



## Assessing Validity and Reliability of Physical and Psychological Violence Victimization Instrument among Adolescents in Dating Relationships

Suci Musvita Ayu<sup>1</sup>, Erni Gustina<sup>1</sup>, Liena Sofiana<sup>1</sup>, Thoharoh Halimatusa'diyah<sup>1</sup>, Soeharto<sup>2,3,4</sup>, Moh. Irma Sukarelawan<sup>5</sup>, Ratu Matahari<sup>6</sup>, Septian Emma Dwi Jatmika<sup>7</sup>

<sup>1</sup> Public Health, Faculty of Public Health, Universitas Ahmad Dahlan, Indonesia

<sup>2</sup> Research Center of Educational Technologies, Azerbaijan State University of Economics, Baku, Azerbaijan

<sup>3</sup> National Research and Innovation Agency (BRIN), Jakarta, Indonesia

<sup>4</sup> Doctoral School of Education, University of Szeged, 32-34, Petofi S. sgt., Szeged, H-6722, Hungary

<sup>5</sup> Physics Education Study Program, Faculty of Teacher Training and Education, Universitas Ahmad Dahlan, Indonesia

<sup>6</sup> Institute for Population and Social Research, Mahidol University, Thailand

<sup>7</sup> International Health program, Institute of Public Health, College of Medicine, National Yang-Ming University, Taipei, Taiwan, ROC

Email: [suci.ayu@ikm.uad.ac.id](mailto:suci.ayu@ikm.uad.ac.id)

\* Corresponding author

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### Abstract

**Background:** Couple victimization among adolescents has an impact on their physical and psychology. The objectives of this study were to evaluate the validity and reliability of a physical and psychological violence scale among dating adolescents. **Methods:** A total of 294 students participated in this study. The participants were chosen using a basic random sampling approach. The validity of the proposed scale was assessed using expert judgment, t-values, and Standardized Loading Factors (SLFs) using Confirmatory Factor Analysis. The reliability of each construct was determined using the Construct Reliability (CR) value. The acquired data satisfied the criterion for goodness-of-fit based on Confirmatory Factor Analysis. The experts deemed a total of 37 items valid. **Results:** The Confirmatory Factor Analysis demonstrates that the 32-item scale measuring victims of physical and psychological violence meets the criteria for validity and reliability. The t-values range from 6.41 to 17.87, the standardized loading factor ranges from 0.38 to 0.85, confirming construct validity achieved, and the construct reliability ranges from 0.89 to 0.93, showing all construct or latent factors achieving acceptable reliability criteria. **Conclusion:** Victims of physical and psychological assault met the criteria for being valid and reliable.

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## INTRODUCTION

Intimate partner violence (IPV) is a significant global public health problem that affects a large number of women worldwide. The World Health Organisation (WHO) estimates that the global prevalence of IPV is around 30%.<sup>1</sup> IPV encompasses multiple forms of abuse, including physical, sexual, emotional, and controlling behaviour.<sup>2</sup> The impact of IPV is profound, causing physical, sexual, and psychological harm to women.<sup>3</sup>

Research has shown that IPV is the most common form of violence against women worldwide.<sup>4-6</sup> The prevalence of IPV varies across regions, with developing regions experiencing higher rates, reaching up to 33%.<sup>7</sup> In Africa, the prevalence of IPV in women ranges from 2% to 57%.<sup>8</sup> IPV violence is not limited to physical violence but also includes psychological and sexual violence.<sup>9,10</sup> Psychological violence has been reported as the most common form of IPV, followed by physical and sexual violence.<sup>9,10</sup>

In Indonesia, the prevalence of violence in women aged 15-64 years, both unmarried and those who have/are having a partner, experienced physical violence at 18.1%, and 33.4% experienced physical and/or sexual violence during life, both carried out by spouse and non-spouse.<sup>11</sup> The Annual Note Sheet (CATAHU) in 2023 reported that in private/personal areas, psychological violence had the highest percentage at 39.6% (1,494 cases), while physical violence ranked third at 18.9% (713 cases).<sup>12</sup> The results from the previous study reported that 59.2% of adolescents had committed violence against their partners.<sup>13</sup>

Some studies show that IPV is more difficult to recognize from both the perspective of the victim and from the perspective of the community.<sup>14,15</sup> Physical violence remains a prevalent form of violence in relationships among adolescents.<sup>16-18</sup> Psychological violence has not received significant study attention as a kind of violence due to its inherent difficulty in evaluation and its subjective nature, which sets it apart from physical violence and other forms of violence.<sup>19,20</sup> Adolescent girls are more susceptible to psychological violence than males.<sup>21</sup> Psychological violence is pervasive and constitutes a distinct form of violence within romantic relationships. It is recognized as the primary cause of pain for women who experience partner violence.

