from the two waves of internet survey. The reliability was examined by internal consistency and test-retest reliability. Two types of validity were examined: criterion-related validity with the Buss-Perry Aggression Questionnaire (Buss & Perry, 1992; Ando et al., 1999), the Violence Against Women Screen (Kataoka, 2005), and Kessler 6 (Kessler et al., 2002), and construct validity by factor analysis.

1) Participants and data collection

Two waves of internet surveys were conducted in October and in November 2011 to

examine the reliability and validity of the J-CTS2SF. Invitations were sent via e-mails to the registrants of an internet company over the age of 18 years. The survey company had a stock of over 1,500,000 registrants, who were eligible for internet surveys (Macromill, 2011). The registrants were those who lived in Japan, 43% of whom resided in the Kanto area. There was no age limit in registration; over 50 % of them were aged 30 to 49 years, and those below 19 and above 60 years were less than 10 % of the total. The proportion of men/women and married/unmarried were identical to the Japanese national population (Macromill, 2011; Ministry of Internal Affairs and Communications Japan, 2011). The proportion of full-time employees was less among the registrants of survey company compared to nationally representative samples in other surveys, although household income did not differ considerably (Macromill, 2012).

Those who agreed to participate in the current study filled in a questionnaire on the company's webpage. The survey was kept open until 100 respondents were obtained for each of the marital status categories by gender (married and not-married by male and female).

Those who had never been in an intimate relationship were screened out at the time of recruitment. As a result, 412 respondents were included in the first survey (103 respondents for each category of each gender). Four weeks after the first survey, invitations to the second survey were sent to the respondents of the first survey. The second survey was open for 5 days, and obtained data from 393 respondents (retention rate = 95.4%). Analysis was

conducted on the data of those who responded to the first and the second surveys. The participation in this study was completely voluntary, and anonymity and confidentiality were assured. The Research Ethics Committee of the University Tokyo Graduate School of Medicine approved the research procedure of this study (No. 3403).

2) Measurement

(1) The J-CTS2SF

The full-set of J-CTS2SF was administered to measure the types and frequency of IPV related acts of respondents and their partners in the past twelve months (Straus et al., 2004). Items on negotiation tactics asked the frequency of negotiation and compromise (cognitive) and respect and care (emotional) by the following two questions:

[REDACTED]

[REDACTED]

[REDACTED].

Psychological aggression items included insult, swore, and shout (minor) and threat (severe):

[REDACTED]

[REDACTED]

[REDACTED].

Physical assault items measured push, shove, and slap (minor) and punch, kick and beating (severe):

[REDACTED]

. Sexual coercion

items measures forced sex without (minor) and with physical forces (severe):

. Injury included sprain, bruise,

small cut, and pain (minor) and injuries that required medical treatment (severe):

. All items were scored on an eight-point scale

(1 = *once*, 2 = *twice*, 3 = *3-5 times*, 4 = *6-10 times*, 5 = *11-20 times*, 6 = *more than 20 times*, 7

= *not in the past year, but it did happen before*, and 8 = *never happened*). The acts conducted

by respondents and resulting injury of the partner was defined “perpetration” and the acts

conducted by their partners and resulting injury of the respondents was defined as

victimization.

(2) The Buss-Perry Aggression Questionnaire (BAQ)

The Japanese version of BAQ measures personal traits of aggression with 24 items on a five-point Likert scale (1 = *strongly disagree* to 5 = *strongly agree*) (Buss & Perry, 1992; Ando et al., 1999). It has four sub-scales; anger, hostility, physical aggression, and verbal aggression. The total scores of sub-scales were summed to yield a general total score from 24 to 120. A higher score means a higher degree of aggression.

(3) Violence Against Women (VAW) Screen

The VAW is a Japanese screening instrument to detect IPV victimization among women in a prenatal period (Kataoka, 2005). While the VAW was validated in a female prenatal population, its items were assumed to be applicable to general female and male population without the items of pregnant related experiences or gender-laden incidences as in other validated screening instruments. VAW consists of seven items on the incidences of physical violence (2 items), psychological violence (6 items), and sexual violence (1 item) with the three response options on the frequency of incidents (1 = *never*, 2 = *sometimes*, and 3 = *often*). Each score was summed into a total score and the total score of 9 or higher was defined as having IPV victimization.

(4) Kessler 6 (K6)

K6 assesses psychological distress that is not specific to certain types of mental disorders (Kessler et al., 2002). It asks the frequency of listed psychological states in the past thirty days with six items on a five-point scale (0 = *none of the time*, 1 = *a little of the time*, 2 = *some of the time*, 3 = *most of the time*, and 4 = *all of the time*). The total score of 13 and above is defined as having a serious mental disorder (Kessler et al., 2003). K6 was validated in a Japanese population and showed good concordance with the diagnosis by Composite International Diagnostic Interview on mood and anxiety disorders (Furukawa et al., 2008).

(5) Demographic variables

In addition to gender and marital status, the following variables were measured and included in the analysis as control variables: age (*18-29 years' old, 30-39 years' old, 40-49 years' old, and 50 years' old or older*), educational attainment (*high school, college, and university*), employment status (*employed and not employed*), and having any children (*none, and one or more*). Household income was measured by ten income categories, and divided into quartile (*low, low-average, average-high, and high*).

3) Statistical analysis

Reliability was assessed by internal consistency and test-retest reliability. Cronbach's alpha coefficients were computed using the data from the first survey for each sub-scale by perpetration/victimization status: perpetration items (2 items), victimization items (2 items), and perpetration and victimization items combined (4 items). Two types of alpha were calculated: raw alpha based on covariance of items and standardized alpha based on correlation of items. When the variances of the items vary widely, a coefficient of raw alpha will be low. Test-retest reliability was assessed by Yule's Q in order to avoid the underestimation of the coefficients by the low prevalence of IPV incidences. Yule's Q shows the agreement of assessment between the two waves of survey: 0 = *completely by chance* to 1 = *completely in agreement*. In the second survey, the J-CTS2SF was assessed by looking back at the past twelve months, from the time of the first survey, to make the duration of assessment comparative between the two surveys. Dummy variables were created by

assigning a score of “one” to the report of one or more instances, and “zero” to no instances, which was the scoring methods for the succeeding secondary analysis on the J-SHINE. Intra Class Correlation Coefficients were not calculated because of the highly skewed distribution of the J-CTS2SF.

Criterion-related validity was examined by the association of the J-CTS2SF items on respondent’s acts with aggression (BAQ), and partner’s acts with IPV victimization (VAW). Respondents’ acts of psychological, physical and sexual violence and injury (perpetration) were hypothesized to have positive associations with BAQ scores, while negotiation was expected to have negative association. Partners’ acts of psychological, physical, and sexual violence and injury (victimization) were hypothesized to have positive associations with being positive for IPV victimization by VAW screening, while negotiation was assumed to have negative associations. Negotiation tactics, such as discussion and positive affect in communication, were expected to have an inverse association with IPV, because they were the means of settling a disagreement in couples (Straus et al., 1996) and reduced the incidences of severe physical assault and injury (Moraes et al., 2002). Logistic regression analyses were conducted, having dichotomous variables of CTS2SF subscales (0 = *never*, 1 = *one or more instances*) as dependent variables. The BAQ, for which no cut-off point was available to define the level of aggression, was entered in the logistic models as a continuous variable. VAW was dichotomized at the cut-off points of 9 as a criterion of victimization (Kataoka,

2005). Criterion-related validity was also tested on the association between the J-CTS2SF at the first survey and psychological distress measured by K6 at the second survey. For this analysis, dichotomous variables on “IPV perpetration and/or victimization” were created from the J-CTS2SF items. This scoring method was used in the succeeding secondary analysis. The responses to each item were dichotomized into “0” and “once or more times”, and having experienced any instances in the subscale was coded as having experienced IPV regardless of one’s perpetration/victimization status (0 = *neither by respondents nor their partners* and 1 = *one or more instances by respondents and/or their partners*). K6 was dichotomized at the cut-off point of 13 for having psychological distress at the level of severe mental disorders (Kessler et al., 2003). Greater psychological distress at the second survey was hypothesized to have positive associations with psychological, physical, and sexual violence and injury at the first survey regardless of respondents’ perpetration/victimization status, while negotiation was assumed to have a negative association. Generalized estimating equations models were applied to the longitudinal data from the first and the second surveys as to control psychological distress at the first survey. Construct validity was examined by exploratory factor analysis based on the maximum likelihood method with promax rotation.

Chapter III

Results

3.1 Sample characteristics and score distribution of the J-CTS2SF

The sample characteristics of internet survey are presented in table 1. The participants in this internet survey were tended to have higher educational attainment and lower household income compared to other studies in general populations (Kanbayashi, 2011). Table 2 shows the distributions of J-CTS2SF items based on the data from the first survey. Those who experienced physical assaults, injury, and sexual coercion were less than 10% in either case of perpetration and victimization. Severe items on psychological aggression and physical assault, and items on sexual coercion and injury were highly screwed, and the majority of respondents reported no instances on these items.

Table 1. Sample characteristics of the internet survey (N = 393)¹⁾

		Colum % ²⁾
Sex	Men	50.4
	Women	49.6
Marital status	Married	49.1
	Single	50.9
Age (year)	29 or younger	19.1
	30-39	28.5
	40-49	30.8
	50 or older	21.6
Education	High School	30.6
	College	24.4
	University	45.0
Employment	Employed	69.0
	Not-employed	31.0
Household income	Low	24.9
Mean (SD) = 3,920 (5,638) ³⁾	Low-average	21.4
	Average-high	29.0
	High	24.7
Having any children	Yes	44.0
	No	56.0

1) Those who participated in both the first and second survey.

2) Percentage of each demographic category to the total sample.

3) Medians of each of the 10 categories of household income were used to calculate mean and SD. (thousand yen)

Table 2. Distributions of the J-CTS2SF items at the first survey (N = 393)

			Prevalence (%) ¹⁾	Mean ²⁾	Median ²⁾	SD ²⁾	Skew ²⁾
Negotiation	Self	Cognitive	60.8	4.46	2	6.69	2.06
		Emotional	46.8	3.07	0	6.16	2.71
		Either	64.4				
	Partner	Cognitive	54.7	3.87	1	6.28	2.29
		Emotional	40.7	2.38	0	5.24	3.25
		Either	59.3				
Psychological	Perpetration	Mild	27.7	1.56	0	4.49	4.12
		Severe	4.6	0.15	0	1.36	16.10
		Either	28.0				
	Victimization	Mild	27.0	1.69	0	4.57	3.76
		Severe	4.6	0.13	0	1.31	17.54
		Either	27.0				
Physical	Perpetration	Mild	8.4	0.60	0	3.11	6.80
		Severe	3.3	0.28	0	2.34	9.76
		Either	8.9				
	Victimization	Mild	7.6	0.46	0	2.64	7.65
		Severe	2.3	0.17	0	1.83	12.95
		Either	7.9				
Injury	Perpetration	Mild	4.3	0.13	0	0.97	11.45
		Severe	0.8	0.02	0	0.23	15.00
		Either	4.3				
	Victimization	Mild	4.8	0.11	0	0.62	8.00
		Severe	1.0	0.03	0	0.42	17.66
		Either	5.1				
Sexual	Perpetration	Mild	1.3	0.02	0	0.14	10.41
		Severe	0.3	0.01	0	0.10	19.82
		Either	1.3				
	Victimization	Mild	5.1	0.26	0	1.68	10.61
		Severe	0.8	0.01	0	0.12	13.43
		Either	5.1				

1) Percentage of respondents who reported one or more incidences in the past 12 months.

2) Response categories were converted to frequency; 1 = once as 1, 2 = twice as 2, 3 = 3-5 times as 4, 4 = 6-10 times as 8, 5 = 11-20 times as 15, 6 = more than 20 times as 25, and others as 0.

3.2 Reliability of the J-CTS2SF

Cronbach's alpha coefficients were presented in table 3. Standardized alpha coefficients were considerably higher than those of raw alpha, which indicated the variances of the items varied widely. Generally, standardized alpha was higher for items that measured respondents' acts (0.52 - 0.85) than those of partners (0.18 – 0.83). The items on physical assault had the highest internal consistency (0.85 for respondents; 0.83 for partners), and those of sexual coercion had the lowest (0.52 for respondents; 0.18 for partners), followed by psychological aggression (0.53 for respondents; 0.47 for partners).

Table 3. Cronbach's alpha coefficients for the subscales of J-CTS2SF at the first survey

	Perpetration (Respondent's act)		Victimization (Partner's act)		Both combined	
	Raw	Standardized	Raw	Standardized	Raw	Standardized
Negotiation	0.67	0.67	0.68	0.69	0.85	0.85
Psychological	0.34	0.53	0.28	0.47	0.55	0.58
Physical	0.83	0.85	0.80	0.83	0.80	0.81
Injury	0.50	0.85	0.50	0.53	0.61	0.70
Sexual	0.50	0.52	0.03	0.18	0.03	0.45

Table 4 shows Yule's Q for test-retest reliability. Yule's Q coefficients were considerably high; the highest for physical assault by respondents (0.99) and the lowest for negotiation by respondents (0.78).

Table 4. Yule's Q statistics for test-retest reliability of the J-CTS2SF between the first and the second survey

	Perpetration (Respondent's act)	Victimization (Partner's act)	Both combined
	Coefficient (SE)	Coefficient (SE)	Coefficient (SE)
Negotiation	0.78 (0.05)	0.82 (0.04)	0.78 (0.05)
Psychological	0.91 (0.03)	0.90 (0.03)	0.89 (0.03)
Physical	0.99 (0.01)	0.96 (0.02)	0.98 (0.01)
Injury	0.98 (0.01)	0.97 (0.01)	0.97 (0.01)
Sexual	0.98 (0.02)	0.97 (0.02)	0.96 (0.02)

3.3 Validity of the J-CTS2SF

Higher BAQ was positively associated with psychological aggression (OR = 1.06, $p < 0.001$), physical assault (OR = 1.07, $p < 0.001$), and injury perpetration (OR = 1.07, $p = 0.001$) (table 5). IPV victimization assessed by the VAW was positively associated with psychological aggression (OR = 21.77, $p < 0.001$), physical assault (OR = 14.46, $p < 0.001$), sexual coercion (OR = 24.15, $p = 0.002$), and negotiation (OR = 2.26, $p < 0.001$) (table 6). The iteration of maximum likelihood estimation did not converge for the association of injury with the VAW because of the complete separation (Allison, 1999), where the VAW was always negative in the absence of injury victimization. Severe psychological distress measured by K6 at the second survey was positively associated with psychological aggression (OR = 2.41, $p < 0.001$), physical assault (OR = 3.09, $p < 0.001$), injury (OR = 2.88, $p = 0.004$), and sexual coercion (OR = 3.46, $p = 0.002$) at the first survey regardless of one's perpetration/victimization status (table 7).

Table 5. Logistic regression on the cross-sectional association of the J-CTS2SF with the BAQ ¹⁾

	OR	95% CI			p value
Perpetration (Respondent's act)					
Negotiation	1.00	0.99	-	1.02	0.782
Psychological	1.06	1.04	-	1.09	< 0.001
Physical	1.07	1.03	-	1.10	< 0.001
Injury	1.07	1.03	-	1.12	0.001
Sexual	1.01	0.91	-	1.11	0.920

1) All models were adjusted for gender, age, marital status, having any children, household income, and employment status. The BAQ and the J-CTS2SF were measured at the first survey. BAQ was entered in the model as a continuous variable.

Table 6. Logistic regression on the cross-sectional association of the J-CTS2SF with the VAW ¹⁾

	OR	95% CI			p value
Victimization (Partner's act)					
Negotiation	2.26	1.46	-	3.50	< 0.001
Psychological	21.77	9.72	-	48.72	< 0.001
Physical	14.46	3.32	-	63.01	< 0.001
Injury	NA	NA	-	NA	NA
Sexual	24.15	3.10	-	187.93	0.002

1) All models were adjusted for gender, age, marital status, having any children, household income, and employment status. The VAW and the J-CTS2SF were measured at the second survey. VAW was coded into a dichotomous variable (score 9 or above as being victimized, and 8 or lower as reference).

Table 7. Generalized Estimating Equation on the association between the J-CTS2SF at the first survey and K6 at the second survey¹⁾

	OR	95% CI			p value
Negotiation	1.40	0.91	-	2.14	0.125
Psychological aggression	2.41	1.56	-	3.71	< 0.001
Physical assault	3.09	1.77	-	5.39	< 0.001
Injury	2.88	1.41	-	5.91	0.004
Sexual coercion	3.46	1.60	-	7.49	0.002

1) All models were adjusted for gender, age, marital status, having any children, household income, and employment status. K6 at the first survey was modeled in a generalized estimating equation to adjust for the psychological distress at the baseline.

Construct validity was examined by exploratory factor analysis. A scree plot suggested three factors for the J-CTS2SF, accounting for 85% of the variation among the items (table 8). Factor pattern after promax rotation was presented in table 9. Factor 1 concerned physical and psychological aggression and injury, factor 2 concerned sexual coercion and severe injury of partners, and factor 3 concerned negotiation tactics. The factor patterns with five factors, which correspond to the number of factors in original CTS2, and with six factors, whose eigenvalues were more than 1.0, were also examined, but the maximum likelihood estimation did not achieve the best estimation, exceeding the iteration limit.

