

The mediating role of motorcycle riding behavior in the relationship between risky riding intention and safety incidents among housewife motorcyclists in Jabodetabek

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ABSTRACT

Motorcycles accounted for 73% of all accidents in 2024, with human mistake causing 95% of these crashes. While the experiences of female riders, particularly suburban housewife motorcyclists, who face severe multitasking demands and time constraints remain largely unexplored, little is known about how dangerous driving intentions convert into driving habits that could lead to safety problems. In order to assess how psychological variables are reflected in driving behavior and how this behavior affects safety incidents, this study utilizes the MRBQ (Motorcycle Rider Behavior Questionnaire) and PLS-SEM (Partial Least Squares Structural Equation Modeling). The findings indicate that all aspects of the MRBQ (speeding, traffic infractions, control errors, and stunts) are directly affected by risky riding intentions. It was discovered that only speed violations had a substantial indirect impact of risky riding intention on safety incidents. Speed violations is a mediator between risky riding intention and safety incidents, even though risk-taking driving intentions affect a variety of driving behaviors. Practical insights into the creation of speed management measures and psychologically grounded road safety interventions that aim to reduce safety-related events among female motorcyclists in Indonesia's urban areas are provided by the findings.

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1. INTRODUCTION

Motorcycles are the preferred mode of transportation for Indonesians compared to other modes of transportation due to their greater flexibility in navigating dense traffic [1]. Cost efficiency and ease of mobility are key factors for lower-middle-class people choosing motorcycles as their primary mode of transportation. As indicated by data comes from the Electronic Registration and Identification System (ERI) of the Indonesian National Police [2], reported that Indonesia has a total of 137,350,299 registered motorcycles. This annual expansion in two-wheeled vehicle usage has directly contributed to a rising incidence of road traffic accidents involving this mode of transport. Motorcycle users have been identified as the most vulnerable group of road

users Chouhan et al. [3], because motorcycles do not have adequate physical protection like other motor vehicles, so motorcyclists are at high risk of serious injury or death in a crash.

The high number of traffic accidents in Indonesia is an issue that requires serious attention, with motorcycles are the most frequent cause of accidents. This information comes from the Indonesian National Police [4], the number of traffic violations in Indonesia throughout 2024 was dominated by motorcycles, up to 73% of the total accidents. 95% of accidents occurred due to human error. Based on research by Schreurs et al. [5] Accidents are predominantly attributed to human error, particularly those arising from unsafe or risky driving practices. According to Barbosa et al. [6] many accidents are caused by risky driver behavior. Schereurs et al. [5] and Bui et al. [7] shows that driver behavior cannot be underestimated, because careless driving behavior, such as violating traffic rules or not obeying signs has a higher risk of accidents.

Risky driving behaviors are widespread in Indonesia like violating lane boundaries, riding on sidewalks, running red lights, and neglecting the use of safety equipment (helmets). Studies by Jefri et al. [8] and Halim et al. [9] among the most common risky behaviors seen in various cities across Indonesia is riding without a helmet, carrying multiple passengers, and performing sudden maneuvers without using turn signals. According to Labbo et al. [10], emotional factors, driving experience, and social pressure can shape the types of drivers who have different tendencies to commit traffic violations. High work pressure can lead to risky driving behaviors, such as running red lights, not wearing safety equipment like helmets, and even riding while using a cell phone [6].

Halim et al. [9] stated that the highly diverse behavior of motorcyclists tends to be influenced by social pressure and multitasking. These multitasking demands require maximum efficiency of time and energy. To minimize the use of time and energy, Indonesian motorists often ignore traffic regulations [11]. This is relevant to the context of housewife riders who have diverse responsibilities, including managing household mobility, such as taking children to school, shopping, and other activities. The phenomenon of housewife motorcyclists in Indonesia, which is a social representation of risky driving behavior, requires further in-depth research on this issue.

Jefri et al. [8] stated that a driver's psychological condition strongly influences riding behavior. Similarly, Huemer & Strauß [12] identified attitude and perceived behavioral control as key determinants of red-light violations. In an analysis of motorcycle safety in Jakarta, Jalaludin [13], found that safety behavior is driven by behavioral intention. Furthermore, Hoang [14], demonstrated that perceived behavioral control predicts smartphone use while riding, while Tang [15], highlighted the role of social conformity. Finally, Nguyen-Phuoc's [16] revealed that perceived deterrent effects significantly impact risky riding intentions.

The MRBQ is a standardized instrument for studying the riding behavior of motorcyclists. It is utilized to assess and evaluate riding behavior based on several criteria, including traffic and control mistakes, speeding, hazardous riding behavior, and the use of safety equipment [17]. The MRBQ has been employed in multiple international investigations to gauge the correlation between detrimental outcomes such as being engaged in accidents and breaking traffic laws, and high-risk motorcycle riding behavior. Studies across various countries, including Thailand, Vietnam, India, Pakistan, Tanzania, and Belgium, consistently show that risky riding behaviors measured by the MRBQ are associated with higher risks of traffic violations, crashes, and near-miss incidents [3], [5], [7], [17], [18]. MRBQ adaptations in Indonesia have produced different factor structures and item compositions. Motorcycle riding behavior is influenced by local traffic conditions, cultural contexts, and rider characteristics. Riding behavior should be examined within specific populations and settings [8], [19], [20], [21]. Building on these findings, the present study employs the Indonesian-adapted MRBQ to investigate riding behavior among housewife motorcyclists in Jabodetabek, a group that remains underrepresented in motorcycle safety research.

