

# Gender disparities in knowledge of urban adolescents dating violence: differential item function analysis in rasch model

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## ABSTRACT

Adolescent dating violence (ADV) is a global public health problem that has a serious impact on adolescents' physical, psychological, and social development. This study aimed to explore gender disparities in Indonesian adolescents' knowledge of dating violence using the Rasch Model and Differential Item Function Analysis. A total of 250 junior high school students in Yogyakarta, consisting of 107 males and 143 females, participated. The ADV knowledge measurement instrument consisted of 16 previously tested items for validity and reliability. Results showed that female students had a higher level of knowledge than male students, especially in identifying emotional and physical violence. Differential item function (DIF) analysis revealed that two items showed differences in perception based on gender, with female students focusing more on physical violence. In contrast, male students tended to view physical violence as a more common behavior. This study highlights the importance of more inclusive and gender-sensitive educational programs to increase adolescents' knowledge of different forms of dating violence. The findings provide important insights for the development of interventions that can help prevent dating violence among adolescents.

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## 1. INTRODUCTION

Recently, there has been an exponential increase in interest in the study of adolescent dating violence (ADV). Adolescent ADV is a significant public health problem, is of considerable concern, and has significant implications for both victims and perpetrators [1]. Adolescents across genders can experience ADV [2], [3]. Abusive behaviors that occur in adolescent dating increase their risk of engaging in repeated aggressive relationships [4] as well as increasing the likelihood of engaging in intimate partner violence (IPV) in adulthood [5], [6]. This phenomenon seriously threatens adolescents' physical, psychological, and academic development. To prevent ADV, gaining in-depth and accurate insights into the knowledge or perceptions held by dating adolescents is crucial.

Gender disparity in knowledge about ADV is an important aspect that needs to be understood to prevent such violence among adolescents. Adolescent dating violence is a significant public health problem, with prevalence rates varying across countries. In Canada, more than one-third of ever-dating adolescents experienced some form of dating violence within 12 months [7]. In Colombia, almost 90% of adolescents reported experiencing verbal or emotional dating violence, often in two-way relationships [8]. Meanwhile, in Malawi, more than a quarter of ever-dating adolescents reported being victims of violence, with significant

gender differences in the type of violence experienced [9]. In Egypt and the United States, the prevalence rates of three types of ADV were 71% and 70%, respectively [10].

Not only in countries like Canada, Colombia, and Malawi, dating violence is a severe concern in Indonesia, where patriarchal culture still strongly influences gender perceptions in interpersonal relationships. In 2022, Gender-based dating violence in the personal sphere reported to service agencies ranked first, with 3,528 cases out of 8,172 cases. Meanwhile, data reported to National Commission on Violence Against Women amounted (*Komnas Perempuan*) to 422 out of 2,098 cases (ranked third). Psychological violence had the highest percentage at 1,494 cases (39.6%) and sexual violence at 1,086 cases (28.8%). Physical and economic violence ranked third (713 cases) and fourth (463 cases), respectively [11], [12]. In complaints to *Komnas Perempuan*, there were 1,016 cases of students as victims and 335 cases of perpetrators. According to data on complaints to the service institutions (*Lembaga Layanan*), 1,070 cases of students being victims and 227 cases being perpetrators. Based on data from service institutions in 2022, there were 948 cases of victims at the junior high school level and 541 cases of perpetrators. Meanwhile, data on complaints to the National Commission on Violence Against Women in 2022 junior high school, there were 299 cases of victims and 128 cases of perpetrators [12]. In another study, 31% of adolescents who were dating experienced physical and psychological violence, with the dominance of violence in the frequent frequency category [13].