Table 8. Eigenvalues of the reduced correlation matrix of the J-CTS2SF based on the data from the first survey

No. of factors	Eigenvalue	Difference	Cumulative proportion
1	11.50	5.87	0.49
2	5.63	2.74	0.73
3	2.89	1.27	0.85
4	1.62	0.26	0.92
5	1.36	0.18	0.98
6	1.18	0.33	1.03

Table 9. Rotated factor pattern of the J-CTS2SF based on the data from the first survey

No.	Item	Factor 1	Factor 2	Factor 3
Physical assault, psychological aggression, and injury				
9		0.788	-0.036	-0.056
6		0.717	0.029	-0.063
5		0.716	-0.025	-0.022
10		0.689	0.024	-0.012
13		0.602	0.048	0.059
11		0.563	0.146	0.010
14		0.493	0.110	0.033
12		0.477	0.277	-0.002
4		0.387	-0.025	0.193
3		0.379	-0.031	0.250
15		0.371	0.227	0.024
Sexual coercion and partner's severe injury				
17		-0.125	1.043	-0.002
18		0.097	0.580	-0.036
16		0.115	0.546	-0.035
19		0.117	0.422	0.076
20		0.104	0.256	0.065
Negotiation				
1		-0.031	-0.028	0.852
2		-0.004	0.015	0.819
7		0.026	0.035	0.629
8		0.074	0.028	0.614

Estimated by maximum likelihood method with promax rotation.

Chapter IV

Discussion

Internal consistency of the J-CTS2SF was generally low, and differed by types of subscales and perpetration/victimization status. Physical assault by respondents and partners had the highest internal consistency, and sexual coercion and negotiation by their partners had the lowest. The coefficients of standardized alpha were considerably higher than those of raw alpha, which indicated that the items in the subscale correlated but the variance of items varied due to the differences in the level/types of acts/events. Compared to the high internal consistency of the original CTS2, low internal consistency of the J-CTS2SF was expected, because the subscales of J-CTS2SF included only two items, each of which measured different levels/types of acts/events; those who engaged in minor aggressive acts may not have necessarily engaged in severe ones (Straus et al., 2004). Test-retest reliability examined by Yule's Q was high for the interval of four weeks.

Concordance with related scales generally indicated good concurrent validity. The results of logistic regression showed that the increase in a BAQ total score by one unit increased the odds of psychological, physical, and sexual violence by about 6 to 7%. For the ease of interpretation, a dichotomous variable of BAQ divided at the median was used in the same logistic regression models. Having a higher score of BAQ was positively associated with perpetration of psychological abuse (OR = 2.6, 95% CI = 1.6-4.2), physical assault (OR

= 4.8, 95% CI = 1.9-11.9), and injury (OR = 6.9, 95% CI = 1.5-31.3). On the other hand,

significant associations with BAQ were not found for the negotiation and sexual coercion.

These acts measured by the J-CTS2SF may not be strongly related to one's personal traits of aggression.

IPV victimization was positively associated with negotiation by partners, and victimization in psychological, physical, and sexual violence. Although logistic regression models did not yield an estimation for injury due to complete separation, cross-tabulation showed significant association between injury measured by J-CTS2SF and being positive in IPV screening ($X^2 = 18.2$, $p < 0.001$, $DF = 1$). In a Japanese sample, having negotiation measured by the J-CTS2SF was positively associated with IPV victimization measured by the VAW. This association implies that negotiation tactics may be often used in the course of couple conflicts and partner violence (Dutton, 1992; Eldridge & Christensen, 2002).

Psychological distress corresponding to severe mental illness had positive associations with psychological, physical, and sexual violence and injury regardless of one's victimization/perpetration status, which supported the hypothesis in the current study.

Negotiation did not have a significant negative association with psychological distress, although it had positive association with IPV victimization. In the current Japanese sample, the ways negotiation tactics were used and its consequences could have been diverse, either preventing, resolving or aggravating marital conflict, which may have weakened its association

with psychological distress. It is also likely that the negotiation sub-scale may not reflect the ways of negotiation that are unique to IPV related experience in a Japanese population.

The exploratory factor analysis found the fewer number of factors in the J-CTS2SF than in the original CTS2, in spite that the CTS2SF was constructed based on the factor structure of CTS2. However, the overall factor structure found in this study was considered to be in agreement with that of the full CTS2 theoretically. Factor 1 included items on aggression and its consequence (psychological aggression, physical assault, and injury), factor 2 included sexual coercion, and factor 3 included negotiation tactics. Severe injury of partners (perpetration) was categorized in factor 2 together with sexual coercion. These results indicate that severe injury of partners may have been highly correlated with sexual coercion in a current sample of Japanese men and women.

Generally, the J-CTS2SF was considered to be an instrument that can measure IPV perpetration and victimization with fair reliability and good validity in Japanese men and women. Internal consistency was low because of the small number of items that measures different levels/types of acts/event especially in case of sexual coercion and psychological aggression. On the other hand, the concurrent validity indicated the good ability of J-CTS2SF to capture the incidences of IPV. Because of these findings, the use of J-CTS2SF can be justified especially in a large-scale community survey where the full CTS2 cannot be administered for the limited amount of time. Negotiation items in this short version may need

further scrutiny on its accuracy to assess IPV related behaviors and incidences in a Japanese population.

SECTION II

Secondary Analysis on the Japanese Study of Stratification, Health, Income, and Neighborhood (J-SHINE)

Chapter V

Marital Violence and Health Care Utilization

5.1 Marital violence and health care

Victims and perpetrators of marital violence often contact multiple source of professional support, such as health care, psychological counseling, social welfare service, and legal and judicial services (Petersen, Moracco, Goldstein, & Clark, 2003; Gordon, 1996). Health care providers were the most frequently contacted professionals among them due to the deteriorated physical and mental health conditions accompanying marital violence (Goodman, Dutton, Weinfurt, & Cook, 2003; Hamilton & Coates, 1993; Gordon, 1996). A study in Japan found that among female victims of intimate partner violence (IPV), 24 % had ever been injured due to the IPV incidences, and more than one third of these women had been injured more than twice (Yoshihama et al., 2007). It was also found that 14% of women who had experienced IPV victimization reported difficulty in performing usual activities due to their health problems, 34 % used painkiller, and 28% used health care services during one month period before the data collection (Yoshihama et al., 2009). A very few studies investigate health care needs of IPV perpetrators. Existing studies indicate that perpetrators may also have increased use of health care due to injury, mood and anxiety disorders, and substance abuse/dependence and resulting physical ill-health (Kessler, Molnar, Feurer, & Appelbaum, 2001; Tang et al., 2008; Gass, Stein, Williams, & Seedat, 2011).

In Japan, a public counseling office, “Spousal Violence Counseling and Support Center,” the Police, and the district courts provide victims of marital violence with protection services under the Act on the Prevention of Spousal Violence and the Protection of Victims. Article six of the act states the roles of health care providers in assisting this protection network by notifying marital violence cases detected during the duties and providing the patients/clients in marital violence with the information on relevant social resources (Cabinet office Government of Japan, 2001). Under the act, about 40 to 80 marital violence cases were reported from health care facilities to the police and over 7,500 cases were referred to the Spousal Violence Counseling and Support Centers by health professionals and other civilians nationwide annually (Cabinet office Government of Japan, 2012b; National Police Agency Japan, 2012). In addition to detection and referral, health care providers can create an opportunity for those in marital violence to recognize their experience as violence, identify supporters, and develop a safety plan (Gerbert et al., 2002; Olive, 2007; Nemoto, Rodriguez, & Mkandawire-Valhmu, 2008). Because of these potential contributions of health care providers and the frequent use of health care among those in marital violence, the use of health care has great potentials in introducing those in marital violence to a larger support network, motivating their problem-solving behaviors, and protecting them against serious harms caused by marital violence.

However, health care may be underutilized in the presence of marital violence in

spite of the increased health care need (Diop-sidibé, Campbell, & Becker, 2006; Barrett, O'Day, Roche, & Carlson, 2009; Miller et al., 2010; Ta & Hayes, 2010). For example, a study in Hawaii found that IPV predicted the presence of barriers in prenatal care independent of socioeconomic conditions (Ta et al., 2010). Another study in the US found that, female adolescents who had foregone care in spite of their health needs were twice as likely as to experience IPV compared to those who had not foregone care (Miller et al., 2010). Seeing health care providers may result in disclosing the marital violence to others outside of the family, which could cause negative consequences, such as feeling of shame and embarrassment, stigmatization, disruption to family, escalation of marital violence, and being reported to the police and social services (Lempert, 1997; Liang, Goodman, Tummala-Narra, & Weintraub, 2005; Nemoto, Rodriguez, & Valhmu, 2006; Bent-Goodley, 2007; Robinson & Spilsbury, 2008; Rose et al., 2011). It is important to examine which situations can discourage or facilitate care-seeking behaviors in marital violence and how they do so in order to effectively reach out to the under-served population and prevent serious harms caused by marital violence. This study examined the effect of socioeconomic conditions and psychosocial resources on the association between marital violence and health care utilization.

5.2 Effect of socioeconomic conditions on the health care utilization in marital violence

Liang et al. (2005) asserted that the help-seeking process in IPV was largely

influenced by one's socioeconomic conditions. For example, those who have more financial resources, stable jobs, or working potential may have greater freedom in conceptualizing certain situations as unacceptable or intolerable and seek external support, because they are likely to have more resources and options for actions to solve the problem. On the other hand, those with fewer resources may not evaluate the same situation as a problem, because it is unlikely to be solved (Liang et al., 2005; Goodman, Smyth, Borges, & Singer, 2009).

Educational attainment, household income and employment status can be some socioeconomic conditions that may determine available resources that facilitates problem-solving in marital violence. However, few studies ever examined the effect of socioeconomic conditions on the health care utilization in marital violence, and none have investigated the effect of employment status (West, Kantor, & Jasinski, 1998; Henning & Klesges, 2002; Hyman, Forte, Mont, Romans, & Cohen, 2009).

Formal education represents a transition from a socioeconomic position of parents in childhood to one's achieved socioeconomic position in adulthood (Lynch & Kaplan, 2000). In addition to its influence through the pathway involving occupational status and financial resources, education is often conceptualized in a framework of human capital, which is "the productive capacity developed, embodied, and stocked in human beings themselves" (Mirowski & Ross, 1998). Education may influence care-seeking behaviors in marital violence by developing the problem-solving abilities that can be applied to different types of

problems and situations, the habits and attitudes in favor of long-term benefits, and the confidence and motivation in having control over one's life (Ross & Wu, 1995; Mirowski et al., 1998; Lynch et al., 2000; Braveman et al., 2005; Singh-Manoux & Marmot, 2005).

However, results of previous studies on the association between educational attainment and health care utilization were mixing: some found a positive association of higher education and health care utilization (Delgado-Rodríguez, Gómez-Olmedo, Bueno-Cavanillas, & Gálvez-Vargas, 1997; Ta et al., 2010), but others did not (Naganuma et al., 2006; Blay, Fillenbaum, Andreoli, & Gastal, 2008; Hanibuchi, 2010). Only one study in the US examined the independent effect of educational attainment on the health care utilization in the context of marital violence and did not find a significant association between educational attainment and help-seeking from friends, relatives, or professionals among female victims of IPV (West et al., 1998).

Household income is another socioeconomic condition that may influence the use of health care in marital violence. Household income is an indicator of material condition that reflects availability and quality of material and non-material resources, such as housing, food, clothing, transportation, recreational activities, and health care (Lynch et al., 2000).

Household income functions as a buffer against negative effects of life-stressors, including those of marital violence (Sutherland, Sullivan, & Bybee, 2001; Coker, Weston, Creson, Justice, & Blakeney, 2005). Poverty may intensify acute and chronic stressors that were

barely eliminated by their individual efforts, and may exacerbate the psychological state of helplessness in marital violence (Goodman et al., 2009). The effect of household income on care-seeking behaviors in marital violence may differ by the socio-demographical characteristics of respondents, the types of services, and the cost of utilization. A study based on criminal justice records in the US found that abused women with higher incomes had increased use of counseling and supportive services, some of which were provided for free (Henning et al., 2002). On the other hand, a study based on a community sample of abused women in Canada found that women with lower income were more likely to contact social services for their IPV problems, such as counseling, crisis centers, shelters, and legal-based victim services that were provided free of charge (Hyman et al., 2009). However, these studies were based on the data of female victims. This methodological choice resulted in the lack of evaluation on the moderating effect of socioeconomic conditions, and how socioeconomic conditions would interact with marital violence to increase or decrease health care utilization has been unexplored. The lower utilization of healthcare among those with lower household income may have a general phenomenon that could be observed in the absence of marital violence (Babazono, Kuwabara, Hagihara, Yamamoto, & Hillman, 2008).

Employment status is another possible socioeconomic factor that facilitates health care utilization in marital violence. While household income represents the material condition of the household, employment status reflects individual financial security and prosperity

independent of those of marital partners (Costello, Chung, & Carson, 2005). Employment also provides opportunities to enhance one's capacities through social interaction and develop specific abilities, which may further result in an individual sense of effectiveness, fulfillment, and social integration (Hasselkus, 2002; Winch, 2002). Previous studies found that employment facilitated adequate use of care among pregnant women (Simkhada, Teijlingen, Porter, & Simkhada, 2007; Liang, Chang, Lin, Lin, & Chen, 2012), and the same association could be found among those experiencing marital violence. In the context of marital violence, an individual source of income independent of their partners' may be of particular importance. Those out of employment may lack financial autonomy and need to ask their partner for money to obtain health care, which could discourage their use of health care (Postmus, Plummer, McMahon, Murshid, & Kim, 2012). In the work place, instrumental, informational and emotional support for problem-solving provided by colleagues and formal support provided by employers, such as general health check-ups and Employee Assistance Programs, may promote one's care-seeking behavior by assisting employees' problem identification and actions toward a solution (Costello et al., 2005; Swanberg, Logan, & Macke, 2005). Employment can also enhance social connections, self-esteem, and a sense of effectiveness against the negative effect of marital violence on one's psychosocial well-being (Costello et al., 2005). However, no study has ever conducted on the moderating effect of employment on the association between marital violence and health care utilization.

5.3 Roles of psychosocial resources in care-seeking in marital violence

Understanding how socioeconomic conditions affect care-seeking in marital violence is crucial for extending existing theories and developing effective intervention strategies.

Psychosocial resources may be the factors that interact with marital violence and socioeconomic conditions, and may encourage or discourage one's use of health care. Internal resources, such as a sense of control and self-efficacy, were often lowered in the experience of marital violence (Bargai, Ben-Shakhar, & Shalev, 2007; Li, Kirby, Sigler, Hwang, & LaGory, 2010), which could be aggravated by low educational attainment, poverty, and unemployment (Goodman et al., 2009). Resulting feelings of helplessness or lack of control may discourage active problem-solving (Goodman et al., 2009). On the other hand, higher educational attainment, higher household income, and being in employment likely strengthen one's sense of effectiveness through enhanced abilities, extended social contacts, and participation and success in a labor market (Mirowski et al., 1998; Lynch et al., 2000; Costello et al., 2005). The enhanced internal resources may promote care-seeking in marital violence, owing to positive self-appraisal of one's ability to handle the situations (Goodman et al., 2009). However, the effects of internal psychological resources in marital violence have not been examined in relation to health care utilization.

Another possible psychosocial factor that may explain the differential effects of socioeconomic conditions on the association between marital violence and health care

utilization is social support. Social support provides interpersonal resources for tangible assistance, information for problem-solving and emotional sustenance, and is considered to be protective against the negative effects of stressors due to enhanced coping behaviors (House & Kahn, 1985; House, Umberson, & Landis, 1998). Support from family, friends and colleagues for dealing with marital violence includes financial assistance, the offering of shelters, giving information and advice, and accompanying them to professional services (Bosch & Schumm, 2004; Swanberg et al., 2005; Goodman et al., 2009). Previous studies found that informal support encouraged problem-focused coping and the use of health and social services among those who experienced marital violence (Liang et al., 2005; Diop-Sidibe et al., 2006; Goodman et al., 2009). The availability of these support systems is likely to be affected by socioeconomic conditions. Those having a better socioeconomic condition may have better access to a network of people with material resources to offer and with information, skills and social contacts that can be used for dealing with marital violence effectively (Goodman et al., 2009). However, the roles of social support in linking socioeconomic conditions with health care utilization have been understudied in the context of marital violence.

5.4 Aims of study and research hypotheses

This study aimed at examining the effects of socioeconomic conditions on the association between marital violence and health care utilization. It also explored the

mechanisms through which socioeconomic conditions would affect health care utilization in marital violence. It was hypothesized that psychosocial resources, such as individual psychological resources and social support, will be the key factors that explained the differential effect of socioeconomic conditions.

This study examined three hypotheses. The first hypothesis was that those experiencing marital violence were more likely to use health care compared to those who are not experiencing marital violence, and that this association between marital violence and health care utilization was independent of their socioeconomic conditions. The second hypothesis was that those with lower educational attainment, lower household incomes, and those out of employment were less likely to use health care in the presence of marital violence. The third hypothesis is that the moderating effects of socioeconomic conditions were largely explained by the difference in levels of psychosocial resources, i.e. one's sense of effectiveness and social support. Mastery and health literacy were included in the analysis as internal psychological resources that represent a sense of effectiveness and control over one's life (mastery), and specifically in a health care context (health literacy). As interpersonal resources, instrumental support and informational support were included in the analysis, because socioeconomic conditions would affect the level of social support one can obtain, and further encourage or discourage the help-seeking behaviors of those experiencing marital violence (Liang et al., 2005; Swanberg et al., 2005; Bonomi et al., 2006; Diop-Sidibe et al.,

2006; Lewis et al., 2006; Goodman et al., 2009; Schöllgen, Huxhold, Schüz, & Tesch-Römer, 2011).