Screening instruments that have been developed to identify women as victims of IPV, such as the VITA Scale<sup>15</sup>, IVPRAS<sup>22</sup>, and CASR-SF<sup>23</sup>. The 15-item CAS version has been developed from 12 items developed from the original CAS and 3 items suggested by experts and a literature review covering 3 domains, namely physical, sexual, and psychological abuse that contain questions about violence experienced for life, current exposure, and the frequency of exposure to violence. The VITA Scale contains items about the specific role of several emotions, such as shame, guilt, and fear. The VITA Scale aims to assess the intensity of the post-traumatic influence of victims of IPV.<sup>15</sup> While

there are scales to identify intimate partner violence, there is limited information on scales to recognize dating violence in adolescents.

The purpose of this study was to determine the validity and reliability of an instrument for victims of physical and psychological violence in adolescent dating. The following research questions were posed for consideration: (1) What is the content validity of the scale of victims of physical and psychological violence in adolescent dating? (2) What is the construct validity and reliability of the scale of victims of physical and psychological violence in adolescent couples?

Against the background of the issues outlined, the results of this study contribute to providing in-depth insights into the prevalence and characteristics of intimate relationship violence among adolescents in Indonesia. This study not only reinforces the importance of recognizing physical and psychological violence as the main forms of violence in adolescent relationships but also highlights the challenges in the identification of psychological violence, which has received less attention. As such, this study serves as a basis for developing screening instruments that are more specific and effective in identifying adolescent relationship violence, which in turn can improve prevention and intervention efforts in the community.

## METHODS

### Participants

The preliminary study involved 15 respondents (11 females and four males) selected using a convenience sampling technique. They were involved in providing feedback on the readability of the developed instrument. The main study involved 397 respondents selected using a purposive sampling technique at a private university in Yogyakarta, Indonesia and used inclusion criteria. The inclusion criteria were all active university students (male and female) who had non-marital relationships, were able to be respondents and provided consent. Based on the inclusion criteria, 294 out of 397 respondents were obtained.

### Scale-development procedures.

The scale construct validation was determined based on responses from 294 respondents who met the inclusion criteria. The experts assessed the scale using 10 items in terms of content: (a). Accuracy of examples of violence (b). Correspondence of items, (c). Completeness of types of violence, (d). Language Suitability (e). Use of Communicative Language (f). Appropriate use of language with the level of development of respondents. The scale for physical and psychological violence victims employed a four-point Likert rating scale, namely: 1 (Often), 2 (Sometimes), 3 (Rarely), and 4 (Never).

## Data Collection Procedures

An online questionnaire completed via Google Forms was used to collect data. Potential respondents received the questionnaire through social media groups. To confirm that they were freely participating in the study, respondents were asked to fill out a consent form on the first page of the questionnaire.<sup>24</sup> Those who refused to participate or did not meet the participation requirements could not proceed to answer the questions. Students will proceed to the next step. All data were collected over 3 weeks.

## Data Analysis

The Aiken V technique determines the validity of the content.<sup>25</sup> Experts who were involved in this study were 5 people and 5 rating numbers, namely “very irrelevant,” “less relevant,” “quite relevant,” “relevant,” and “very relevant.” Based on the Aiken V table (significance level of 5%), the allowable cutoff value of the content validity index was 0.80. In carrying out a factor analysis, or more specifically, a Confirmatory factor analysis (CFA), a number of requirements must be fulfilled. This includes the adequacy of the sample size and the model's suitability. The KMO value test and Bartlett's sphericity were used to ensure the sample size's adequacy or data suitability and whether factor analysis can be performed.<sup>26-29</sup> The adequacy or suitability of the model for factor analysis if it fulfills a KMO-MSA value of more than 0.6, and Bartlett's Test of Sphericity is statistically significant or sig. < 0.05.<sup>30</sup>