Various studies on dating violence have been reviewed. For example, Exner-Cortens *et al.* [14] investigated how factors such as power imbalance, bullying, and risk of social marginalization influence patterns of victimization and dating violence behaviors among Canadian adolescents. In addition, Padilla-Medina *et al.* [15] have examined adolescents' help-seeking intentions related to dating violence based on racial and ethnic differences in adolescents aged 12-19 years. Emezue *et al.* [16] used an interpretive approach grounded in Relational Dialectics Theory to explore rural young men's views on their risk of dating violence, both as perpetrators and victims, and their help-seeking behaviors. Galdo-Castıneiras *et al.* [17] evaluated the effectiveness of an educational intervention to reduce justifications for dating violence among adolescents in Murcia, Spain. Meiksin *et al.* [18] systematically reviewed social norms related to dating violence and gender in 24 Americas, Africa, and Europe studies. In addition, Morrison *et al.* [19] also explored how Canadian adolescents respond to disclosures of dating violence by their peers. In Indonesia, Ayu *et al.* [1] examined the relationship between dating duration and adolescents' involvement in dating violence, showing that both females and males are equally likely to be perpetrators and victims of physical and psychological violence. However, although many studies have been conducted, there are still limitations in studies that report gender disparities in adolescents' knowledge of dating violence, especially in the Indonesian cultural context.

A lack of knowledge about the forms of ADV makes adolescents vulnerable to violence, both as victims and perpetrators. Misunderstanding or lack of awareness about the signs of dating violence can result in a permissive attitude towards such violence or an inability to seek help. Research exploring gender disparities in adolescents' knowledge of dating violence is important because gender can influence individuals' perceptions and understanding of violence. Adolescent females and males may have different views on violent behavior, which in turn affects their attitudes and responses in dealing with the situation.

This study seeks to fill the gap by using the differential item function (DIF) analysis in Rasch Model to analyze gender disparities in adolescents' knowledge of dating violence in Yogyakarta, Indonesia. With this approach, the research can identify differences in perceptions and knowledge between male and female adolescents, as well as highlight forms of violence that are more easily identified by each gender. In addition, the results of this study are expected to provide practical contributions to the development of more gender-sensitive educational programs, focusing not only on physical violence but also on emotional violence and other forms of violence that are often overlooked. The contribution of this research is expected to not only enrich the literature on dating violence among adolescents but also provide insights for the development of more effective intervention programs that are sensitive to gender differences. By understanding gender disparities in knowledge about dating violence, preventive measures can be better geared to the specific needs of adolescent girls and boys, thus helping to reduce the prevalence of dating violence in adolescence.

## 2. METHOD

### 2.1. Research type and respondents

The type of research used in this study is a survey model that aims to explore students' knowledge of adolescent dating violence. A purposive sampling technique was used to ensure that the selected students met strict inclusion criteria for data accuracy and representativeness. Sample sizes between 50 and 250 are recommended for data stability and goodness of fit to the Rasch model [20]. There were 250 early adolescent students at the junior high school, consisting of 107 (42.8%) males and 143 (57.2%) females. Respondents came from public (136) and private (114) junior high schools in Yogyakarta, Indonesia. After data screening,

two students (1 male and 1 female) were excluded from the analysis because they had extreme scores and negative Point Measure Correlation (Pt. Mea. Corr) based on the Rasch model [21].

## 2.2. Research procedure

Data collection was conducted during counselling guidance class hours in each school to ensure it did not interfere with students' main learning activities. The counselling teachers of each school were briefed and involved in assisting the data collection process during the study. Data on students' knowledge of dating violence was collected directly using the paper and pencil method over 35 days, with a completion time between 25-35 minutes. Students were not required to provide their names or school identities to ensure the confidentiality of respondents' data. All students participated voluntarily based on the informed consent provided.

## 2.3. Instrument

Knowledge of adolescent dating violence was collected through 16 items (16-ADV) that had been developed. Before use, the 16-ADV was quality tested through its fit with the Rasch model and based on the Outfit Mean Square (MnSq), ZStd, and Pt. Mea. Corr, one item (item 8) was not used because it did not fit with the Rasch model [22].