These hypotheses were examined in the total samples and gender-subgroups. Recent studies on IPV typology suggested that men can also be the target of violence by their female partners, but that the context, course and consequence of the violence may differ by genders (Ansara and Hindin, 2010; Johnson, 2006); female victims were more likely to experience a severe and chronic pattern of violence and control that accompanied high levels of fear and injury than male victims. Thus, it is assumable that help-seeking in marital violence has gender-specific patterns, but none of the previous studies on this topic examined the effect of gender due to the lack of male samples for comparison. The current study examined how socioeconomic conditions affect the use of health care in marital violence and explored the gender differences in the effect of socioeconomic conditions.

Chapter VI

Methods

6.1 Study design and sample

Research hypotheses were tested using the data from the Japanese Study of Stratification, Health, Income, and Neighborhood (J-SHINE). The J-SHINE survey collected data from October 2010 to February 2011 in four municipalities in and around the Tokyo metropolitan area. The selection of survey sites was based on the cooperation of local governments. Survey participants were randomly selected from voter registration lists. The age range of participants was from 25 to 50 years old at the time of recruitment, which covered young adulthood and older to investigate the association of one's socioeconomic conditions with health in working age population. The interviewers visited prospective respondents at home and distributed the questionnaire if they agreed to participate in the survey. The questionnaire was self-administered with a computer-assisted personal interview program. The total number of participants was 4,381 with a response rate of 31.5%. The total sample of 2,984 participants was used for this study, after excluding the data of 1,341 respondents who did not have spouses or common-law spouses at the time of data collection, or refused to report their partner status. Fifty-six respondents who did not respond to a set of questions on marital violence, or had missing data on health care utilization were further excluded. Those with missing values were more prevalent among the unemployed, excluding

housewives and househusbands ($p = 0.002$, two-sided chi-squared test) and among those with lower educational attainment ($p = 0.059$, two-sided chi-squared test). The Research Ethics Committee of the University of Tokyo Graduate School Medicine approved the survey procedures (No. 3073-(1)).

6.2 Measures

1) Marital violence

Three subscales of the Japanese version of CTS2SF that corresponds to psychological violence and physical violence were used to measure marital violence in the past twelve months: psychological aggression, physical assault, and injury (Straus et al, 2004). Sexual violence was not measured because of the sensitivity of the issues which could evoke negative reactions to participation in this multidisciplinary survey. Psychological

aggression items included insult, swore, and shout (minor) and threat (severe):

. Physical

assault items measured push, shove, and slap (minor) and punch, kick and beating (severe):

. Injury included sprain, bruise, small

cut, and pain (minor) and injuries that required medical treatment (severe):

[REDACTED]

[REDACTED]. In the J-SHINE, the response options were converted into 3 points from the original 8 points (1 = *never*, 2 = *once*, and 3 = *twice or more*).

For the analysis, responses were further dichotomized into “never” and “once or more times” to assess the presence of incidence rather than its frequency. Then, three subscales with victimization and perpetration were combined to create a dichotomous variable of any psychological and physical violence in marital relationship: if respondents reported any psychological aggression, physical assault, or injury in marital relationship once or more times in the past year, they were coded as having experienced marital violence (raw Cronbach alpha = 0.77; standardized Cronbach alpha = 0.80).

Two types of variables were additionally created regarding the directions of marital violence. Perpetration/victimization status was coded into three categories; perpetration only, victimization only, and mutual violence. Perpetration only was coded positive when respondents perpetrated any types of violence against their partners once or more times without any incidence of victimization. Victimization only was coded positive when respondents experienced victimization by their partners in any types of marital violence once or more times without any incidences of perpetration. Mutual violence was coded positive when respondents experienced both perpetration and victimization in any types of marital violence once or more times. The other variable on the direction of violence was a

dichotomous variable of “any victimization.” Those who experienced victimization in any types of marital violence once or more times were coded as having any victimization regardless of the presence or absence of perpetration.

The J-SHINE included a pre-modified version of the severe psychological aggression items. The Spearman rank-order correlation between the pre-revised item and the revised item were calculated using the data from the internet survey in section one: 0.84 for severe psychological aggression of respondents and 0.61 for that of their partners. Agreement of the dichotomized composite variables, which were used in the current analysis, of the pre-revised items and the revised items was high (0 = *no severe psychological aggression either by respondent or partner* and 1 = *any severe psychological aggression by respondent and/or partner*): Kappa coefficient = 0.71 (SE = 0.07), Yule Q = 0.99 (SE = 0.01).

2) Health care utilization

Health care utilization was measured by one item that asked about the experience of receiving outpatient care in the past twelve months: “*During the past twelve months, did you ever receive treatment at clinics or hospitals about your illness or injury, including treatment of bonesetting, acupuncture, and moxibustion?*” A positive response to this item was coded as having utilized health care in the past twelve months. Visits to health care facility for general health check-ups, health consultation, immunization, and dental treatment were excluded.

Admission cases were not included in the current study because admission to the hospital was

assumed to reflect seriousness of health problems including severe injury under the universal insurance coverage, rather than care-seeking behaviors that may be moderated by socioeconomic conditions.

3) Socioeconomic conditions

For educational attainment, respondents were asked to choose all types of educational institutions in which they were enrolled, and further chose the one they were enrolled in most recently. The final educational institutions enrolled were categorized into three levels: junior high school and high school, two years' college and vocational college, and university or higher. Household income was measured by fifteen income bands. A median for each band was equalized by the root of the number of household members. The equalized income was categorized into three levels so that each level contained the same fraction of the total survey population.

Before examining the hypotheses, the statistical models with different categorization of education and household income were preliminarily tested for educational attainment or household income predicting healthcare utilization to select the best categorization of the measures of socioeconomic conditions using Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC): three categories with junior high and high school, some college, and university or higher (educational attainment) and with equal frequency distribution (household income), four categories with each type of institution (educational

attainment) and with equal frequency distribution (household income), two categories divided at the lowest of the three categories (lowest/higher), and two categories divided at the highest of the three categories (highest/lowest). The three categories of educational attainment and household income showed a better fit, and thus were included in the subsequent statistical models.

Employment was measured by one item that asked current employment status from three options: being employed (including any types of employment such as full-time, part-time, self-employed and others), taking leave from work, and unemployed (including students, housewives, and job hunters). A dichotomous variable was created by coding “being employed” and “taking leave” as “employed”, and the rest as “not employed.”

4) Psychosocial resources

(1) Mastery

Four items on mastery were derived from the personal mastery scale used in a large-scale community survey in Japan and the United States (Kan, et al. 2012; Lachman & Weaver 1998). The scales asked how strongly the respondents agreed or disagreed with the following statements about themselves: *“I can do just about anything I really set my mind to”*; *“When I really want to do something, I usually find a way to succeed at it”*; *“Whether or not I am able to get what I want is in my own hands”*; and *“What happens to me in the future mostly depends on me.”* All items were based on a seven-point Likert scale (from 1 = *totally*

applicable to 7 = never applicable). For the current analysis, the scores were reversed and summed up for a total score (raw Cronbach alpha = 0.77; standardized Cronbach alpha = 0.77). As in table 10 in a result section, mastery had a U-shape association with marital violence; marital violence was more prevalent in higher and lower level of mastery compared to the middle. For the analysis with ordinary least squares (OLS) linear regression, the total scores were centered to the mean by rescoreing them into the difference from the mean.

(2) Health literacy

Health literacy was measured by five items that inquired about the respondent's ability to gather and utilize information on health (Ishikawa & Kiuchi, 2010): "*I can seek information from various sources, such as newspapers, books, TV, and the internet*"; "*I can extract relevant information from various sources*"; "*I can understand and communicate the information with others*"; "*I can consider the credibility of the information*"; and "*I can make decisions for my improving health based on the information that I've got*." All items were measured by a five-point Likert scale (from 1 = *totally disagree* to 5 = *strongly agree*). The scores from each item were summed to obtain a total score (raw Cronbach alpha = 0.84; standardized Cronbach alpha = 0.84).

(3) Social support

Two types of social support were included in the current analysis: instrumental support and informational support (House et al., 1985). In the J-SHINE, each type of support

was measured by one item: “*How much practical support do the following persons give you when you need some help in your daily life?*” (instrumental support); and “*How much do the following people give you helpful guidance when you have a problem or are in a trouble?*” (informational support). Respondents were asked to choose one response option from a five-point Likert scale (1 = *a lot*, 2 = *some*, 3 = *little*, 4 = *never*, and 5 = *not applicable*). Each item was asked for each of the five sources of support: spouse/partner, other co-residing family members, non-co-residing family members or relatives, neighbors, and friends. For the current analysis, support from spouse/partner was excluded considering the strong correlation between marital violence and support from spouse/partner, and specifically examined the support from sources other than their partners. The scores were reversed, and the reversed scores of each source of support were totaled for each type of support.

Mastery, health literacy, instrumental support and informational support were recoded into three categories with approximately equal frequency distribution for the use in logistic regression analysis and OLS linear regression analysis.

5) Control variables

Gender was coded as either men or women. Age was categorized into 4 groups (*25-33 years' old*, *34-39 years' old*, *40-44 years' old*, and *45-51 years' old*) so that the frequency distributions and age range were approximately equal among categories. Number of children included 4 categories (*none*, *one*, *two*, and *three or more*). Difficulty in accessing health care

was physical inaccessibility measured by two items. Respondents were first asked if they did not visit health care facilities in spite of their ill-health or injury in the past twelve months. Those who had such experience were further asked to select the reasons. Any one of positive responses to the following two reasons was coded as “having difficulty in accessing health care”: (1) *the absence of health care facilities near one’s house*, and (2) *the lack of transportation to health care facilities*. The survey area had four categories each of which corresponded to a municipality of residency. All statistical models were adjusted for these control variables.

6.3 Statistical analysis

Bivariate associations of marital violence, and socioeconomic conditions (educational attainment, household income, and employment status) with health care utilization were assessed in cross-tabulations and evaluated for significance with chi-squared tests, as well as using logistic regression with the adjustment for control variables. The independent association of marital violence with health care utilization was examined in a multiple logistic regression analysis with the adjustment of socioeconomic conditions and control variables. To examine the gender difference in the association of marital violence with health care utilization, interaction terms between marital violence and gender were added in the multiple logistic regression model. The multiple logistic regression was also conducted on the male and female samples separately. Logistic regression coefficients and their standard

errors were exponentiated and reported for ease of interpretation as odds ratios (ORs) with 95% confidence intervals (95% CIs), two-sided.

The moderating effects of socioeconomic conditions on the association between marital violence and health care utilization were examined by adding each interaction term between marital violence and educational attainment (model 1), household income (model 2), and employment status (model 3). Then, all interaction terms were simultaneously entered into the multiple logistic regression model to control any possible influence from other moderating effects (model 4). To examine gender difference in the moderating effect of socioeconomic conditions, three-way interaction terms among marital violence, socioeconomic conditions, and gender was added to model 4. In addition, model 4 was also examined in the male and female sub-samples separately. Statistical significance was evaluated using 0.05 level two-sided tests, except that of interaction terms. A small sample size increases a risk for detecting false negative (Type II error) in the interaction test (Greenland, 1993; Marshall, 2007). Marshall (2007) found that a middle-size study could obtain a useful gain in power by raising Type I error rate; a study with 1,000 samples could gain 10% increase in power and power above 70% when the Type I error rate is increased from 5 % to 20% in most types of interactions. Considering the risk of detecting spurious interactions by raising the Type I error rate (Marshall, 2007), the level of significance was set at 10 % in this study. These series of analyses were conducted using a dichotomous variable

of any victimization in order to see if the same patterns of association were observed with victimization experience.

The effect of socioeconomic conditions on health care use in marital violence was also examined based on the subgroup of respondents who experienced any types of marital violence. The associations of educational attainment, household income, and employment status with health care utilization were examined using logistic regression with the adjustment for the perpetration/victimization status and other control variables. Analyses were conducted on the total, male, and female samples.

Hierarchical logistic regressions were conducted to explore underlying mechanisms that links different socioeconomic conditions to different likelihoods of health care utilization in marital violence. Four types of psychosocial resources, mastery (model 5), health literacy (model 6), instrumental support (model 7), and informational support (model 8), were added to the model 4 to observe the association between psychosocial resources and health care utilization, and the changes in the odds ratios of interaction terms.

Additionally, mediation analysis was conducted to estimate the magnitude and statistical significance of the indirect effects, which is the effect of moderation by socioeconomic conditions that were explained by mastery, health literacy, instrumental support, and informational support; the effect of product of marital violence and socioeconomic conditions (XW) on health care utilization (Y) through psychosocial resources

(M).

The indirect effect is estimated by the following two regression models; a mediating variable (M) as a dependent variable (Equation 1) and an outcome variable (Y) as a dependent variable (Equation 2), with i as an intercept and e as a random error:

$$M = i_M + a_1X + a_2W + a_3XW + e_M \quad (1)$$

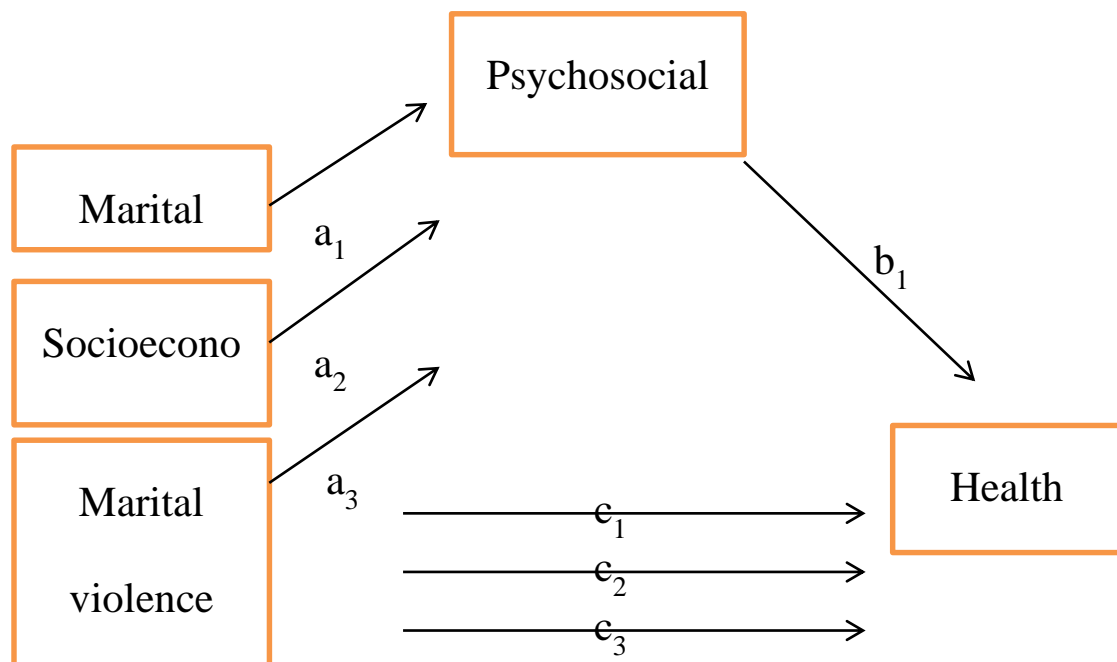
$$Y = i_Y + c_1'X + c_2'W + c_3'XW + b_1M + e_Y \quad (2)$$

When the outcome variable (Y) was binary, it is recommended to rescale the coefficients to make them comparative across the equations to synthesize them. While the residual variance for a model changes depending on the variables included in OLS regression models, the residual variance is fixed in the logistic regression. Because of this procedure, the scaling of the coefficients in logistic regression varies as variables in the model changes (Jasti, Dudley, & Goldwater, 2008). To make the coefficients on different scales in different equation comparative, each coefficient of independent variable is standardized by multiplying the coefficient by its standard deviation and divided it by the standard deviation of dependent variable (Jasti et al., 2008).

The indirect effect of the product of marital violence and socioeconomic condition is quantified as the coefficient of interaction term, XW , in the model of M (a_3 in Equation 1) and the coefficient of M on Y holding X and W constant (b_1 in Equation 2) in Figure 3. That is, the effect of XW through a_3 and b_1 , being calculated by $a_3 \times b_1$ as in path analysis (Hayes 2012).

The indirect effect of the product of marital violence and socioeconomic condition is also interpreted as the change in the conditional effect of marital violence on health care utilization through psychosocial resources as the socioeconomic condition changes. The analysis was conducted using SAS macro developed by Hayes (2012), which adopts a path analysis framework for moderation and mediation analysis (Preacher & Hayes, 2008). All parameter estimates in equation 1 were generated by OLS linear regression, and those in equation 2 were estimated by logistic regression.

Figure 3. Indirect effect of the moderated association between marital violence and health care utilization by socioeconomic conditions (XW) through psychosocial resources (M)



The magnitude and statistical significance of indirect effect through psychosocial

resources were estimated using the boot-strapping method (Efron, 1987). The boot-strapping method is preferable over the Sobel test in testing indirect effects. The Sobel test assesses whether the estimated indirect effect through a mediating variable is statistically significant or not. A coefficient of indirect effect is divided by its standard error to calculate z score for the p value. Thus the Sobel test requires the shape of the distribution of the indirect effects to be normal, but this assumption is often violated (Jasti et al., 2008). On the other hand, the boot-strapping method, which does not require this assumption, has higher power and better Type I error control (MacKinnon, Lockwood, & Williams, 2004; Williams & MacKinnon 2008; Hayes, 2009). Bias-corrected 95% confidence intervals and standard error (SE) for indirect effects were computed based on bootstrap estimation with 10,000 replications, two-sided. For direct effect, coefficients and SE were calculated based on Newton-Raphson iteration algorithm. All analyses were conducted using the SAS[®] statistical package (SAS Institute Inc, Cary, NC, USA).