The validity of each item was determined based on the t-value and standardized loading factor (SLF) from the Confirmatory Factor Analysis results. Items are declared valid if they meet the t-value > 1.96 and SLF  $\geq$  0.40.<sup>31</sup> Referring to these two values, items will be removed and re-analyzed if they do not meet the minimum values.<sup>32</sup> The next step is to determine the suitability or suitability of the model through several Goodness-of-Fit indices.<sup>33</sup> Based on the number of observed variables (12-30 observed variables) and number of observations (> 250 number of observations), the suitability index in this study refers to the cut-off value of five indices suggested by Hair *et al.*:  $\chi^2/df$ , Comparative Fit Index (CFI), Tucker Lewis Index (TLI), Root Mean Square of Approximation (RMSEA) and Standardized Root Mean Residual (SRMR).<sup>34,35</sup> Table 1 shows the Goodness-of-Fit index standard for a scale model of victims of physical and psychological violence in dating adolescents.

**Table 1.** Standard Model of Goodness-of-Fit Index for PPVV

| Fit indices | Recommended Values               |
|-------------|----------------------------------|
| $\chi^2/df$ | $\leq 5.00$                      |
| CFI         | $\geq 0.92$                      |
| TLI         | $\geq 0.92$                      |
| SRMR        | $\leq 0.08$ with CFI $\geq 0.92$ |
| RMSEA       | $< 0.07$ with CFI $\geq 0.92$    |

After the validity of each item is obtained, the reliability of each construct is determined based on the value of Construct Reliability (CR) and Variance Extracted (VE).<sup>36</sup> Model reliability is good if it meets a CR value of  $\geq 0.70$  and  $VE \geq 0.50$ , but the reliability coefficient of 0.60 to 0.70 can be accepted as long as the indicators of the model construct validity are also good.<sup>32,37</sup>

## RESULTS

### Eligible Respondents

Based on the established criteria, 294 respondents were identified: 13% were men (37 respondents), and 87% were women (257 respondents). Their ages range from 17 to 25 years, with an average age = 20.1 years and SD = 1.4 years. The distribution of respondents consisted of 30% first-level students, 27% second-level, 23% third-level, 19% fourth-level, and 2% fifth-level.

### Content Validity

Table 2 shows the results of the experts' assessment to determine the content validity scale for victims of physical and psychological violence in dating adolescents. The magnitude of the calculated V index ranges from 0.8 - 0.9. This indicates that the developed scale can be used for further analyses.

**Table 2.** Content Validity Scale of Victims of Physical and Psychological Violence

| Aiken V | Item 1 | Item 2 | Item 3 | Item 4 | Item 5 | Item 6 | Item 7 | Item 8 | Item 9 | Item 10 |
|---------|--------|--------|--------|--------|--------|--------|--------|--------|--------|---------|
| PhyVV   | 0.8    | 0.8    | 0.8    | 0.8    | 0.8    | 0.8    | 0.9    | 0.8    | 0.9    | 0.8     |
| PsyVV   | 0.9    | 0.8    | 0.8    | 0.8    | 0.9    | 0.8    | 0.9    | 0.8    | 0.9    | 0.8     |

PhyVV = Physical Violence Victims; PsyVV = Psychological Violence Victims

### Validity and Reliability Construct

The analysis showed that the data fulfilled the adequacy and suitability requirements for factor analysis. This was supported by the KMO-MSA value of 0.904, and Bartlett's Test of Sphericity had a significance of  $< 0.05$ . Table 3 shows the results of the confirmatory factor analysis. Four measurement models were obtained from the analysis results.

**Table 3.** Model fit indices on the scale of physical and psychological violence

| Models  | Description   | $\chi^2$ | df  | $\chi^2/df$ | CFI  | TLI  | SRMR  | RMSEA |
|---------|---|----------|-----|-------------|------|------|-------|-------|
| Model 1 | All item  | 2626.05  | 628 | 4.18        | 0.90 | 0.89 | 0.083 | 0.104 |
| Model 2 | Removed item 4 item (Phy9, Phy12, Phy14, and Phy16) | 2261.93  | 494 | 4.58        | 0.91 | 0.90 | 0.084 | 0.111 |
| Model 3 | Index Modification (33 items)                       | 1315.92  | 443 | 2.97        | 0.95 | 0.94 | 0.069 | 0.082 |
| Model 4 | Modification indices (32 items) with removed Phy11  | 1217.98  | 416 | 2.93        | 0.95 | 0.94 | 0.072 | 0.081 |