## 2.4. Analysis technique

Analysis of students' knowledge of violence was conducted using Rasch modelling. The raw data of students' knowledge was processed and analyzed using Ms. Excel, Winstep 4.6.1 [23], and IBM SPSS Statistics 22. Before analysis, the raw data was converted to logit units using Winstep 4.6.1 to obtain data on an interval scale [24], [25]. Students' knowledge level was then grouped using a Wright map, which directly compares the difficulty level of the questions and the respondents' knowledge level. Comparisons of student knowledge by gender were analyzed using the Mann-Whitney U test. Furthermore, DIF analysis was used to identify item trends by gender [26], [27].

# 3. RESULTS AND DISCUSSION

## 3.1. Quality of 16-ADV

To assess students' knowledge of ADV, we designed 16 items to measure this knowledge. Quality testing showed that 15 of the 16 items used fit well with the Rasch model, a measurement model that focuses on the probability of a correct response to an item. A good fit is when the Outfit MnSq value is 0.5-1.5 [28]. Values below 2.0 can still be considered for use because it does not reduce the measurement quality, while more than 2.0 can distort the measurement results [29]. Item 8 (PGTH8) cannot be used because it is outside the limits of a good fit, which can distort the measurement results.

The item reliability value of 0.99 indicates a very high level of consistency of the items in the 16-ADV used to measure students' knowledge of dating violence [29]. This high reliability indicates that the items in the 16-ADV provide consistent and reliable results when used to measure knowledge about violence in early adolescent dating in different populations or under different conditions [30]. This indicates that the 16-ADV used has excellent reliability in measuring students' knowledge on the topic of dating violence.

The item separation index of 8.78 indicates that the 16-ADV can discriminate and separate items [31], [32]. So that it can separate students with higher knowledge from students with lower knowledge. In other words, 16-ADV effectively identifies different levels of knowledge among students and can provide a clear picture of the distribution of knowledge in the adolescent population studied. Overall, these results indicate that the 16-ADV used is not only reliable but also has strong validity in differentiating students' knowledge levels on dating violence.

## 3.2. Student knowledge level

In the mistar logit as shown in Figure 1, students' knowledge levels are spread from -3 to +5 logits, with the lowest being -2.02 logits and the highest being 4.61. Each hash mark (#) on the logit bar represents six students, while a dot (.) represents 1-5 students. The average student knowledge, shown on the left of the map, is higher than the average item difficulty level on the right of the map. The distribution of students' knowledge is more widespread at a high level, indicating that most students have good knowledge about dating violence. Adolescents' high knowledge of dating violence can help them recognize the signs of violence early on, thus preventing or avoiding potentially dangerous relationships [5], [33]. It also encourages them to make healthier decisions in dating relationships. As proposed by Ferreira *et al.* [34], integrating the topic of dating violence into adolescent education can develop healthy emotional relationship skills.