Chapter VII

RESULTS

7.1 Prevalence and socio-demographic correlates of health care utilization and marital violence

The reported twelve-month prevalence of health care utilization and marital violence was 66.3% and 28.0% respectively (table 10). Health care utilization was more prevalent among those who experienced marital violence ($\chi^2_1 = 5.10$, $p = 0.024$), those who had higher educational attainment ($\chi^2_2 = 13.56$, $p = 0.001$), those who had higher household income ($\chi^2_2 = 23.73$, $p < 0.001$), women ($\chi^2_1 = 4.54$, $p = 0.033$), the oldest ($\chi^2_3 = 15.99$, $p = 0.001$), and those without children ($\chi^2_3 = 8.34$, $p = 0.040$). Marital violence was more prevalent among the younger ($\chi^2_3 = 22.85$, $p < 0.001$), while none of the other socio-demographic profiles statistically differed in prevalence of marital violence. On the other hand, the levels of psychosocial resources were significantly different between those who experienced marital violence and those who did not. Marital violence was more prevalent among those with lower informational support ($\chi^2_2 = 7.92$, $p = 0.019$), while it was more prevalent among those with both low and high levels of mastery ($\chi^2_2 = 6.15$, $p = 0.046$).

Table 10. Characteristics of respondents who were in marital relationships by health care utilization and by marital violence in the past 12 months

		Total (N=2,984)	Healthcare care utilization in the past 12 months (n = 1,978)			Any marital violence in the past 12 months (n = 834)		
		% ¹⁾	% ²⁾	X ² (DF)	p value	% ³⁾	X ² (DF)	p value
Health care utilization	Utilized	66.3				29.3	5.10 (1)	0.024*
	Not utilized	33.7				25.4		
Marital violence	Any	28.0	69.4	5.10 (1)	0.024*			
	None	72.1	65.1					
Education	Jr. high/high	27.0	62.4	13.56 (2)	0.001*	29.7	2.34 (2)	0.310
	Some college	31.3	64.7			28.6		
	University	41.7	69.9			26.7		
Household income	Low	26.5	60.7	23.73 (2)	<0.001*	30.8	5.36 (2)	0.068
	Average	36.9	66.5			29.5		
	High	36.6	72.4			25.8		
Employment	Employed	77.9	66.8	1.38 (1)	0.239	27.1	3.18 (1)	0.075
	Not-employed	22.1	64.3			30.7		
Mastery	Low	28.6	64.9	1.04 (2)	0.594	30.4	6.15 (2)	0.046*
	Middle	32.8	65.9			25.4		
	High	38.6	67.2			29.5		
Health literacy	Low	35.6	65.7	4.72 (2)	0.095	30.2	4.25 (2)	0.120
	Middle	25.5	63.8			26.6		
	High	38.9	68.5			26.7		
Instrumental support	Low	28.7	68.0	1.83 (2)	0.401	30.3	4.99 (2)	0.082
	Middle	38.3	65.1			28.2		

Informational support	High	33.1	66.3			25.6		
	Low	25.6	67.0	2.12 (2)	0.347	30.8	7.92 (2)	0.019*
	Middle	39.6	64.8			28.7		
Gender	High	34.8	67.5			25.0		
	Men	44.0	64.3	4.54 (1)	0.033*	28.3	0.05 (1)	0.818
	Women	56.0	68.0			27.9		
Age (year)	25-33	23.7	61.4	15.99 (3)	0.001*	33.7	22.85 (3)	<0.001*
	34-39	26.3	67.1			29.4		
	40-44	24.6	65.0			27.3		
	45-51	25.5	71.1			22.6		
Number of children	None	22.0	69.4	8.34 (3)	0.040*	26.7	4.48 (3)	0.214
	1	26.0	65.4			30.6		
	2	38.9	67.0			27.8		
	3 or more	13.1	60.9			25.5		
Difficulty in accessing to health facilities	Yes	0.9	78.6	1.92 (1)	0.166	28.6	0.01 (1)	0.939
	No	99.1	66.2			27.9		
Survey area	1	19.7	68.3	4.13 (3)	0.248	27.7	1.13 (3)	0.769
	2	24.3	68.0			29.1		
	3	28.5	65.7			28.4		
	4	27.5	64.0			26.7		

1) Colum % (percentage of each of the correlates and demographic categories to the total sample).

2) Row % (percentage of respondents with health care utilization in the past 12 months to the total sample in each correlates and demographic categories).

3) Row % (percentage of respondents with marital violence in the past 12 months to the total sample in each correlates and demographic categories).

* $p < 0.05$

7.2 Association of marital violence with health care utilization

Table 11 shows bivariate associations of marital violence and socioeconomic conditions with health care utilization and their independent associations estimated by multiple logistic regression, adjusting for age, gender, number of children, difficulty in accessing health care facilities, and survey area. A bivariate model shows a positive association between marital violence and health care utilization. The likelihood of health care utilization among those experiencing marital violence was 1.28 time higher than that of those not experiencing marital violence (OR = 1.28, 95% CI = 1.07-1.53, $p = 0.006$). Those with lower educational attainment and those with lower household income were less likely to use health care (education, $p < 0.001$; household income, $p = 0.001$). The likelihood of utilizing health care did not differ by employment status significantly ($p = 0.060$).

In a multiple logistic regression model, the presence of marital violence had a positive association with increased use of health care independent of educational attainment and household income with a slight increase in the odd ratio (OR = 1.36, 95 % CI = 1.12-1.66, $p = 0.002$). Educational attainment and household income maintained negative association as well (education, $p = 0.041$; household income, $p = 0.012$), although ORs became closer to one compared to those in the bivariate models. As in the bivariate model, employment status did not have significant association with health care utilization in the multiple logistic regression model ($p = 0.107$). These results were identical to the association

of any victimization. The presence of any victimization was positively associated with increased use of health care independent of one's socioeconomic conditions; the odds associated with the presence of any victimization were 1.30 times higher than the odds associated with the absence of any victimization (OR = 1.30, 95% CI = 1.06-1.60, $p = 0.012$) (a table is not shown).

The interaction terms between marital violence and gender indicated that the association between marital violence and health care utilization did not differ by gender (OR = 0.73, 95% CI = 0.49-1.09, $p = 0.125$; reference = men). However, subgroup analyses found that the presence of marital violence was positively associated with health care utilization only in men (OR = 1.69, 95% CI = 1.25-2.27, $p < 0.001$), but not in women ($p = 0.222$) (table 12). When the association of any victimization was examined, the gender difference was more evident, showing the significant three way interaction at the 0.10 level. The odds ratio of health care utilization associated with the present of any victimization, relative to its absence, were lower in women than in men (OR = 0.67, 95% CI = 0.44-1.01, $p = 0.055$) (a table is not shown).

Table 11. Associations of marital violence and socioeconomic conditions with health care utilization in the past 12 months in the total sample

		Bivariate model ¹⁾					Multiple logistic regression model ²⁾				
		OR	95% CI		p value ³⁾		OR	95% CI		p value ³⁾	
Marital violence	Any	1.28	1.07	-	1.53	0.006*	1.36	1.12	-	1.66	0.002*
	None	1					1				
Education	Jr. high/high	0.68	0.56	-	0.84	< 0.001*	0.82	0.65	-	1.03	0.041*
	Some college	0.71	0.59	-	0.87		0.76	0.61	-	0.95	
	University	1					1				
Household income	Low	0.63	0.49	-	0.80	0.001*	0.68	0.53	-	0.88	0.012*
	Average	0.76	0.61	-	0.95		0.80	0.64	-	1.01	
	High	1					1				
Employment	Not-employed	0.81	0.66	-	1.01	0.060	0.82	0.64	-	1.04	0.107
	Employed	1					1				
AIC / BIC (N)		Marital violence		3,697.5 / 3,775.2 (2,911)				2,958.5 / 3,062.3 (2,357)			

1) Adjusted for age, gender, number of children, access difficulty, and survey area.

2) Adjusted for age, gender, number of children, access difficulty, and survey area. All variables were entered simultaneously.

3) Likelihood ratio test for type three analysis. DF = 1 for marital violence and employment and DF = 2 for education and household income.

* p < 0.05

Table 12. Associations of marital violence and socioeconomic conditions with health care utilization in the past 12 months in the male and female samples¹⁾

	Men (n = 1,085)					Women (n = 1,272)				
	OR	95% CI		p value ³⁾		OR	95% CI		p value ³⁾	
Marital Violence										
Any	1.69	1.25	-	2.27	< 0.001*	1.18	0.90	-	1.55	0.222
None	1					1				
Education										
Jr. high/high	0.78	0.57	-	1.08	0.013*	0.89	0.63	-	1.25	0.702
Some college	0.59	0.42	-	0.85		0.89	0.66	-	1.19	
University	1					1				
Household income										
Low	0.88	0.60	-	1.29	0.749	0.56	0.40	-	0.79	0.004*
Average	0.89	0.64	-	1.25		0.72	0.52	-	1.00	
High	1					1				
Employment										
Not employed	0.43	0.11	-	1.71	0.232	0.84	0.65	-	1.08	0.171
Employed	1					1				
AIC / BIC					1401.8 / 1486.6	1559.5 / 1647.1				

1) Adjusted for age, number of children, access difficulty, and survey area. All variables were entered simultaneously.

2) Likelihood ratio test for type three analysis. DF = 1 for marital violence and employment and DF = 2 for education and household income.

* p < 0.05

7.3 Moderating effects of socioeconomic conditions on the association between marital violence and health care utilization

The interaction terms between marital violence and socioeconomic conditions were added in the multiple logistic regression model to examine the moderating effects of socioeconomic conditions (table 13). The association of marital violence with health care utilization did not differ statistically by the level of education (model 1: $p = 0.544$), household income (model 2: $p = 0.661$), nor employment (model 3: $p = 0.105$). A main effect of marital violence after adjusting for the interaction with a socioeconomic condition is interpreted as the association of marital violence when the socioeconomic condition in the interaction term was in a reference category. The odds ratio for health care utilization in the presence of marital violence to its absence was 1.48 when the respondents were university graduates ($p = 0.013$) and 1.50 when the respondents were employed ($p = 0.001$). However, the odds ratios for health care utilization in the presence of marital violence among those in lower educational attainment or those out of employment, compared to those in reference categories, was not statistically significant.

In the model 4, where all interaction terms were entered simultaneously, the moderating effect of employment became significant at the 0.10 level; the odds ratio of health care use in the presence of marital violence to the absence were significantly lower among respondents out of employment compared to those in employment (OR = 0.66, 95% CI =

0.41-1.06, $p = 0.086$). The main effect of marital violence ($p = 0.146$), and the interaction terms of education ($p = 0.456$) and household income ($p = 0.415$) were not significant in this full model. The same patterns of moderating effect of socioeconomic conditions were observed when the association of any victimization was examined. Employment was the only socioeconomic condition that had a significant interaction with any victimization. The magnitude of moderation by employment status was larger in the case of any victimization than in the case of marital violence (perpetration and/or victimization) (OR = 0.58, 95% CI = 0.35-0.94, $p = 0.027$) (a table is not shown).

Three-way interaction among marital violence, socioeconomic conditions, and gender were examined to see if there would be any gender difference in the moderating effect of socioeconomic conditions. None of the moderation by education, household income, or employment differed between men and women significantly ($p = 0.697$, $p = 0.724$, and $p = 0.168$, respectively). Table 14 shows the results of gender-subgroup analyses. In men, the interaction between marital violence and educational attainment was significant at 0.10 level ($p = 0.100$), but not in women ($p = 0.667$). For men, the odds ratio of health care use in the presence of marital violence relative to its absence was lower among those whose highest educational attainment was junior high school and high school (OR = 0.46, 95% CI = 0.23-0.95) compared to those who graduated university.

When marital violence (perpetration and/or victimization) was replaced with any victimization, three-way interaction among any victimization, employment status and gender was significant at the 0.10 level ($p = 0.067$). Although none of the interaction between any victimization and educational attainment, household income, and employment status was statistically significant at the 0.10 level in men and in women. The odds ratio of health care utilization in the presence of any victimization relative to the absence among women out of employment was lower than that among men out of employment (OR = 0.60, 95% CI = 0.35-1.03) (a table is not shown).

Table 13. Moderating effect of socioeconomic conditions on the association between marital violence and health care utilization in the past 12 months in the total sample¹⁾ (N = 2,357)

		Model 1				Model 2					Model 3				Model 4						
		OR	95% CI		p value ²⁾	OR	95% CI		p value ²⁾	OR	95% CI		p value ²⁾	OR	95% CI		p value ²⁾				
Main Effect																					
Marital violence (MV)																					
Any		1.48	1.08	-	2.03	0.013*	1.19	0.84	-	1.69	0.330	1.50	1.19	-	1.88	0.001*	1.34	0.90	-	2.01	0.146
None		1					1					1					1				
Education																					
Jr. high/high		0.88	0.67	-	1.15	0.113	0.82	0.65	-	1.03	0.041*	0.82	0.65	-	1.03	0.040*	0.89	0.68	-	1.16	0.108
Some college		0.77	0.60	-	0.98		0.76	0.61	-	0.95		0.76	0.61	-	0.95		0.76	0.59	-	0.98	
University		1					1					1					1				
Household income																					
Low		0.68	0.53	-	0.88	0.013*	0.65	0.49	-	0.87	0.011*	0.69	0.53	-	0.89	0.014*	0.63	0.47	-	0.84	0.007*
Average		0.81	0.64	-	1.01		0.76	0.59	-	0.99		0.80	0.64	-	1.01		0.76	0.58	-	0.98	
High		1					1					1					1				
Employment																					
Not employed		0.82	0.64	-	1.05	0.115	0.82	0.64	-	1.04	0.106	0.91	0.69	-	1.21	0.539	0.93	0.70	-	1.23	0.607
Employed		1					1					1					1				
Interaction																					
Education																					
MV x Jr. high/high		0.77	0.47	-	1.26	0.544											0.74	0.45	-	1.24	0.456
MV x some college		0.97	0.61	-	1.54												0.99	0.61	-	1.59	

Household income																			
MV x low	1.22	0.74	-	2.01	0.661					1.40	0.83	-	2.37	0.415					
MV x average	1.22	0.76	-	1.96						1.29	0.80	-	2.09						
Employment																			
MV x not employed										0.68	0.43	-	1.08	0.105	0.66	0.41	-	1.06	0.086 [†]
AIC/BIC	2961.3 / 3076.6				2961.7 / 3077.0				2957.9 / 3067.5				2963.1 / 3095.7						

1) Adjusted for age, gender, number of children, access difficulty, and survey area. All variables were entered simultaneously.

2) Likelihood ratio test for type three analysis. DF = 1 for marital violence and interaction term of employment and DF = 2 for education, household income, the interaction term of education, and the interaction term of household income.

*p < 0.05, [†]p < 0.10 for interaction terms.

Table 14. Moderating effect of socioeconomic conditions on the association between marital violence and health care utilization in the male and female samples¹⁾

		Men (n = 1,085)					Women (n = 1,272)				
		OR	95% CI		p value		OR	95% CI		p value	
Main Effect											
Marital violence (MV)	Any	1.68	0.99	-	2.84	0.049*	0.95	0.49	-	1.82	0.869
	None	1					1				
Education	Jr. high/high	0.95	0.66	-	1.38	0.055	0.82	0.55	-	1.23	0.504
	Some college	0.61	0.41	-	0.92		0.83	0.58	-	1.17	
	University	1					1				
Household income	Low	0.80	0.52	-	1.24	0.518	0.51	0.34	-	0.76	0.004*
	Average	0.82	0.56	-	1.20		0.69	0.48	-	1.00	
	High	1.00					1				
Employment	Not employed	0.34	0.06	-	1.98	0.217	0.93	0.68	-	1.26	0.622
	Employed	1					1				
Interaction											
Education											
MV x Jr. high/high		0.46	0.23	-	0.95	0.100†	1.35	0.64	-	2.86	0.667
MV x some college		0.91	0.41	-	2.04		1.32	0.68	-	2.56	
Household income											
MV x low		1.43	0.63	-	3.25	0.586	1.37	0.67	-	2.80	0.693

MV x average	1.38	0.70	-	2.72		1.16	0.58	-	2.35	
Employment										
MV x not employed	1.91	0.09	-	40.46	0.672	0.71	0.41	-	1.23	0.220
AIC/BIC	1406.4 / 1516.2					1566.4 / 1679.6				

- 1) Adjusted for age, number of children, access difficulty, and survey area. All variables were entered simultaneously.
- 2) Likelihood ratio test for type three analysis. DF = 1 for marital violence and interaction term of employment and DF = 2 for education, household income, the interaction term of education, and the interaction term of household income.

*p < 0.05, †p < 0.10 for interaction terms.

To further examine the effect of socioeconomic conditions on the association between marital violence and health care utilization, analyses were conducted on the data of those who experienced marital violence in the past twelve months using the total, male, and female samples (appendix D). Lower educational attainment had significant negative association with health care utilization among men ($p = 0.030$), and being out of employment had marginal negative association with health care utilization among women ($p = 0.051$). Interaction terms between socioeconomic conditions and gender were added in the model with the total sample of those who experienced marital violence in the past twelve month. The interaction between employment status and gender was significant at the 0.10 level ($p = 0.052$); In a group of people experiencing marital violence, the odds ratio for health care utilization of women out of employment was lower compared to the odds ratio of men out of employment ($OR = 0.63$, 95% $CI = 0.39-1.00$, $p = 0.052$) (a table is not shown).