Table 3 shows that the first Confirmatory Factor Analysis was used to analyze the 37 items (see appendix). Even though 37 items already had a  $t_{value} > 1.96$ , four items were removed (Phy9, Phy12, Phy14, and Phy16) because they had an SLF value lower than the cut-off. The Goodness-of-Fit Index is shown in Table 3 in Model 1. Model 1 shows that the model is less fit because the CFI, TLI, SRMR, and RSMEA values do not meet the recommended values. Therefore, re-analysis was carried out without including Phy9, Phy12, Phy14, and Phy16.

All items (33 items) in the second analysis have fulfilled the cut-off value, which is SLF value  $\geq 0.35$ . The Goodness-of-Fit Index is shown in Table 3 as model 2. Model 2 shows that the overall model does not fit. Therefore, the researchers modified the index as suggested in the third analysis. The results of the modification of the index are shown in Model 3 in Table 3. However, in the third analysis, the SLF PhyVV11 value has decreased and does not reach the cut-off value, so it is re-analyzed by eliminating Phy11 and obtaining 32 valid and fit items. Model 4 in Table 3 shows the fourth Goodness-of-Fit analysis. It appears that after the second modification, the Goodness-of-Fit Index has increased for the CFI and TLI index and decreased in the index  $\chi^2/df$  and RMSEA.

The results of the analysis of the CR values were 0.89 and 0.93 for the constructs of physical violence and psychological violence, respectively. The results in Table 4 confirm that all the constructs or latent factors in this study achieved acceptable reliability criteria. Construct validity based on SLF values confirmed that all items had loading values above 0.4, confirming the instrument's validity in this study. The complete validity and reliability values for each construct are shown in Table 4.

**Table 4.** Validity and Reliability Scale of Victims of Physical and Psychological Violence

| Latent Variables          | SLF $\geq$ 0.40 | Reliability    |                | Explanation | Latent Variables               | SLF $\geq$ 0.40 | Reliability    |                | Explanation |
|---------------------------|-----------------|----------------|----------------|-------------|--------------------------------|-----------------|----------------|----------------|-------------|
|                           |                 | CR $\geq$ 0.70 | VE $\geq$ 0.50 |             |                                |                 | CR $\geq$ 0.70 | VE $\geq$ 0.50 |             |
| Physical Violence Victims |                 | 0.89           | 0.50           | Reliable    | Psychological Violence Victims |                 | 0.93           | 0.50           | Reliable    |
| Phy1                      | 0.70            |                |                | Valid       | Psy1                           | 0.65            |                |                | Valid       |
| Phy2                      | 0.64            |                |                | Valid       | Psy2                           | 0.64            |                |                | Valid       |
| Phy3                      | 0.52            |                |                | Valid       | Psy3                           | 0.60            |                |                | Valid       |
| Phy4                      | 0.70            |                |                | Valid       | Psy4                           | 0.88            |                |                | Valid       |
| Phy5                      | 0.78            |                |                | Valid       | Psy5                           | 0.68            |                |                | Valid       |
| Phy6                      | 0.82            |                |                | Valid       | Psy6                           | 0.69            |                |                | Valid       |
| Phy7                      | 0.57            |                |                | Valid       | Psy7                           | 0.63            |                |                | Valid       |
| Phy8                      | 0.89            |                |                | Valid       | Psy8                           | 0.57            |                |                | Valid       |
| Phy10                     | 0.70            |                |                | Valid       | Psy9                           | 0.64            |                |                | Valid       |
| Phy13                     | 0.65            |                |                | Valid       | Psy10                          | 0.74            |                |                | Valid       |
| Phy15                     | 0.73            |                |                | Valid       | Psy11                          | 0.73            |                |                | Valid       |
| Phy17                     | 0.68            |                |                | Valid       | Psy12                          | 0.85            |                |                | Valid       |
|                           |                 |                |                |             | Psy13                          | 0.78            |                |                | Valid       |
|                           |                 |                |                |             | Psy14                          | 0.86            |                |                | Valid       |
|                           |                 |                |                |             | Psy15                          | 0.55            |                |                | Valid       |
|                           |                 |                |                |             | Psy16                          | 0.77            |                |                | Valid       |
|                           |                 |                |                |             | Psy17                          | 0.75            |                |                | Valid       |
|                           |                 |                |                |             | Psy18                          | 0.60            |                |                | Valid       |
|                           |                 |                |                |             | Psy19                          | 0.67            |                |                | Valid       |
|                           |                 |                |                |             | Psy20                          | 0.74            |                |                | Valid       |