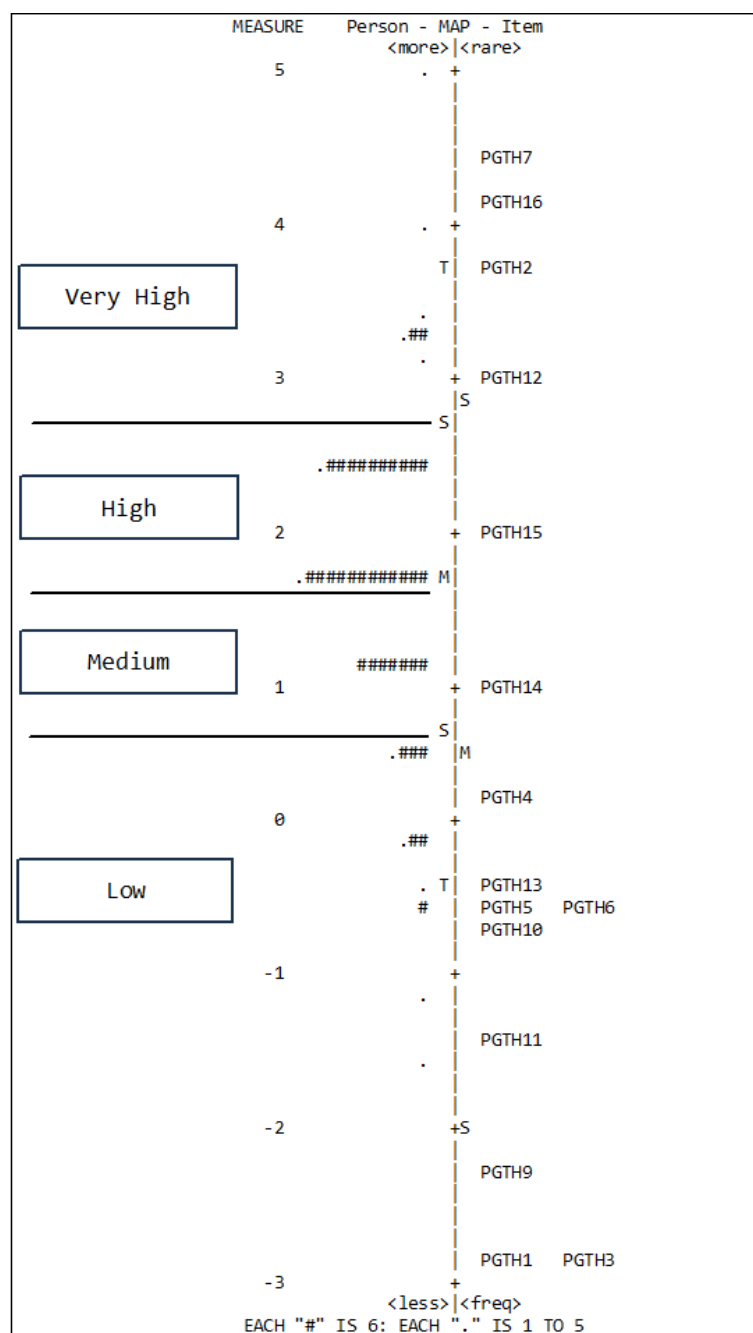


Figure 1. Wright map of students' knowledge about dating violence

### 3.3. Disparities in students' knowledge of dating violence

Table 1 summarizes the results of the analysis of differences in students' knowledge of ADV. Based on the logit values in Table 1, there is a statistically significant difference between male and female students' knowledge of ADV (sig.<0.05). Female students had a higher mean understanding (1.32 logits) than males (1.05 logits). The gap in knowledge about dating violence between female and male adolescents can be attributed to several factors. First, female students are more frequently targeted by campaigns and educational programs on dating violence, thus increasing their awareness and knowledge [35]. Second, female students tend to be more open and receptive to information about physical and psychological violence [36] so that they are easier to absorb and remember information about dating violence. Third, there is a growing interest among adolescent females to understand the dynamics of violence because of their potential to become victims of dating violence [37].

Table 1. Disparities in student knowledge of dating violence based on gender

Statistics	Gender		
	Male	Female	Total
Descriptive			
N	106	142	248
Mean	1.05	1.32	1.21
Minimum	-2.02	-2.02	-2.02
Maximum	4.61	3.57	4.61
Test Statistics			
Mean Rank	113.20	132.94	
Mann-Whitney U	6328.000		
Wilcoxon W	11999.000		
Z	-2.196		
Asymp. Sig. (2-tailed)	0.028		

### 3.4. Differential item functioning (DIF) of student knowledge by gender

Figure 2 visualizes the tendency of students' knowledge towards dating violence in adolescents. The results of the analysis using the DIF technique showed that there were gender trends in 2 of the 15 forms of violence in 16-ADV. This tendency was identified through the DIF contrast value (-0.5 to 0.5), Rasch-Welch  $t$  (-2 to 2), and Mantel-Haenszel probability ( $>0.05$ ).