7.4 The role of psychosocial resources in the moderation of association between marital violence and health care utilization

Hierarchical logistic regression analyses were conducted to see whether the moderation of association between marital violence and health care utilization by socioeconomic conditions would be attributable to the level of mastery (model 5), health literacy (model 6), instrumental social support (model 7), or informational social support (model 8) (table 15). In all models, psychosocial resources did not have either positive or

negative associations with health care utilization (mastery: $p = 0.972$, health literacy: $p = 0.121$, instrumental support: $p = 0.719$, and informational support: $p = 0.441$) with the adjustment for marital violence, socioeconomic conditions, and control variables. The inclusion of psychosocial resources did not change the odds ratios of interaction terms in all models considerably, including in the case of interaction between marital violence and employment, which had significant negative association with health care utilization in model 4.

These results were generally identical to those of the sub-group analyses for men (table 16) and for women (table 17). In men, the statistical significance of interaction between marital violence and educational attainment was reduced to be none at the 0.10 level after the inclusion of health literacy. However, the changes in the odds ratio of the interaction were negligible before ($OR = 0.46$ in table 14) and after ($OR = 0.47$ in model 6 of table 16) the inclusion of health literacy. These results indicated that the indirect effect of interaction between marital violence and educational attainment through health literacy was negligible.

Table 15. Effect of psychosocial resources on the moderating effect of socioeconomic conditions on the association between marital violence and health care utilization in the total sample¹⁾ (N = 2,357)

	Model 5					Model 6					Model 7					Model 8				
	OR	95% CI			p value ²⁾	OR	95% CI			p value ²⁾	OR	95% CI			p value ²⁾	OR	95% CI			p value ²⁾
Marital violence (MV)																				
Any	1.34	0.90	-	2.00	0.146	1.33	0.89	-	1.99	0.161	1.33	0.89	-	1.99	0.155	1.35	0.90	-	2.01	0.141
None	1					1					1					1				
Education																				
Jr. high/high	0.89	0.68	-	1.16	0.108	0.90	0.69	-	1.17	0.124	0.88	0.67	-	1.16	0.110	0.89	0.68	-	1.17	0.104
Some college	0.76	0.59	-	0.98		0.77	0.59	-	0.99		0.76	0.59	-	0.98		0.76	0.59	-	0.98	
University	1					1					1					1				
Household income																				
Low	0.63	0.47	-	0.84	0.007*	0.64	0.48	-	0.86	0.010*	0.63	0.47	-	0.84	0.007*	0.63	0.47	-	0.84	0.007*
Average	0.76	0.58	-	0.98		0.77	0.59	-	1.00		0.75	0.58	-	0.98		0.75	0.58	-	0.98	
High	1					1					1					1				
Employment																				
Not employed	0.93	0.70	-	1.24	0.608	0.93	0.70	-	1.23	0.601	0.92	0.69	-	1.23	0.586	0.92	0.69	-	1.23	0.572
Employed	1					1					1					1				
Interaction																				
Education																				
MV x Jr. high/high	0.74	0.45	-	1.24	0.455	0.75	0.45	-	1.24	0.459	0.75	0.45	-	1.24	0.467	0.74	0.44	-	1.23	0.443
MV x some college	0.99	0.61	-	1.59		0.99	0.61	-	1.60		0.99	0.61	-	1.60		0.98	0.60	-	1.58	
Household income																				
MV x low	1.40	0.83	-	2.38	0.414	1.43	0.85	-	2.43	0.375	1.40	0.83	-	2.37	0.413	1.42	0.84	-	2.40	0.392
MV x average	1.29	0.80	-	2.09		1.30	0.81	-	2.11		1.30	0.80	-	2.10		1.31	0.81	-	2.11	

Employment																				
MV x not employed	0.66	0.41		1.06	0.086 [†]	0.67	0.42	-	1.06	0.090 [†]	0.66	0.41	-	1.06	0.086 [†]	0.66	0.41	-	1.06	0.085 [†]
Mastery																				
Very high/very low	0.99	0.81	-	1.20	0.972															
High/low	0.97	0.76	-	1.24																
Average	1																			
Health Literacy																				
Low						0.88	0.72	-	1.09	0.121										
Middle						0.79	0.64	-	0.99											
High						1														
Instrumental support																				
Low											1.10	0.87	-	1.40	0.719					
Middle											1.03	0.84	-	1.27						
High											1									
Informational support																				
Low																0.97	0.75	-	1.23	0.441
Middle																0.86	0.69	-	1.06	
High																1				
<hr/>																				
AIC /BIC	2967.0 / 3111.1					2962.8 / 3107.0					2966.4/ 3110.5					2964.6 / 3108.8				

1) Adjusted for age, gender, number of children, access difficulty, and survey area. All variables were entered simultaneously.

2) Likelihood ratio test for type three analysis. DF = 1 for marital violence and interaction term of employment and DF = 2 for education, household income, the interaction term of education, the interaction term of household income, mastery, health literacy, instrumental support, and informational support.

* p < 0.05, [†]p < 0.10 for interaction terms.

Table 16. Effect of psychosocial resources on the moderating effect of socioeconomic conditions on the association between marital violence and health care utilization in men¹⁾
(N = 1,086)

	Model 5					Model 6					Model 7					Model 8				
	OR	95% CI			p value ²⁾	OR	95% CI			p value ²⁾	OR	95% CI			p value ²⁾	OR	95% CI			p value ²⁾
Marital violence (MV)																				
Any	1.69	1.00	-	2.85	0.047*	1.68	0.99	-	2.85	0.048*	1.66	0.98	-	2.81	0.056	1.68	0.99	-	2.85	0.049*
None	1					1					1					1				
Education																				
Jr. high/high	0.96	0.67	-	1.39	0.058	0.97	0.67	-	1.41	0.066	0.96	0.66	-	1.38	0.057	0.96	0.67	-	1.39	0.055
Some college	0.61	0.41	-	0.92		0.62	0.41	-	0.94		0.61	0.41	-	0.92		0.61	0.41	-	0.92	
University	1					1					1					1				
Household income																				
Low	0.80	0.52	-	1.24	0.519	0.82	0.53	-	1.27	0.603	0.80	0.52	-	1.24	0.524	0.79	0.51	-	1.22	0.462
Average	0.82	0.56	-	1.21		0.84	0.57	-	1.23		0.83	0.56	-	1.21		0.81	0.55	-	1.18	
High	1					1					1					1				
Employment																				
Not employed	0.27	0.05	-	1.44	0.104	0.26	0.05	-	1.41	0.098	0.28	0.05	-	1.50	0.115	0.26	0.05	-	1.42	0.101
Employed	1					1					1					1				
Interaction																				
Education																				
MV x Jr. high/high	0.46	0.23	-	0.94	0.095 [†]	0.47	0.23	-	0.96	0.106	0.47	0.23	-	0.95	0.100 [†]	0.45	0.22	-	0.93	0.089 [†]
MV x some college	0.90	0.40	-	2.02		0.91	0.41	-	2.04		0.92	0.41	-	2.06		0.90	0.40	-	2.01	
Household income																				
MV x low	1.43	0.63	-	3.27	0.590	1.44	0.63	-	3.29	0.565	1.45	0.63	-	3.30	0.567	1.48	0.65	-	3.39	0.533

MV x average	1.37	0.69	-	2.70		1.39	0.71	-	2.75		1.39	0.70	-	2.74		1.41	0.71	-	2.78	
Employment																				
MV x not employed	0.42	0.12		49.04	0.561	0.41	0.12	-	50.46	0.551	2.27	0.11	-	46.71	0.588	2.17	0.11	-	44.66	0.608
Mastery																				
Very high/very low	0.92	0.82	-	1.46	0.824															
High/low	0.93	0.75	-	1.53																
Average	1																			
Health Literacy																				
Low						0.86	0.63	-	1.17	0.334										
Middle						0.79	0.57	-	1.09											
High						1														
Instrumental support																				
Low											1.17	0.83	-	1.65	0.632					
Middle											1.14	0.83	-	1.57						
High											1									
Informational support																				
Low																1.08	0.76	-	1.53	0.202
Middle																0.83	0.59	-	1.16	
High																1				
AIC /BIC					1410.8 / 1530.5					1409.0 / 1528.7					1410.3/ 1530.0					1408.0 / 1527.7

1) Adjusted for age, number of children, access difficulty, and survey area. All variables were entered simultaneously.

2) Likelihood ratio test for type three analysis. DF = 1 for marital violence and interaction term of employment and DF = 2 for education, household income, the interaction term of education, the interaction term of household income, mastery, health literacy, instrumental support, and informational support.

* p < 0.05, †p < 0.10 for interaction terms.

Table 17. Effect of psychosocial resources on the moderating effect of socioeconomic conditions on the association between marital violence and health care utilization in women¹⁾
(N = 1,272)

	Model 5					Model 6					Model 7					Model 8				
	OR	95% CI			p value ²⁾	OR	95% CI			p value ²⁾	OR	95% CI			p value ²⁾	OR	95% CI			p value ²⁾
Marital violence (MV)																				
Any	0.95	0.49	-	1.82	0.869	0.92	0.48	-	1.77	0.804	0.94	0.49	-	1.81	0.856	0.96	0.50	-	1.84	0.902
None	1					1					1					1				
Education																				
Jr. high/high	0.83	0.55	-	1.24	0.543	0.83	0.55	-	1.25	0.542	0.83	0.55	-	1.24	0.538	0.85	0.56	-	1.27	0.567
Some college	0.84	0.59	-	1.18		0.83	0.59	-	1.18		0.84	0.59	-	1.18		0.83	0.59	-	1.18	
University	1					1					1					1				
Household income																				
Low	0.51	0.34	-	0.76	0.004*	0.51	0.34	-	0.76	0.004*	0.51	0.34	-	0.75	0.003*	0.51	0.34	-	0.76	0.004*
Average	0.69	0.48	-	1.00		0.70	0.48	-	1.01		0.69	0.48	-	1.00		0.70	0.48	-	1.01	
High	1					1					1					1				
Employment																				
Not employed	0.92	0.67	-	1.25	0.591	0.91	0.67	-	1.24	0.564	0.91	0.67	-	1.24	0.542	0.91	0.67	-	1.24	0.566
Employed	1					1					1					1				
Interaction																				
Education																				
MV x Jr. high/high	1.34	0.63	-	2.83	0.679	1.34	0.63	-	2.85	0.660	1.35	0.64	-	2.86	0.671	1.30	0.61	-	2.76	0.731
MV x some college	1.31	0.68	-	2.55		1.33	0.69	-	2.59		1.31	0.68	-	2.55		1.28	0.66	-	2.48	
Household income																				
MV x low	1.38	0.68	-	2.84	0.666	1.44	0.70	-	2.95	0.601	1.37	0.67	-	2.82	0.684	1.40	0.68	-	2.87	0.654

MV x average	1.16	0.57	-	2.33		1.16	0.57	-	2.34		1.16	0.57	-	2.34		1.18	0.58	-	2.38	
Employment																				
MV x not employed	0.72	0.41		1.24	0.236	0.73	0.42	-	1.26	0.253	0.72	0.42	-	1.26	0.251	0.72	0.42	-	1.25	0.241
Mastery																				
Very high/very low	0.93	0.70	-	1.22	0.779															
High/low	0.89	0.63	-	1.26																
Average	1																			
Health Literacy																				
Low						0.92	0.69	-	1.23	0.289										
Middle						0.78	0.57	-	1.06											
High						1														
Instrumental support																				
Low											1.08	0.76	-	1.53	0.697					
Middle											0.94	0.71	-	1.24						
High											1									
Informational support																				
Low																0.83	0.57	-	1.20	0.450
Middle																0.86	0.65	-	1.13	
High																1				
AIC /BIC					1571.8 / 1695.4					1569.8 / 1693.4					1571.6/ 1695.1					1570.7 / 1694.3

1) Adjusted for age, number of children, access difficulty, and survey area. All variables were entered simultaneously.

2) Likelihood ratio test for type three analysis. DF = 1 for marital violence and interaction term of employment and DF = 2 for education, household income, the interaction term of education, the interaction term of household income, mastery, health literacy, instrumental support, and informational support.

* p < 0.05

Mediation analyses were conducted to see the magnitude and statistical significance of indirect effects of the moderating effect of socioeconomic conditions through psychosocial resources. Table 18 shows the coefficients of the indirect effect of three types of interaction terms; marital violence and educational attainment, marital violence and household income, and marital violence and employment status. Indirect effects were reported by four types of mediating variables; psychosocial resources, mastery, health literacy, instrumental support, and informational support. None of the indirect effect was significant, including 0 in the 95% confidence intervals. These results were generally identical to the results in sub-group analyses for men (appendix E) and for women (appendix F).

Table 18. Indirect effect of the moderated association between marital violence and health care utilization by socioeconomic conditions through psychosocial resources in the total sample

	Marital violence × education				Marital violence × household income				Marital violence × employment			
	Coefficients ²⁾	SE	95% CI		Coefficients ³⁾	SE	95% CI		Coefficients ⁴⁾	SE	95% CI	
Mastery	0.000	0.003	-0.005	- 0.009	0.000	0.003	-0.005	- 0.007	0.001	0.006	-0.010	- 0.019
Health literacy	0.005	0.006	-0.002	- 0.023	0.004	0.005	-0.002	- 0.021	0.009	0.011	-0.003	- 0.042
Instrumental support	0.002	0.005	-0.003	- 0.017	-0.001	0.003	-0.013	- 0.004	-0.002	0.007	-0.029	- 0.005
Informational support	-0.001	0.004	-0.014	- 0.003	0.001	0.003	-0.003	- 0.012	0.001	0.007	-0.007	- 0.024

- 1) Adjusted for age, gender, number of children, access difficulty, survey area education and household income. Bias-corrected 95% bootstrap confidence interval and SE were estimated using 10,000 bootstrap samples.
- 2) Coefficients of indirect effect of interaction between marital violence and education on health care utilization through psychosocial resources estimated in the framework of path analysis, controlling for the direct effect of marital violence, socioeconomic conditions, interaction of education, and control variables.
- 3) Coefficients of indirect effect of interaction between marital violence and household income on health care utilization through psychosocial resources estimated in the framework of path analysis, controlling for the direct effect of marital violence, socioeconomic conditions, interaction of household income, and control variables.
- 4) Coefficients of indirect effect of interaction between marital violence and employment on health care utilization through psychosocial resources estimated in the framework of path analysis, controlling for marital violence, socioeconomic conditions, interaction of employment, and control variables.

Chapter VIII

Discussion

8.1 Marital violence and health care utilization

The presence of marital violence was associated with increased use of health care independent of socioeconomic conditions among Japanese community residents.

Educational attainment and household income were independently associated with health care utilization, but the adjustment for these socioeconomic conditions did not weaken the strength of the association between marital violence and healthcare utilization. The likelihood of using health care in the past twelve months was 1.36 times higher among those experiencing marital violence than those not experiencing marital violence after adjusting the effect of socioeconomic conditions. This result highlighted the magnitude of negative health effects of marital violence for community residents, and the potentials of health care providers' roles in identifying and intervening in marital violence, which is often confined within a private sphere of "family matters" (Lempert, 1997; Liang et al., 2005; Bent-Goodley, 2007; Rose et al., 2011).

8.2 Effect of socioeconomic conditions on the association between marital violence and health care utilization

The association between marital violence and health care utilization significantly

differed by employment status in the total sample. The odds ratio of health care utilization in the presence of marital violence to the absence of marital violence were 1.52 times higher among those who were employed compared to those who were not employed. None of the mastery, health literacy, instrumental support, and informational support explained the differential association by employment status in the total, male, and female samples.

One of the possibilities is that differences in severity of violence and perceived health may have confounded the moderating effect of employment status on the association between marital violence and health care (Krishnan, 2005; Mogford, 2011). Logistic regression analysis was conducted based on the data of those who experienced marital violence in the current sample to examine the hypothesis that those in employment experienced more physically threatening violence and thus had increased use of health care than those out of employment did. As a result, those out of employment were slightly more likely to experience physical violence and/or injury compared to psychological violence (OR = 1.05, 95% CI = 1.01-1.05), which did not support this hypothesis. Another hypothesis was that those in employment had poorer self-perceived health when they experience marital violence because of their sensitivity to ill-health for maintaining occupational functions. Logistic regression was conducted to see whether the association between Self Rated Health (SRH) and marital violence would differ between those in

employment and those out of employment. As a result, statistically significant interaction between marital violence and employment in predicting SRH was not found ($p = 0.211$). Other factors, such as health check-ups at the work place and increased motivation in health maintenance for better occupational functioning, might have promoted health care utilization in marital violence among those who were employed (Goodman et al., 2009; Boyle & Counts, 1988).

The association of marital violence was independent of the effect of education in total sample, which was in accordance with a previous finding by West et al. (1998). In subgroup analysis, it was found that men who graduated junior high school or high school had lower likelihood of using health care relative to men who graduated university in the presence of marital violence. The positive association between higher educational attainment and increased health care use is in congruent with the previous findings on pregnant women experiencing marital violence. However, none of mastery, health literacy, instrumental support, and informational support explained the moderating effect of education in men. Further study is needed to explain why higher education facilitated the use of health care among men when they experience marital violence.