## DISCUSSION

This study aims to produce a scale of victims of physical and psychological violence that is valid and reliable both in terms of content (theory) and construct (empirical). This is supported by the Aiken V index value of 0.8 - 0.9. This value indicates that the instrument has high content validity. This judgment is based on input from experts, who provided confidence that the instrument covers relevant aspects of physical and psychological violence in dating relationships. Good content validity is a crucial first step in ensuring that the instrument can be used to measure the intended variables accurately.

Several expert suggestions have been used to refine the editorial wording of the scale. For example, on physical violence (PHYVV10): "My partner knocked me out of the vehicle" was changed to "My partner forced me out of the vehicle in the middle of the journey" on psychological violence (PSYVV4). For example, "My partner demands me to have sex" became "My partner demands me to have sex whenever he/she wants."

Sample size adequacy and model fit must be met to conduct Confirmatory Factor Analysis (CFA). The results of the initial requirements test show that the KMO MSA value and Bartlett's Test of Sphericity significance value have met the requirements for the adequacy of the sample size for factor analysis. The KMO MSA value shows the ratio of the distance between the correlation coefficients to the partial correlation coefficient, and Bartlett's Test of Sphericity significance value shows that, overall, all correlations in the correlation matrix.<sup>34</sup>

Furthermore, the model's fit is determined by the Goodness-of-Fit index value. Four CFAs were conducted to obtain empirically valid items. The cut-off value we used was in accordance with the suggestion that for a sample size of 250, the minimum factor loading is 0.34.<sup>31</sup> The assessment of model fit is based on the absolute fit index (RMSEA or RMR) and relative fit index (CFI, TLI, IFI). Hair et al. recommend a TLI and CFI cut-off value of 0.92 (observed variables  $12 < m < 30$  and number of observations  $> 250$ ) because a value of 0.90 is too low and may lead to incorrect model acceptance. Not all fit indices are shown in this study. Three or four fit indices of different types (at least one incremental and one absolute index) can provide evidence of adequate model fit.

*Model 1.* Preliminary analysis showed that out of 37 items, four items (Phy9, Phy12, Phy14, and Phy16) had to be removed as the SLF (Standardised Loading Factor) value was lower than the set cut-off value. The model showed unsatisfactory Goodness-of-Fit Index results with CFI, TLI, SRMR, and RMSEA values that did not meet the recommended values. This indicates that the initial model did not fully fit the data. *Model 2.* After removing four items, the second analysis using 33 items showed insufficient Goodness-of-Fit Index results. This indicates that although four items were removed, the overall model still needs to be modified to improve the fit. *Model 3.* Model modifications were made based on the suggested index of adding covariance between two errors in

one latent variable.<sup>38-40</sup> However, item Phy11 showed a decrease in SLF value and did not meet the cut-off value. This suggests the need for deletion of this item and re-analysis with 32 items.

*Model 4.* The final analysis with 32 items showed improvements in the Goodness-of-Fit Index values, with increases in CFI and TLI values and decreases in  $\chi^2/df$  and RMSEA values. Overall, in Table 3, model 4 shows a good model fit. This is supported by the fit indices that have met the recommended values except RMSEA. Although RMSEA is less fit, the representation of the absolute badness of the fit index can be replaced by the SRMR value.<sup>34</sup> This model shows that the instrument fits the data better and is valid after modification. The results of the validity and reliability test of the scale of victims of physical and psychological violence show that the scale of victims of physical and psychological violence can be declared valid and reliable. This is supported by the SLF value, which is in the range of 0.38 - 0.82 (physical violence victim scale) and 0.44 - 0.85 (psychological violence victim scale). The CR value is 0.89 (scale of victims of physical violence) and 0.93 (scale of victims of psychological violence). Construct Reliability (CR) indicates that the same latent construct has been consistently represented across all measures.