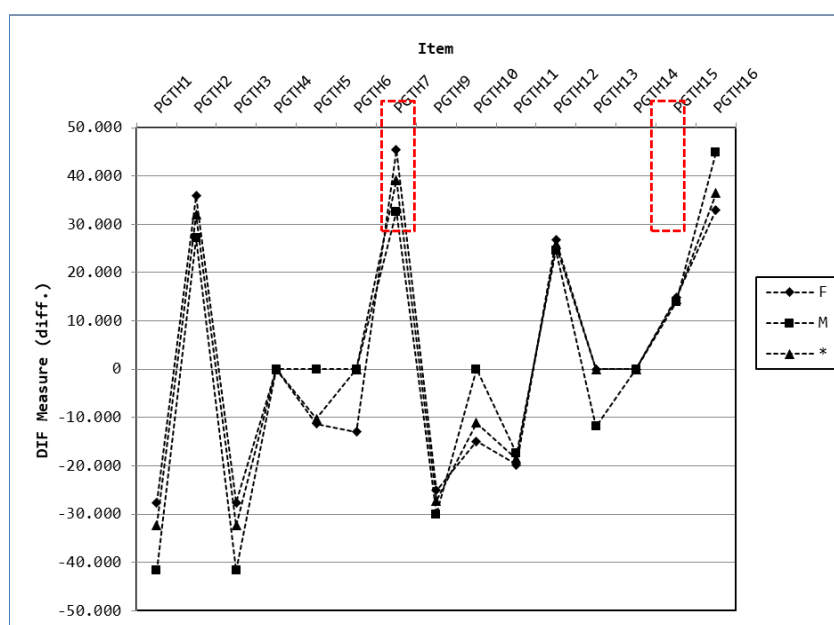


Figure 2. Differential item functioning ADV base on gender

Specifically, item PGTH7, “Dating violence consists of physical violence only,” tends to be more easily agreed upon by female students. Meanwhile, item PGTH16, “Hitting your partner is a normal thing to do,” tends to be more easily agreed upon by male students. This shows that there are differences in knowledge and perceptions between male and female students towards the types and forms of dating violence. The other 13 items did not show gender-based trends, indicating that most items in the 16-ADV are equal for both male and female students. These findings are important to consider when developing more gender-sensitive educational programs.

Item PGTH7, “Dating violence consists of physical violence only,” tended to be more easily understood by female students, suggesting limited knowledge among female adolescents about the forms of dating violence. The fact that female adolescents are more likely to understand this item indicates that they are more focused on physical violence and are unaware or less informed about other forms of violence, such as emotional or psychological, economic, and sexual violence. These findings are in line with those presented by Morrison *et al.* [19]. They showed that adolescent females tend to identify physical violence as dating violence compared to other forms, such as psychological or cyber violence. Moreover, educational interventions that focus on dating violence often highlight physical violence and indirectly lead adolescent

girls to associate dating violence with physical acts rather than psychological or emotional violence [17]. This focus can make them more familiar with physical violence and potentially overlook other forms of violence that can be just as damaging, perpetuating the cycle of violence [1].

This limited knowledge highlights the need for a more comprehensive and inclusive education program since they enter the early adolescent stage [19]. Proper education at an early age can help prevent the formation of violence-tolerant behavior patterns and improve their ability to recognize and cope with dating violence situations. Adolescent females who are unprepared to confront and identify signs of violence may be at increased risk of experiencing or tolerating violence in their relationships in the future. Educational programs should emphasize not only physical violence but also other forms of violence that can potentially occur in dating [2], [38]–[41]. Thus, female students' understanding of dating violence can become more holistic, helping them to recognize and resist all forms of violence they may face. Therefore, it is important to integrate dating violence education into school curricula and extracurricular programs that engage adolescent females early on.