Household income did not moderate the association between marital violence and health care utilization. In addition, household income was not associated with health care

utilization in the sub-group of respondents who experienced marital violence in the past twelve months. This finding contradicts the previous findings on the use of counseling and social services among female victims in the US and Canada (Henning et al., 2002, Hyman et al., 2009). Lower household income might not have created additional barriers against health care utilization among those who are experiencing marital violence in a Japanese society, where consumption of health care requires less expense on the individual users under the universal insurance coverage (Fukawa, 2002). The use of social services, such as crisis centers and shelters, might be under the stronger influence of household income; those with lower household income may have more access to social services due to the restricted availability of private services and personal support in a financially deprived population (Goodman et al., 2009; Hyman et al., 2009). It is also possible that increased health care need among those experiencing marital violence in poverty offset the negative association between low income and health care use in marital violence (Goodman et al., 2009).

8.3 Gender difference

The association between victimization in marital violence and health care utilization differed by gender on the basis of statistical interaction at the 0.10 level. Gender-subgroup analyses found that the presence of marital violence had positive association with

increased health care use in men, but not in women. One possibility for the lack of significant association in women is that the types of marital violence reported by female respondents may have differed from that of men. In the current sample, 80 % of the reports on victimization by female respondents was psychological without physical victimization, while 50 % of victimization in men were psychological (appendix G). The association between perpetration/victimization status and health care utilization also indicated that victimization measured in this study did not contribute to the increased use of health care in the female sample (appendix H). Psychological violence without physical assault may have been less acute and critical to their health so that it did not motivate the use of health care as much as physical violence could do. Another possibility is that women's experience with marital violence created the barrier against the use of health care. Previous studies found that women in Japan were often blamed or stigmatized for marital violence due to the cultural values of male authority and avoidance of family disturbance (Yoshihama, 2002a; Yoshioka, Gilbert, El-Bassel, & Baig-Amin, 2003; North, 2009). These cultural factors might have discouraged women's contact to health care providers in marital violence.

The moderating effect of employment on the association between any victimization and health care utilization differed by gender; the likelihood of health care use in the presence to the absence of victimization was 1.67 times higher among men out of

employment than among women out of employment. The reasons for this gender difference are unknown from the current study. Previous studies found that female victims of marital violence often experienced control and financial abuse by their partners, and they had to ask permission from their partners to obtaining health care (Yoshihama, 2002b; Postmus et al., 2012). In Japan, housewives without individual source of income are likely to depend on their husbands' medical insurance and their records of health care use are sent to the husbands in employment (Fukawa, 2002; Miyaji, 2008), which might have discouraged female victims in contacting health care providers especially in fear of disclosing their care-seeking to their partners (Miyaji, 2008; Rose et al., 2011). Higher likelihood of health care use among men out of employment might be due to their physical and mental health problems accompanying marital violence, such as alcohol/drug abuse and dependence (Coker, Smith, McKeown, & King; 2000; Stith, Smith, Penn, Ward, & Tritt, 2004; Tang et al., 2008; Cunradi, Ames, & Duke, 2011; Stöckl et al., 2011; Sugayama et al., 2011). To further explain the gender difference, the context, impact and health related correlates of marital violence should be included in the analysis to consider the differentials in the experience of marital violence between men and women.

8.4 Strengths and limitations

The current study has strengthened the existing evidence that the use of health care

was more prevalent among those experiencing marital violence with the results from a Japanese community sample of both genders (Bergman et al., 1991). The use of composite variable of marital violence (perpetration and/or victimization) in this study had an advantage in reducing possible report bias from perpetration/victimization status (Sugarman & Hotaling, 1997; Simpson & Christensen, 2005), and accurately measuring the presence of marital violence. In addition, the current study addressed that not only female victims, but men had increased use of health care in marital violence. This study also addressed the significant role of employment in facilitating care-seeking in marital violence. Employment has been mainly examined as a factor for the occurrence of marital violence, and very few studies had examined how it affect the problem-solving behaviors of people experiencing marital violence (Bybee & Sullivan, 2005; Kim & Gray, 2008).

However, these findings require cautious interpretation given the limitations in this study. First, the lack of significant moderating effects of educational attainment and household income in total sample may have resulted from the characteristics of participants in J-SHINE due to its low response rate. Participants in J-SHINE were likely to have higher educational attainment than those in other social surveys, and higher household incomes than the general Japanese population (Kanbayashi, 2011). Inclusion of deprived population would compensate for these limitations.

Second, the measurement of marital violence in this study may have resulted in the failure to capture the possibly distinctive care-seeking behaviors between victims and perpetrators (Gass et al., 2011). In the current sample, about 80 % of respondents reported mutual violence and 87 % of any victimization defined in this study was mutual violence. It is not easy to distinguish victimization from perpetration in mutual violence because of the interactive nature of violence (Kelly & Johnson, 2008; Renner and Whitney, 2012; Stith et al., 2004) and the lack of assessment of the context of violence in CTS2SF (McHugh & Frieze, 2006; Straus et al., 2003); one can employ violence to protect oneself from partner's violence. More detailed assessment of violence is needed to investigate the perpetration/victimization specific care-seeking behaviors in future studies.

Third, failure to detect significant indirect effects through social support may have resulted from the buffering effect of social support against the negative consequences of marital violence (Coker et al., 2002; Goodman, Dutton, Vankos, & Weinfurt, 2005; Levendosky et al., 2004). In addition, the models for mediation analysis included the interaction term that was investigated for the indirect effect, but not the other types of interaction terms, because of the limitation of PROCESS. Thus, the possible effect of these excluded interactions was not reflected in the estimation of indirect effect through psychosocial resources. However, the results of mediation analysis in this study were

considered to be appropriate, because they agreed with the findings from the logistic regression models where psychosocial resources were hierarchically added in the models that examined interactions between marital violence and socioeconomic conditions.

Forth, this cross-sectional study is not able to claim the causality among marital violence, psychosocial resources, and healthcare utilization. It was possible that deteriorated health status among those who use health care affected the level of psychosocial resources (González-Guarda, Peragallo, Vasquez, Urrutia, & Mitrani, 2009). In such cases, the assumption of mediation analysis that the interaction between marital violence and socioeconomic conditions would decrease psychosocial resources and result in increased use of health care was violated.

Fifth, the current study did not measure sexual abuse, which has devastating negative effect on health (Edwards, Black, Dhingra, McKnight-Eily, & Perry, 2009). The exclusion of sexual abuse may have resulted in weakening the association between marital violence and health care utilization in this study.

CONCLUSION

This thesis presented the results of the development of the Japanese version of Revised Conflict Tactic Scales Short Form (J-CTS2SF) and the secondary analysis on the Japanese Study of Stratification, Health, Income, and Neighborhood (J-SHINE), which used the J-CTS2SF to measure marital violence.

The internet survey in the first section demonstrated the fair reliability and sound validity of J-CTS2SF as a measurement of intimate partner violence (IPV) for large scale community surveys. However, concerns arose regarding the interpretation of results in application. The data from J-SHINE showed that the majority of marital violence accompanied with both perpetration and victimization, and the small numbers of perpetration-only and victimization-only could have resulted in widening 95% confidence interval in estimating coefficients. In addition, the mutual violence measured by the J-CTS2SF is likely to include heterogeneous experiences and consequences of violence that can be either victimization or perpetration in nature; some may have talked back (psychological perpetration) to their partner who physically assaulted them (physical victimization), or other may get their partners injured out of fear (injury perpetration) because their partners verbally threatened them (psychological victimization). The context of violence measured by the J-CTS2SF may also have differed by gender, as female

victimization without perpetration did not contributed to the increased use of health care in this study. Thus, the interpretations of the results require careful consideration to make conclusion about the association of perpetration and victimization with outcome measures and its gender differences. To further examine the course of marital violence and gender differences, more detailed assessment of marital violence should be incorporated with the J-CTS2SF to reflect possible differentials in the patterns and impacts of marital violence between men and women (Smith et al., 1999; Kessler et al., 2001; Coker et al., 2002; Sokoloff & Dupont, 2005; Johnson, 2006; Kelly et al., 2008; Ansara et al., 2010; Reed, Raj, Miller, & Silverman, 2010).

The presence of marital violence was associated with the increased use of health care among community residents in Japan. The likelihood of using health care in the presence to the absence of violence was lower among those who were not employed compared to those who were employed. Women out of employment were less likely to use health care than men out of employment when they are experiencing marital violence. Men, but not women, with lower educational attainment were less likely to use health care in the presence of marital violence, but the statistically significant gender difference was not found in the moderating effect of education in the current study. Psychosocial resources examined in this study did not explain the moderating effects of socioeconomic conditions.

Further studies are needed to explore the mechanisms in which a particular social condition encourages or discourages the use of social resources in marital violence and its gender difference.

The findings of this study underline potential contributions health care providers can make to the secondary and tertiary prevention of marital violence. It should be also noted that a small portion of those experiencing marital violence disclosed their experience to health care providers (Cabinet office Government of Japan, 2012a; Miller et al., 2010), and only about 50% to 70% of those who disclosed the violence to health care providers found that the professional support was helpful (Hamilton & Coates, 1993). Health care providers' lack of competency, the shortage of time and space to discuss the issues related to marital violence in health care settings, and the difficulty in ensuring privacy especially in the presence of the partner, may have created this situation (Lempert, 1997; McGrath et al., 1997; Erickson, Hill, & Siegel, 2001; Nemoto et al., 2006; Bent-Goodley, 2007; Robinson et al., 2008; Rose et al., 2011). These barriers within health care institutions need to be overcome for health care providers to fulfill their roles in the secondary and tertiary prevention of marital violence.

[REDACTED]

[illegible]

[REDACTED]
 [REDACTED]
 [REDACTED]
 [REDACTED]
 [REDACTED]

[REDACTED]

Age Group	Percentage Vaccinated
18-24	15%
25-34	25%
35-44	35%
45-54	45%
55-64	75%
65-74	85%
75+	88%

Material from the *CTS2 “short form”* copyright © 2003 by Western Psychological Services. Translated and adapted by M. Umeda, University of Tokyo, for specific, limited research use under license of the publisher, WPS, 625 Alaska Avenue, Torrance, California 90503, U.S. A. (rights@wpspublish.com). No additional reproduction, in whole or in part, by any medium or for any purpose, may be made without prior, written authorization of WPS. All rights reserved.

Appendix B. Five subscales of the CTS2SF and corresponding items

Sub-scales		Item number	
		Perpetration	Victimization
		(Repondent's act)	(Partner's act)
Negotiation	Cognitive	1	2
	Emotional	7	8
Psychological aggression	Minor	3	4
	Severe	13	14
Physical assault	Minor	9	10
	Severe	11	12
Injury	Minor	6	5
	Severe	16	15
Sexual coercion	Minor	17	18
	Severe	19	20

[illegible]

[REDACTED]

短縮版 CTS 2 を元に作成された尺度の著作権はウェスタン・サイコロジカル・サービスにあります (© 2003 by Western Psychological Services)。本尺度はウェスタン・サイコロジカル・サービスの許可を得て梅田麻希 (東京大学) が本研究のために翻訳、使用したものです。書面によるウェスタン・サイコロジカル・サービスの事前の許可なしに、本尺度のすべて、または一部を複製することは、どのような使用媒体・目的でも禁じられています。すべての著作権はウェスタン・サイコロジカル・サービスにあります。

Western Psychological Service, 625 Alaska Avenue, Torrance, California 90503, U.S.A. (rights@wpspublish.com).

Appendix D. Association between socioeconomic conditions and health care utilization among those who experienced marital violence in the past 12 months in the total, male, and female samples

	Total (n = 675) ¹⁾					Men (n = 305) ²⁾					Women (n = 370) ²⁾				
	OR	95% CI		p value ³⁾		OR	95% CI		p value ³⁾		OR	95% CI		p value ³⁾	
Perpetration/victimization															
Perpetration	1.20	0.70	-	2.07	0.457	0.79	0.38	-	1.65	0.812	1.97	0.80	-	4.81	0.138
Victimization	0.77	0.45		1.30		0.88	0.36	-	2.17		0.69	0.35	-	1.36	
Mutual	1					1					1				
Education															
Jr. high/high	0.69	0.44	-	1.08	0.256	0.45	0.24	-	0.84	0.030*	1.17	0.60	-	2.26	0.834
Some college	0.80	0.52	-	1.24		0.54	0.27	-	1.11		1.19	0.66	-	2.13	
University	1														
Household income															
Low	0.86	0.52	-	1.43	0.849	1.04	0.46	-	2.38	0.984	0.63	0.32	-	1.24	0.409
Average	0.92	0.58	-	1.46		0.98	0.50	-	1.90		0.75	0.38	-	1.47	
High	1					1					1				
Employment															
Not employed	0.64	0.40	-	1.01	0.056	0.64	0.05	-	8.20	0.738	0.62	0.39	-	1.00	0.051
Employed	1					1					1				

1) Adjusted for age, gender, number of children, access difficulty, and survey area. All variables were entered simultaneously.

2) Adjusted for age, number of children, access difficulty, and survey area. All variables were entered simultaneously.

3) Likelihood ratio test for type three analysis. DF = 1 for employment and DF = 2 for education, household income, the interaction term of education, and the interaction term of household income.

* p < 0.05

Appendix E. Indirect effect of the moderated association between marital violence and health care utilization by socioeconomic conditions through psychosocial resources in men

	Marital violence \times education				Marital violence \times household income				Marital violence \times employment		
	$\beta^2)$	SE	95% CI		$\beta^3)$	SE	95% CI		$\beta^4)$	SE	95% CI
Mastery	-0.003	0.008	-0.032	- 0.007	0.000	0.007	-0.014	- 0.015	NC ⁵⁾		
Health literacy	0.008	0.011	-0.005	- 0.043	0.002	0.009	-0.008	- 0.031	NC ⁵⁾		
Instrumental support	0.003	0.008	-0.005	- 0.033	0.009	0.013	-0.008	- 0.051	NC ⁵⁾		
Informational support	0.002	0.007	-0.006	- 0.027	0.002	0.007	-0.007	- 0.027	NC ⁵⁾		

- 1) Adjusted for age, number of children, access difficulty, survey area education and household income. Bias-corrected 95% bootstrap confidence interval and SE were estimated using 10,000 bootstrap samples.
- 2) Coefficients of indirect effect of interaction between marital violence and education on health care utilization through psychosocial resources estimated in the framework of path analysis, controlling for the direct effect of marital violence, socioeconomic conditions, interaction of education, and control variables.
- 3) Coefficients of the indirect effect of interaction between marital violence and household income on health care utilization through psychosocial resources estimated in the framework of path analysis, controlling for the direct effect of marital violence, socioeconomic conditions, interaction of household income, and control variables.
- 4) Coefficients of the indirect effect of interaction between marital violence and employment on health care utilization through psychosocial resources estimated in the framework of path analysis, controlling for marital violence, socioeconomic conditions, interaction of employment, and control variables.
- 5) Coefficients were not calculated because of the small number of those out of employment in men.

Appendix F. Indirect effect of the moderated association between marital violence and health care utilization by socioeconomic conditions through psychosocial resources in women

	Marital violence × education					Marital violence × household income					Marital violence × employment				
	β^2	SE	95% CI			β^3	SE	95% CI			β^4	SE	95% CI		
Mastery	0.000	0.003	-0.005	-	0.009	0.000	0.003	-0.005	-	0.007	0.001	0.006	-0.010	-	0.019
Health literacy	0.005	0.006	-0.002	-	0.023	0.004	0.005	-0.002	-	0.021	0.009	0.011	-0.003	-	0.042
Instrumental support	0.002	0.005	-0.003	-	0.017	-0.001	0.003	-0.013	-	0.004	-0.002	0.007	-0.029	-	0.005
Informational support	-0.001	0.004	-0.014	-	0.003	0.001	0.003	-0.003	-	0.012	0.001	0.007	-0.007	-	0.024

- 1) Adjusted for age, number of children, access difficulty, survey area education and household income. Bias-corrected 95% bootstrap confidence interval and SE were estimated using 10,000 bootstrap samples.
- 2) Coefficients of indirect effect of interaction between marital violence and education on health care utilization through psychosocial resources estimated in the framework of path analysis, controlling for the direct effect of marital violence, socioeconomic conditions, interaction of education, and control variables.
- 3) Coefficients of indirect effect of interaction between marital violence and household income on health care utilization through psychosocial resources estimated in the framework of path analysis, controlling for the direct effect of marital violence, socioeconomic conditions, interaction of household income, and control variables.
- 4) Coefficients of indirect effect of interaction between marital violence and employment on health care utilization through psychosocial resources estimated in the framework of path analysis, controlling for marital violence, socioeconomic conditions, interaction of employment, and control variables.

Appendix G. Prevalence of perpetration/victimization status by types of violence among men and women who experienced marital violence in the past 12 months²⁾

	Men (n = 305)			Women (n = 370)		
	Perpetration % ¹⁾	Victimization % ¹⁾	Mutual % ¹⁾	Perpetration % ¹⁾	Victimization % ¹⁾	Mutual % ¹⁾
	n = 45	n = 30	n = 230	n = 37	n = 49	n = 284
	(14.8%) ³⁾	(9.8%) ³⁾	(75.4%) ³⁾	(10.0%) ³⁾	(13.2%) ³⁾	(76.8%) ³⁾
Psychological	93.3	53.3	69.1	67.6	79.6	60.2
Physical	2.2	43.3	21.3	32.4	16.3	23.6
Injury	4.4	3.3	9.6	0.0	4.1	16.2
	100.0	100.0	100.0	100.0	100.0	100.0

1) Colum % (percentage of the type of violence to the perpetration/victimization status).

2) Perpetration was defined as perpetration without victimization in any types of violence, victimization as victimization without perpetration in any types of violence, and mutual as experience of both perpetration and victimization in either types of violence. Types of violence were categorized as psychological violence without physical violence and injury, physical violence without injury, and injury.