This study has several limitations, including samples limited to certain areas, data collection methods with self-report questionnaires, which could cause bias, the absence of longitudinal measurements to see changes over time, limitations in factor analysis, which may cause overfitting, and a focus that only focuses on physical and psychological violence without considering other forms of violence.

## CONCLUSION

The Indonesian version of the scale for victims of physical and psychological violence in adolescent couples has shown good validity and is theoretically and empirically acceptable (construct). The Aiken V index ranges from 0.8 - 0.9, which indicates that the developed scale can be used for further analysis based on expert judgment. The results of the CFA confirmed that the model in this study has a good index based on the measurement model. The SLF value confirmed that all items had good loading factors above the 0.4 threshold. Reliability shows that all latent factors are consistent in representing participants' answers. Thus, the physical and psychological violence victimization scale supports its role in measuring the incidence of violence experienced by university-level adolescents, both victims of physical and psychological violence.

## RECOMMENDATION

For future research, it is recommended to expand the sample geographically and culturally, use longitudinal designs, combine qualitative with quantitative methods, develop instruments that cover various forms of violence, conduct research on interventions to reduce violence and evaluate their effectiveness, conduct cross-cultural studies, utilize technology in collection data, as well as



conducting comparative studies to understand patterns or differences in youth experiences of violence in various contexts. To be used as a screening tool for violence, this instrument needs to be tested for sensitivity and specificity by comparing adolescents who experience violence with those who do not. With this approach, it is hoped that future research will provide deeper and more comprehensive insight into physical and psychological violence against adolescents as well as efforts to prevent and handle it.

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#### Declarations

Author contribution : Suci Musvita Ayu was responsible for the entire research process from drafting the instrument to data collection. She drafted the manuscript and helped discuss the findings. Erni Gustina and Liena Sofiana were responsible during the instrument validation process. They also contributed to providing improvements to the manuscript content. Thoharoh Halimatusa'diyah was responsible for collecting data in the field. She also helped in improving the manuscript from the appearance aspect. Soeharto, Ratu Matahari, and Septian Emma Dwi Jatmika assisted in interpreting the findings and making language improvements. Moh.

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**Appendix****Physical Violence Victims (PhyVV) in Dating**

| No. | Statement   |
|-----|---|
| 1   | My partner hits or punches my body parts                          |
| 2   | My partner hit or slapped my face                                 |
| 3   | My partner scratches parts of my body                             |
| 4   | My partner twisted my hand  |
| 5   | My partner slammed me   |
| 6   | My partner pushed me roughly                                      |
| 7   | My partner bit me   |
| 8   | My partner choked me  |
| 9   | My partner pulled me violently*                                   |
| 10  | My partner forced me out of the vehicle in the middle of the trip |
| 11  | My partner pinched me strongly*                                   |
| 12  | My partner kicked a part of my body*                              |
| 13  | My partner hurt me with a hard object                             |
| 14  | My partner threw a hard object at me*                             |
| 15  | My partner tore the clothes I was wearing                         |
| 16  | My partner stepped on my foot*                                    |
| 17  | My partner forced me to have sex                                  |

Note: \* : *invalid*

**Psychological Violence Victims (PsyVV) in Dating**

| No. | Statement   |
|-----|---|
| 1   | My partner looks down on me                                       |
| 2   | My partner demands that I comply with his/her wishes.             |
| 3   | My partner gets angry if I reprimand him/her for his/her mistakes |
| 4   | My partner demands that I have sex whenever he or she wants.      |
| 5   | My partner restricts my socialising.                              |
| 6   | My partner restricts my opposite-sex friends.                     |
| 7   | My partner scolds me in front of other people.                    |
| 8   | My partner seems stingy to me.                                    |
| 9   | My partner underestimates my academic ability.                    |
| 10  | My partner shouts or yells at me.                                 |
| 11  | My partner does not respect my feelings.                          |
| 12  | My partner traumatises me.  |
| 13  | My partner treats me like a fool.                                 |
| 14  | My partner is rude to me.   |
| 15  | My partner makes fun of my appearance.                            |
| 16  | My partner threatens me.  |
| 17  | My partner brings up my past with my old partner.                 |
| 18  | My partner insults me in front of my friends                      |
| 19  | My partner scares me  |
| 20  | My partner says hurtful things                                    |