Item PGTH16, "Hitting your partner is a normal thing to do," tends to be more easily agreed upon by male students in the early adolescent phase, suggesting differences in perceptions and experiences of dating violence between male and female students at this age. Social and cultural norms in Indonesia still support traditional gender stereotypes. Adolescent males are exposed to the view that physical violence, such as hitting, is an acceptable or normal form of expression of power and dominance in relationships [18], [42]. Research shows that adolescent males tend to have higher levels of aggression in the physical aggression type, whereas females are more prone to anger [43]. Therefore, items that mention "hitting the partner" resonate more with adolescent males' experiences or perceptions of power dynamics in dating.

On the other hand, education on dating violence has not reached male students equally. Existing education emphasizes the protection of women and does not sufficiently highlight the role of men as potential perpetrators, so their understanding of violence as unacceptable behavior is underdeveloped. These findings emphasize the need for a more inclusive and balanced approach to education, which focuses on protecting victims and changing the behavior and attitudes of potential perpetrators. Educational programs that emphasize respect for partners, non-violence, and healthy management of aggression are critical to changing adolescent males' perceptions of violence in dating relationships.

#### 4. CONCLUSION

This study aimed to identify gender disparities in adolescents' knowledge of dating violence, and results showed significant differences between male and female students. Overall, female students' average knowledge of dating violence was higher compared to male students. However, findings also showed differences in perceptions between males and females on the types and forms of dating violence. There is limited knowledge of female adolescents about forms of violence. On the other hand, early adolescent males still support traditional gender stereotypes. The findings emphasize the importance of comprehensive and inclusive educational programs that target both female and male adolescents early on, focusing not only on physical violence but also other forms of violence, as well as changing potential perpetrators' perceptions and attitudes towards dating violence. This study makes an important contribution to understanding the differences in knowledge about dating violence between male and female students at the junior high school level. Theoretically, this study contributes to the literature on dating violence by showing that gender differences in knowledge occur not only in aspects of physical violence but also in emotional and psychological violence, which is often overlooked in previous studies. These findings can serve as a basis for developing more targeted and gender-sensitive educational programs. However, this study has several limitations that need to be considered. First, this study only covers junior high school students in the Yogyakarta area, so the results cannot be generalized to a broader population. Secondly, the analysis only focused on gender differences without considering other variables such as socio-economic background, culture, and personal experiences that might affect students' knowledge. For future research, it is recommended that the scope of the research area be expanded and that mixed methods that combine quantitative and qualitative approaches be considered. Further research should also explore the effectiveness of different educational programs in increasing awareness and knowledge of dating violence among adolescents.

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## AUTHOR CONTRIBUTIONS STATEMENT

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Moh. Irma Sukarelawan	✓		✓		✓		✓			✓	✓	✓		✓

C : **C**onceptualization

M : **M**ethodology

So : **S**oftware

Va : **V**alidation

Fo : **F**ormal analysis

I : **I**nvestigation

R : **R**esources

D : **D**ata Curation

O : Writing - **O**riginal Draft

E : Writing - Review & **E**diting

Vi : **V**isualization

Su : **S**upervision

P : **P**roject administration

Fu : **F**unding acquisition

## CONFLICT OF INTEREST STATEMENT

All authors state no conflict of interest.

## INFORMED CONSENT

We have obtained informed consent from all individuals included in this study.

## ETHICAL APPROVAL

The research related to human use has complied with all the relevant national regulations and institutional policies by the tenets of the Helsinki Declaration and has been approved by the author's institutional review board or equivalent committee. This study has also received ethical clearance (EC) No. 012403058 from the Research Ethics Committee, Universitas Ahmad Dahlan.

## DATA AVAILABILITY

The data supporting this study's findings are available from the corresponding author, [SMA], upon reasonable request.

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