3) Row % (percentage of the perpetration/victimization status to the male or female total sample).

Appendix H. Association between victimization/perpetration status and health care utilization in men and in women¹⁾

	Men (n = 1,085)				Women (n = 1,272)			
	OR	95% CI		p value ²⁾	OR	95% CI		p value ²⁾
Perpetration only	1.38	0.72	- 2.68	0.005*	2.19	0.93	- 5.13	0.191
Victimization only	1.62	0.70	- 3.73		0.87	0.47	- 1.61	
Mutual	1.76	1.27	- 2.46		1.17	0.86	- 1.57	
None	1				1			

1) Adjusted for age, number of children, access difficulty, survey area, educational attainment, household income, and employment status. All variables were entered simultaneously.

2) Likelihood ratio test for type three analysis, DF = 3.

* p < 0.05

REFERENCE

- Ackerson, L. K., Kawachi, I., Barbeau, E. M., & Subramanian, S.V.: Effects of individual and proximate educational context on intimate partner violence: A population-based study of women in India. *American Journal of Public Health*, 98(3), 507-514, 2008.
- Allison, P. D.: Logistic regression using SAS®: theory and application (pp. 39-48). Cary: SAS Institute Inc., 1999.
- Andersson, N., Ho-Foster, A., Mitchell, S., Scheepers, E., & Goldstein, S.: Risk factors for domestic physical violence: National cross-sectional household surveys in eight southern African countries. *BMC Women's Health*, 7, 11, 2007.
- Ando, A., Soga, S., Yamazaki, M., Shimai, T., Shimada, H., Utugi, N., Oashi, O., & Sakai, A.: Development of the Japanese Version of the Buss-Perry Aggression Questionnaire(BAQ). *The Japanese Journal of Psychology*, 70(5), 384-392, 1999.
- [In Japanese]
- Ansara, D. L. & Hindin, M. J.: Exploring gender differences in the patterns of intimate partner violence in Canada: a latent class approach. *Journal of Epidemiology and Community Health*, 64, 849-854, 2010.
- Babazono, A., Kuwabara, K., Hagihara, A., Yamamoto, E., & Hillman, A.: Does

income influence demand for medical services despite Japan's "Health Care for All" policy? *International Journal of Technology Assessment in Health Care*, 24(1), 125-130, 2008.

Bargai, N., Ben-Shakhar, G., & Shalev, A. Y.: Posttraumatic stress disorder and depression in battered women: The mediating role of learned helplessness. *Journal of Family Violence*, 22, 267-275, 2007.

Barrett, K. A., O'Day, B., Roche, A., & Carlson, B. L.: Intimate partner violence, health status, and health care access among women with disabilities. *Women's Health Issues*, 19, 94-100, 2009.

Bent-Goodley, T. B.: Health disparities and violence against women: Why and how culture and societal influences matter. *Trauma, Violence, & Abuse*, 8(2), 90-104, 2007.

Bergman, B. & Brismar, B.: 5-year follow-up study of 117 battered women. *American Journal of Public Health*, 81, 1486-1489, 1991.

Blay, S. L., Fillenbaum, G. G., Andreoli, S. B., & Gastal, F. L.: Equity of access to outpatient care and hospitalization among older community residents in Brazil. *Medical Care*, 46(9), 930-937, 2008.

Bonomi, A. E., Thompson, R. S., Anderson, M., Reid, R. J., Carrell, D., Dimer, J. A.,

& Rivara, F. P.: Intimate partner violence and women's physical, mental, and social functioning. *American Journal of Preventive Medicine*, 30(6), 458-466, 2006.

Bosch, K. & Schumm, W. R.: Accessibility to resources: Helping rural women in abusive partner relationships become free from abuse. *Journal of Sex & Marital Therapy*, 30, 357-370, 2004.

Boyle, J. S. & Counts, M. M.: Toward healthy aging: A theory for community health nursing. *Public Health Nursing*, 5(1), 45-51, 1988.

Boyle, M. H., Georgiades, K., Cullen, J., & Racine, Y.: Community influences on intimate partner violence in India: Women's education, attitudes towards mistreatment and standards of living. *Social Science & Medicine*, 69, 691-697, 2009.

Braveman, P. A., Cubbin, C., Egerter, S., Chideya, S., Marchi, K. S., Metzler, M., & Posner, S.: Socioeconomic status in health research: one size does not fit all. *JAMA*, 294(22), 2879-2888, 2005.

Brown, J. B., Lent, B., Schmidt, S., & Sas, G.: Application of the woman abuse screening tool (WAST) and WAST-Short in the family practice setting. *The Journal of Family Practice*, 49(10), 896-903, 2000.

Buss, A. H. & Perry, M.: The aggression questionnaire. *Journal of Personality and Social Psychology*, 63, 452-459, 1992.

Bybee, D. & Sullivan, C. M.: Predicting re-victimization of battered women 3 years after exiting a shelter program. *American Journal of Community Psychology*, 36(1/2), 85-96, 2005.

Cabinet Office Government of Japan: The act on the prevention of spousal violence and the protection of victims. Tokyo: Cabinet Office, Government of Japan, 2001. [In Japanese] [Retrieved January 28th 2013 from <http://www.gender.go.jp/e-vaw/law/nichiei.pdf>http://www.gender.go.jp/e-vaw/chousa/pdf/2011houkoku_all.pdf]

Cabinet Office Government of Japan: Policies and services on intimate partner violence at local governments: Current states of matters and agendas. Tokyo: Cabinet Office, Government of Japan, 2011. [In Japanese] [Retrieved November 1st 2012 from http://www.gender.go.jp/e-vaw/chousa/pdf/2011houkoku_all.pdf]

Cabinet Office Government of Japan: Reports on intimate partner violence. Tokyo: Cabinet Office, Government of Japan, 2012a. [In Japanese] [Retrieved November 1st 2012 from http://www.gender.go.jp/e-vaw/chousa/h24_boryoku_cyousa.html]

Cabinet Office Government of Japan: Results on the consultation at Spousal Violence

Counseling and Support Center in 2012. Tokyo: Cabinet Office, Government of

Japan, 2012b. [In Japanese] [Retrieved January 31st 2013 from

<http://www.gender.go.jp/dv/kensu/pdf/2011soudan.pdf>]

Campbell, J. C.: Health consequences of intimate partner violence. *Lancet*, 359,

1331-1336, 2002.

Campbell, J., Jones, A. S., Dienemann, J., Kub, J., Schollenberger, J., O'Campo, P.,

Gielen, A. C., & Wynne, C.: Intimate partner violence and physical health

consequences. *Archives of Internal Medicine*, 162, 1157-1163, 2002.

Campbell, J. C. & Lewandowski, L. A.: Mental and physical health effects of intimate

partner violence on women and children. *Psychiatric Clinics of North America*,

20(2), 353-374, 1997.

Coker, A. L., Davis, K. E., Arias, I., Desai, S., Sanderson, M., Brandt, H. M., & Smith,

P. H.: Physical and mental health effects of intimate partner violence for men and

women. *American Journal of Preventive Medicine*, 23(4), 260-268, 2002.

Coker, A. L., Pope, B. O., Smith, P. H., Sanderson, & M., Hussey, J., R.: Assessment of

Clinical Partner Violence Screening Tools. *Journal of the American Medical*

Women's Association, Winter, 19-23, 2001.

- Coker, A. L., Weston, R., Creson, D. L., Justice, B., & Blakeney, P.: PTSD symptoms among men and women survivors of intimate partner violence: the role of risk and protective factors. *Violence and Victims*, 20(6), 625-643, 2005.
- Coker, A. L., Smith, P. H., McKeown, R. E., & King, M. J.: Frequency and correlates of intimate partner violence by type: physical, sexual, and psychological battering. *American Journal of Public Health*, 90(4), 553-559, 2000.
- Coker, A. L., Smith, P. H., Thompson, M. P, McKeown, R. E., Bethea, L., & Davis, K. E.: Social support protects against the negative effects of partner violence on mental health. *Journal of Womens' Health and Gender-Based Medicine*, 11(5), 465-476, 2002.
- Costello, M., Chung, D., & Carson, E.: Exploring alternative pathways out of poverty: making connections between domestic violence and employment practices. *Australian Journal of Social Issues*, 40(2), 253-267, 2005.
- Cunradi, C. B., Ames, G. M., & Duke, M: The relationship of alcohol problems to the risk for unidirectional and bidirectional intimate partner violence among a sample of blue-collar couples. *Violence and Victims*, 26(2), 147-158, 2011.
- Delgado-Rodríguez, M., Gómez-Olmedo, M., Bueno-Cavanillas, A., & Gálvez-Vargas, R.: Unplanned pregnancy as a major determinant in inadequate use of prenatal

care. *Preventive Medicine*, 26, 834-838, 1997.

Diop-Sidibé, N., Campbell, J. C., & Becker, S.: Domestic violence against women in Egypt—Wife beating and health outcomes. *Social Science & Medicine*, 62, 1260-1277, 2006.

Dutton, M. A.: Understanding women's responses to domestic violence: A redefinition of battered woman syndrome. *Hofstra Law Review*, 21, 1191-1242, 1992.

Edwards, V. J., Black, M. C., Dhingra, S., McKnight-Eily, L., & Perry, G. S.: Physical and sexual intimate partner violence and reported serious psychological distress in the 2007 BRFSS. *International Journal of Public Health*, 54, S37-S42, 2009.

Efron, B.: Better Bootstrap confidence intervals. *Journal of the American Statistical Association*, 82, 171-185, 1987.

Eldridge, K. A. & Christensen, A.: Demand-withdraw communication during couple conflict: a review and analysis. In Noller, P., Feeney, J. A (Eds.), *Understanding marriage: Developments in the study of couple interaction* (pp. 289-322). New York: Cambridge University Press, 2002.

Ellsberg, M., Jansen, H. A. F. M., Heise, L., Watts, C. H., & García-Moreno, C.: Intimate partner violence and women's physical and mental health in the WHO multi-country study on women's health and domestic violence: An observational

study. *Lancet*, 371, 1165-1172, 2008.

Erickson, M. J., Hill, T. D., & Siegel, R. M.: Barriers to Domestic Violence Screening in the Pediatric Setting. *Pediatrics*, 108(1), 98-102, 2001.

Fujiwara, T., Okuyama, M., & Izumi, M.: The cycle of violence: Childhood abuse history, domestic violence and child maltreatment among Japanese mothers. *Psychologia*, 53, 211-224, 2010.

Fukawa, T.: Public Health Insurance in Japan. Washington: World Bank Institute, 2002.

Furukawa, T. A., Kawakami, N., Saitoh, M., Ono, Y., Nakane, Y., Nakamura, Y., Tachimori, H., Iwata, N., Uda, H., Nakane, H., Watanabe, M., Naganuma, Y., Hata, Y., Kobayashi, M., Miyake, Y., Takeshima, T., & Kikkawa, T.: The performance of the Japanese version of the K6 and K10 in the World Mental Health Survey Japan. *International Journal of Methods in Psychiatric Research*, 17(3), 152-158, 2008.

García-Moreno, C., Jansen, H. A. F. M., Ellsberg, M., Heise, L., & Watts C. H.: Prevalence of intimate partner violence: Findings from the WHO multi-country study on women's health and domestic violence. *Lancet*, 368, 1260-1269, 2006.

Gass, J. D., Stein, D. J., Williams, D. R., & Seedat, S.: Gender differences in risk for intimate partner violence among South African Adults. *Journal of Interpersonal Violence*, 26(14), 2764-2789, 2011.

Gerberding, J. L., Falk, H., Arias, I., & Hammond, W. R.: Intimate partner violence and sexual violence victimization assessment instruments for use in healthcare settings, version 1.0. Atlanta: Centers for Disease Control and Prevention & National Center for Injury Prevention and Control, 2007.

Gerbert, B., Moe, J., Caspers, N., Salber, P., Feldman, M., Herzig, K., & Bronstone, A.: Physicians' response to victims of domestic violence: Toward a model of care. *Women & Health*, 35(2), 1-22, 2002.

González-Guarda, R. M., Peragallo, N., Vasquez, E. P., Urrutia, M. T., & Mitrani, V. B.: Intimate partner violence, depression, and resource availability among a community sample of Hispanic Women. *Issues in Mental Health Nursing*, 30, 227-236, 2009.

Goodman, L., Dutton, M. A., Vankos, N., & Weinfurt, K.: Women's resources and use of strategies as risk and protective factors for reabuse over time. *Violence Against Women*, 11(3), 311-336, 2005.

Goodman, L., Dutton, M. A., Weinfurt, K., & Cook, S.: The intimate partner violence strategies index: Development and application. *Violence Against Women*, 9(2), 163-186, 2003.

Goodman, L. A., Smyth, K. F., Borges, A. M., & Singer, R.: When crises collide: how

- intimate partner violence and poverty intersect to shape women's mental health and coping? *Trauma, Violence, & Abuse*, 10(4), 306-329, 2009.
- Gordon, J. S.: Community services for abused women: a review of perceived usefulness and efficacy. *Journal of Family Violence*, 11(4), 315-329, 1996.
- Greenland, S.: Basic problems in interaction assessment. *Environmental Health Perspectives*, 101, 59-66, 1993.
- Hamilton, B. & Coates, J.: Perceived helpfulness and use of professional services by abused women. *Journal of Family Violence*, 8(4), 313-324, 1993.
- Hanibuchi, T.: Inequalities in health and health care access: Analysis of access to medical care using JGSS-2008. *JGSS Research Series*, 10, 99-110, 2010. [In Japanse] [Retrieved Nov 1st from http://jgss.daishodai.ac.jp/research/monographs/jgssm10/jgssm10_08.pdf]
- Hasselkus, B. R.: The meaning of everyday occupation. Thorofare, NJ: Slack, 2002.
- Hathaway, J. E., Mucci, L. A., Silverman, J. G., Brooks, D. R., Mathews, R., & Pavlos, C. A.: Heath status and health care use of Massachusetts women reporting partner abuse. *American Journal of Preventive Medicine*, 19(4), 302-307, 2000.
- Hayes, A. F.: Beyond Baron and Kenny: Statistical mediation analysis in the new millennium. *Communication Monograph*, 76(4), 408-420, 2009.

- Hayes, A. F.: PROCESS: A versatile computational tool for observed variable mediation, moderation, and conditional process modeling [White paper], 2012.
[Retrieved Sep 17, 2012 from: <http://www.afhayes.com/public/process2012.pdf>]
- Henning, K. R. & Klesges, L. M.: Utilization of counseling and supportive services by female victims of domestic abuse. *Violence and Victims*, 17(5), 623-636, 2002.
- House, J. S. & Kahn, R. L.: Measures and concepts of social support. In Cohen, S., & Syme, S. L. (Eds), *Social Support and Health* (pp. 83-108). Orland: Academic Press, 1985.
- House, J. S., Umberson, D., & Landis. K. R.: Structures and processes of social support. *Annual Review of Sociology*, 14, 293-318, 1998.
- Hudson, W. W. & McIntosh, S. R.: The assessment of Spouse abuse: Two quantifiable dimensions. *Journal of Marriage and the Family*, November, 873-885, 1981.
- Hyman, I., Forte, T., Mont, J. D., Romans, S., & Cohen, M. M.: Help-seeking behavior for intimate partner violence among racial minority women in Canada. *Women's Health Issues*, 19, 101-108, 2009.
- Ishii, A., Asukai, N., Kimura, Y., Nagasue, T., Kurosaki, M., & Kishimoto, J.: Development of the Domestic Violence Screening Inventory (DVIS) and its reliability and Validity. *Psychiatric Medicine*, 45(8), 817-823, 2003. [In Japanese]

- Ishii, A., Asukai, N., Kimura, Y., Suenaga T., & Kurosaki, M.: Reliability and validity of the Revised Conflict Tactics Scales (CTS2). *The 66th annual convention of the Japanese Psychological Association*. Hiroshima, Japan, 2002 Sep. [In Japanese]
- Ishikawa, H. & Kiuchi, T.: Health literacy and health communication. *Biopsychosocial Medicine*, 4, 18, 2010.
- Jasti, S., Dudley, W. N., & Goldwater, E.: SAS macros for testing statistical mediation in data with binary mediators or outcomes. *Nursing research*, 57(2), 118-122, 2008.
- Johnson, M. P.: Conflict and control: Gender symmetry and asymmetry in domestic violence. *Violence Against Women*, 12(11), 1003-1018, 2006.
- Kan, C., Kawakami, N., Karasawa, M., Love, G. D., Coe, C. L., Miyamoto, Y., Ryff, C. D., Kitayama, S., Curhan, K. B., & Markus, H. R.: Psychological Resources as Mediators of the Association between Social Class and Health: Comparative Findings from Japan and the U.S.. *International Journal of Behavioral Medicine*, 2012. [In Press]
- Kanbayashi, H.: Socioeconomic characteristics of respondents in J-SHINE data. Paper presented at: *The 5th multidisciplinary workshop, Elucidation of social stratification mechanism and control over health inequality in contemporary*

Japan: New interdisciplinary area of social and health science. Tokyo, Japan,

2011 Oct 8.

Kataoka, Y.: Development of the Violence Against Women Screen. *Japan Journal of Nursing Science*, 25(3), 51-60, 2005. [In Japanese]

Kataoka, Y., Yaju, Y., Eto, H., & Horiuchi, S.: Domestic violence against women during pregnancy. *Journal of Japan Public Health Association*, 52(9), 785-795, 2005. [In Japanese]

Kelly, J. B. & Johnson, M. P.: Differentiation among types of intimate partner violence: Research update and implications for interventions. *Family Court Review*, 46(3), 476-499, 2008.

Kessler, R. C., Andrews, G., Colpe, L. J., Hiripi, E., Mroczek, D. K., Normand, S. L., Walters, E. E., & Zaslavsky, A. M.: Short screening scales to monitor population prevalences and trends in non-specific psychological distress. *Psychological Medicine*, 32(6), 959-76, 2002.

Kessler, R. C., Barker, P. R., Colpe, L. J., Epstein, J. F., Gfroerer, J. C., Hiripi, E., Howes, M. J., Normand, S. L., Manderscheid, R. W., Walters, E. E., & Zaslavsky, A. M.: Screening for serious mental illness in the general population. *Archives of General Psychiatry*, 60(2), 184-189, 2003.

- Kessler, R. C., Molnar, B. E., Feurer, I. D., & Appelbaum, M.: Patterns and mental health predictors of domestic violence in the United States: Results from the National Comorbidity Survey. *International Journal of Law and Psychiatry*, 24, 487-508, 2001.
- Kim, J. & Gray, K. A.: Leave or stay?: Battered women's decision after intimate partner violence. *Journal of Interpersonal Violence*, 23(10), 1465-1482, 2008.
- Koenig, M. A., Stephenson, R., Ahmed, S., Jejeebhoy, S. J., & Campbell, J.: Individual and contextual determinants of domestic violence in North India. *American Journal of Public Health*, 96(1), 132-138, 2006.
- Krishnan, S.: Gender, class, and economic inequalities and marital violence in rural South India. *Health Care for Women International*, 26, 87-99, 2005.
- Krug, E. G., Dahlberg, L. L., Mercy, J. A., Zwi, A. B., & Lozano, R. (Eds.): World report on violence and health. Geneva: World Health Organization, 2002.
- Kurz, D.: Social science perspectives on wife abuse: Current debates and future directions. *Gender & Society*, 3(4), 489-505, 1989.
- Lachman, M. E. & Weaver, S.L.: The sense of control as a moderator of social class differences in health and well-being. *Journal of Personality and Social Psychology*, 74, 763-773, 1998.

- Lempert, L. B.: The other side of help: Negative effects in the help-seeking processes of abused women. *Qualitative Sociology*, 20(2), 289-309, 1997.
- Levendosky, A. A., Bogat, G. A., Theran, S. A., Trotter, J. S., Eye, A., & Davidson, W. S., II.: The social networks of women experiencing domestic violence. *American Journal of Community Psychology*, 34(1/2), 95-109, 2004.
- Lewis, C. S., Griffing, S., Chu, M., Sage, R. E., Madry, L., & Primm, B. J.: Coping and violence exposure as predictors of psychological functioning in domestic violence survivors. *Violence Against Women*, 12(4), 340-354, 2006.
- Li, Q., Kirby, R. S., Sigler, R. T., Hwang, S., & LaGory, M. E.: A multilevel analysis of individual, household, and neighborhood correlates of intimate partner violence among low-income pregnant women in Jefferson County, Alabama. *American Journal of Public Health*, 100(3), 531-539, 2010.
- Liang, B., Goodman, L., Tummala-Narra, P., & Weintraub, S.: A theoretical framework for understanding help-seeking processes among survivors of intimate partner violence. *American Journal of Community Psychology*, 36(1/2), 71-84, 2005.
- Liang, Y., Chang, H., Lin, Y., Lin, L., & Chen, W.: Factors affecting adequate prenatal care and the prenatal care visits of immigrant women to Taiwan. *Journal of Immigrant and Minority Health*, 2012. doi:10.1007/s10903-012-9734-z.

- Lynch, J. & Kaplan, G.: Socioeconomic position. In Berkman, L. F. & Kawachi, I. (Eds.), *Social Epidemiology*. New York: Oxford University Press, 2000.
- MacKinnon, D. P., Lockwood, C. M., & Williams, J.: Confidence limits for the indirect effect: Distribution of the product and resampling methods. *Multivariate Behavioral Research*, 39, 99-128, 2004.
- Macromill: Registrants of Macromill for internet researchregistrants. Tokyo: Macromill, 2011. [In Japanese]
- Macromill: Life-style survey among Macromill registrants. Tokyo: Macromill, 2012. [In Japanese] [Retrieved January 22nd from http://www.macromill.com/monitor_info/lifestyle/lifestyle2012_summary.pdf]
- Marshall, L. L.: Development of the Severity of Violence Against Women Scales. *Journal of Family Violence*, 7(2), 103-121, 1992.
- Marshall, S. W.: Power for tests of interaction: Effect of raising the Type I error rate. *Epidemiologic Perspectives & Innovations*, 4, 4, 2007.
- McGrath, M. E., Bettacchi, A., Duffy, S. J., Peipert, J. F., Becker, B. M., & Angelo, L. S.: Violence against Women: Provider Barriers to Intervention in Emergency Departments. *Academic Emergency Medicine*, 4(4), 297-300, 1997.
- McHugh, M. C. & Frieze, I. H.: Intimate Partner Violence: New Directions. *Annals of*

the New York Academy of Sciences, 1087, 121-141, 2006.

Miller, E., Decker, M. R., Raj, A., Reed, E., Marable, D., & Silverman, J. G.: Intimate partner violence and health care-seeking patterns among female users of urban adolescent clinics. *Maternal and Child Health Journal*, 14(6), 910-917, 2010.

Ministry of Internal Affairs and Communications Japan: Population Census 2010.

Tokyo: The Statistics Bureau and the Director-General for Policy Planning of Japan, 2011. [In Japanese] [Retrieved January 22nd from <http://www.stat.go.jp/data/kokusei/2010/kihon1/pdf/gaiyou1.pdf>]

Mirowsky, J. & Ross, C. E.: Education, personal control, lifestyle and health: A human capital hypothesis. *Research on Aging*, 20(4), 415-449, 1998.

Miyaji, N.: Handbook for medical professionals: How to respond to DV victims (Iryo Genba ni Okeru DV Higaisya heno Taiou Handbook) (pp. 64-66). Tokyo: Akashi-shoten, 2008. [In Japanese]

Mogford, E.: When status hurts: dimensions of women's status and domestic abuse in rural Northern India. *Violence Against Women*, 17(7), 835-857, 2011.

Moraes, C. L. & Reichenheim, M. E.: Cross-cultural measurement equivalence of the revised Conflict Tactics Scales (CTS2) Portuguese version used to identify violence within couples. *Cad Saude Publica*, 18(3), 783-796, 2002.

Naganuma, Y., Tachimori, H., Kawakami, N., Takeshima, T., Ono, Y., Uda, H., Hata, Y.,

Nakane, Y., Nakane, H., Iwata, N., Furukawa, T., Kikkawa, T.: Twelve-month use of mental health services in four areas in Japan: Findings from the World Mental Health Japan Survey 2002-2003. *Psychiatry and Clinical Neurosciences*, 60, 240-248, 2006.

National Police Agency Japan: Responses to the cases of stalking and marital violence in

2011. Tokyo: National Police Agency Japan, 2012. [In Japanese][Retrieved

January 28th 2013 from <http://www.npa.go.jp/safetylife/seianki/23DV.pdf>]

Nemoto, K., Rodriguez, R., & Mkandawire-Valhmu, L.: Battered Japanese women's

perceptions and experiences of beneficial health care. *Japanese Journal of Nursing Science*, 5, 41-49, 2008.

Nemoto, K., Rodriguez, R., & Valhmu, L. M.: Exploring the health care needs of

women in abusive relationships in Japan. *Health Care for Women International*, 27, 290-306, 2006.

North, S.: Negotiating what's natural: Persistent domestic gender role inequity in Japan.

Social Science Japan Journal, 12(1), 23-44, 2009.

Obi, S. N. & Ozumba, B. C.: Factors associated with domestic violence in south-east

Nigeria. *Journal of Obstetrics and Gynaecology*, 27(1), 75-78, 2007.

- Olive, P.: Care for emergency department patients who have experienced domestic violence: a review of the evidence base. *Journal of Clinical Nursing*, 16, 1736-1748, 2007.
- Parker, B. & McFarlane, J.: Identifying and helping battered pregnant women. *The American Journal of Maternal Child Nursing*, 16, 161-164, 1991.
- Petersen, R., Moracco, K. E., Goldstein, K. M., & Clark, K. A.: Women's perspectives on intimate partner violence services: the hope in Pandora's box. *Journal of the American Medical Women's Association*, 58(3), 185-190, 2003.
- Postmus, J. L., Plummer, S., McMahon, S., Murshid, N. S., & Kim, M. S.: Understanding economic abuse in the lives of survivors. *Journal of Interpersonal Violence*, 27(3), 411-430, 2012.
- Preacher, K. J. & Hayes, A. F.: Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavioral Research Methods*, 40, 879-891, 2008.
- Rani, M., Bonu, S., & Diop-Sidibe, N.: An empirical investigation of attitudes towards wife-beating among men and women in seven Sub-Saharan African Countries. *African Journal of Reproductive Health*, 8(3), 116-136, 2004.
- Reed, E., Raj, A., Miller, E., & Silverman, J. G.: Losing the "gender" in gender-based

violence: The missteps of research on dating and intimate partner violence.

Violence Against Women, 16(3), 348-354, 2010.

Renner, L. M. & Whitney, S. D.: Risk factors for unidirectional and bidirectional intimate partner violence among young adults. *Child Abuse & Neglect*, 36, 40-52, 2012.

Robinson, L. & Spilsbury, K.: Systematic review of the perceptions and experiences of accessing health services by adult victims of domestic violence. *Health and Social Care in the Community*, 16(1), 16-30, 2008.

Rose, D., Trevillion, K., Woodall, A., Morgan, C., Feder, G., and Howard, L.: Barriers and facilitators of disclosures of domestic violence by mental health service users: Qualitative study. *British Journal of Psychiatry*, 198, 189-194, 2011.

Ross, C. E. & Wu, C.: The links between education and health. *American Sociological Review*, 60, 719-745, 1995.

Saltzman, L. E., Fanslow, J. L., McMahon, P. M., & Shelley, G. A.: Intimate partner violence surveillance: Uniform definitions and recommended data elements, version 1.0. Atlanta: Centers for Disease Control and Prevention, National Center for Injury Prevention and Control, 2002.

Sarkar, N. N.: The impact of intimate partner violence on women's reproductive health

and pregnancy outcome. *Journal of Obstetrics and Gynaecology*, 28(3), 266-271, 2008.

Schöllgen, I., Huxhold, O., Schüz, B., & Tesch-Römer, C.: Resources for health: differential effects of optimistic self-beliefs and social support according to socioeconomic status. *Health Psychology*, 30(3), 326-335, 2011.

Sherin, K. M., Sinacore, J. M., Li, X, Zitter, R. E., & Shakil, A.: HITS: a short domestic violence screening tool for use in a family practice setting. *Family Medicine*, 30(7), 508-512, 1998.

Shobe, M. A. & Dienemann, J.: Intimate partner violence in the United States: An econological approach to prevention and treatment. *Social Policy & Society*, 7(2), 185-195., 2007.

Simkhada, B., Teijlingen, E. R., Porter, M., & Simkhada, P.: Factors affecting the utilization of antenatal care in developing countries: Systematic review of the literature. *Journal of Advances in Nursing*, 61(3), 244-260, 2007.

Simpson, L. E. & Christensen, A.: Spousal agreement regarding relationship aggression on the Conflict Tactics Scale-2. *Psychological Assessment*, 17(4), 423-432, 2005.

Singh-Manoux, A. & Marmot, M.: Role of socialization in explaining social inequalities in health. *Social Science & Medicine*, 60, 2129-2133, 2005.

Smith, P. H., Smith, J. B., & Earp, J. A.: Beyond the measurement trap: A reconstructed conceptualization and measurement of woman battering. *Psychology of Women Quarterly*, 23, 177-193, 1999.

Smith, P. H., Tessaro, I., & Earp, J. A. L.: Women's experiences with battering: A conceptualization from qualitative research. *Women's Health Issues*, 5, 197-182, 1995.

Sokoloff, N. J. & Dupont, I.: Domestic Violence at the intersections of race, class, and gender: Challenges and contributions to understanding violence against marginalized women in diverse communities. *Violence Against Women*, 11(1), 38-64, 2005.

Staggs, S. L., Long, S. M., Mason, G. E., Krishnan, S., & Riger, S.: Intimate partner violence, social support, and employment in the post-welfare reform era. *Journal of Interpersonal Violence*, 22(3), 345-367, 2007.

Stith, S. M., Smith, D. B., Penn, C. E., Ward, D. B., & Tritt, D.: Intimate partner physical abuse perpetration and victimization risk factors: A meta-analytic review. *Aggression and Violent Behavior*, 10, 65-98, 2004.

Stöckl, H., Heise, L., & Watts, C.: Factors associated with violence by a current partner in a nationally representative sample of German women. *Sociology of Health, &*

Illness, 33(5), 694-709, 2011.

Straus, M. A.: Measuring Intrafamily Conflict and Violence: The Conflict Tactics (CT) Scales. *Journal of Marriage and the Family*, 41, 75-88, 1979.

Straus, M. A.: Cross-cultural reliability and validity of the Revised Conflict Tactics Scales: A study of university student dating couples in 17 nations. *Cross-Cultural Research*, 38(4), 407-432, 2004.

Straus, M. A., Hamby, S. L., Boney-McCoy, S., & Sugarman, D.B.: The revised Conflict Tactics Scales (CTS2). *Journal of Family Issues*, 17(3), 283-316, 1996.

Straus, M. A., Hamby, S. L., & Warren, W. L.: The Conflict Tactics Scales Handbook. Los Angeles: Western Psychological Services, 2003.

Straus, M. A. & Douglas, E. M.: A short form of the revised Conflict Tactics Scales, and typologies for severity and mutuality. *Violence and Victims*, 19(5), 507-520, 2004.

Sugarman, D. B. & Hotaling G. T.: Intimate violence and social desirability: A meta-analytic review. *Journal of interpersonal violence*, 12(2), 275-290, 1997.

Sugaya, N., Haraguchi, A., Ogai, Y., Senoo, E., Higuchi, S., Umeno, M., Aikawa, Y., & Ikeda, K.: Family dysfunction differentially affects alcohol and methamphetamine dependence: a view from the addiction severity index in Japan. *International Journal of Environmental Research and Public Health*, 8, 3922-3937, 2011.

Sutherland, C. A., Sullivan, C. M., & Bybee, D. I.: Effects of intimate partner violence versus poverty on women's health. *Violence Against Women*, 7(10), 1122-1143, 2011.

Swanberg, J. E., Logan, T. K., & Macke, C.: Intimate partner violence, employment, and the workplace: Consequences and future directions. *Trauma, Violence, & Abuse*, 6(4), 286-312, 2005.

Ta, V. M. & Hayes, D.: Racial differences in the association between partner abuse and barrier to prenatal health care among Asian and Native Hawaiian/other Pacific Islander Women. *Maternal and Child Health Journal*, 14, 350-359, 2010.

Tang, C. S. & Lai, B. P.: A review of empirical literature on the prevalence and risk markers of male-on-female intimate partner violence in contemporary China, 1987-2006. *Aggression and Violent Behavior*, 13, 10-28, 2008.

Taylor, C. A., Guterman, N. B., Lee, S. J., & Rathouz, P. J.: Intimate partner violence, maternal stress, nativity, and risk for maternal maltreatment of young children. *American Journal of Public Health*, 99(1), 175-183, 2009.

Vest, J. R., Catlin, T. K., Chen, J. J., & Brownson, R. C.: Multistate analysis of factors associated with intimate partner violence. *American Journal of Preventive Medicine*, 22(3), 156-164, 2002.

- West, C. M., Kantor, G. K., & Jasinski, J. L.: Sociodemographic predictors and cultural barriers to help-seeking behavior by Latina and Anglo American battered women. *Violence and Victims*, 13(4), 361-375, 1998.
- Williams, J. & MacKinnon D. P.: Resampling and distribution of the Product Methods for Testing Indirect Effects in Complex Models. *Structural Equation Modeling*, 15(1), 23-51, 2008.
- Winch, C.: The economic aims of education. *Journal of Philosophy of Education*, 36(1), 101-117, 2002.
- World Health Organization: WHO multi-country study on women's health and domestic violence against women: Summary report of initial results on prevalence, health outcomes and women's response. Geneva: World Health Organization, 2005.
- Yoshihama, M.: Battered Women's coping strategies and psychological distress: Differences by immigration status. *American Journal of Community Psychology*, 30(3), 429-452, 2002a.
- Yoshihama, M.: Breaking the web of abuse and silence: Voices of battered women in Japan. *Social Work*, 47(4), 389-400, 2002b.
- Yoshihama, M., Horrocks, J., & Bybee, D.: Intimate partner violence and initiation of smoking and drinking: a population-based study of women in Yokohama, Japan.

Social Science & Medicine, 71, 1199-1207, 2010.

Yoshihama, M., Horrocks, J., & Kamano, S.: Experiences of intimate partner violence and related injuries among women in Yokohama, Japan. *American Journal of Public Health*, 97(2), 232-234, 2007.

Yoshihama, M., Horrocks, J., & Kamano, S.: The role of emotional abuse in intimate partner violence and health among women in Yokohama, Japan. *American Journal of Public Health*, 99(4), 647-653, 2009.

Yoshioka, M. R., Gilbert, L., El-Bassel, N., & Baig-Amin, M.: Social support and disclosure of abuse: comparing South Asian, African American, and Hispanic Battered Women. *Journal of Family Violence*, 18(3), 171-180, 2003.