Based on the literature review, motorcycle safety studies in Indonesia have primarily focused on young riders or the general riding population. As a result, little is known about whether the determinants and consequences of risky riding behavior differ among female riders with household responsibilities. This represents an important research gap because housewives frequently use motorcycles for daily mobility while simultaneously managing time constraints, childcare, and household-related tasks, factors that may influence riding decisions and safety outcomes. Information from WHO [22] write women account for 21% of global road traffic fatalities. In Indonesia, particularly in urban areas (Jakarta, Bogor, Depok, Tangerang, and Bekasi) experience highly dense and complex traffic conditions, with motorcycles dominating as the most common mode of transportation and being the most frequently involved in traffic accidents.

Based on the Electronic Registration and Identification System (ERI) of the Indonesian National Police, the Jakarta metropolitan area (Jabodetabek) ranks second highest for the number of motorcycles in Indonesia, reaching 19,471,615 units. Data from IRSMS Korlantas Polri [2] shows that throughout 2024, the highest number of traffic violations occurred in Jabodetabek, totaling 350,017 cases or 16.43% of all incidents in Indonesia. Furthermore, there were around 152,000 traffic accidents in this area, with motorcycles being the most common vehicle type involved. Although previous studies have established associations between risky riding behavior and adverse safety outcomes, limited evidence exists regarding the behavioral mechanisms through which risky riding intentions translate into actual safety incidents. Housewife motorcyclists with household responsibilities remain largely underrepresented in motorcycle safety research, despite their substantial participation in daily urban mobility in many developing countries. This gap is particularly relevant in densely populated metropolitan areas where complex traffic conditions may amplify the consequences of risky riding behavior. To address this gap, the present study investigates the mediating role of motorcycle riding behavior in the relationship between risky riding intention and safety incidents (accidents, near misses, and traffic violations) among non-working housewife motorcyclists in Jabodetabek.

2. MATERIALS AND METHODS

The goal of this research is to analyze the relationship among the following variables: high-risk driving behavior; MRBQ (traffic errors, speeding, control mistakes, and dangerous actions); and safety incidents. Quantitative research is used to test a theory by establishing a hypothesis or examining the relationship between variables measured using instruments and analyzed using statistical analysis and hypothesis testing, which covers all stages of research from data collection and analysis to interpretation and the presentation of findings [23].

Research variables are attributes or characteristics of subjects that can be measured or observed and analyzed in a study [24]. These research variables are divided into independent variables, mediating variables, and dependent variable as presented in Figure 1.

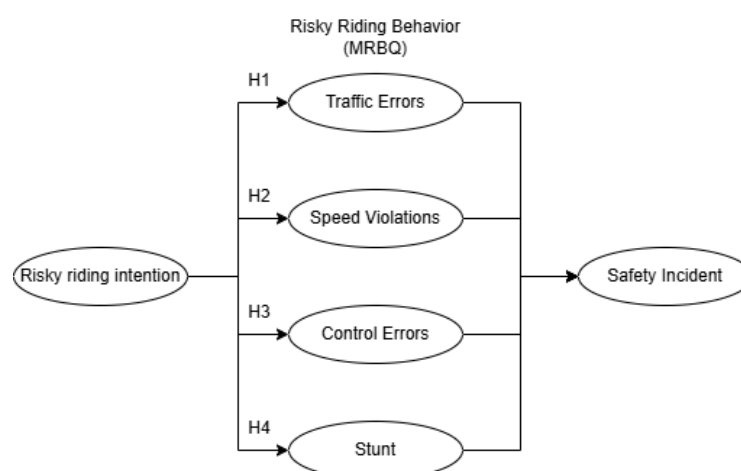


Figure 1. Framework of the study

Figure 1 is based on the Theory of Planned Behavior (TPB) and previous research on motorcycle driving behavior using the MRBQ. People that have a higher motivation to act in a certain way exhibit that behavior in real-life circumstances. A person's tendency or willingness to engage in high-risk driving behavior reflects their intentions. Motorcyclists' intentions to engage in risky riding behavior and their actual riding behavior are significantly influenced by attitudes, subjective norms, and perceived behavioral control. It is presumed that the desire to ride hazardously doesn't directly cause safety incidents but instead influences observable riding behavior, according to this study's mediating function of riding behavior. Motorcyclists with stronger intentions to engage in risky behavior more frequently engage in activities such as traffic violations, speeding, loss of control, and stunt-related behavior, ultimately, this increases the likelihood of accidents, near misses, and traffic violations. In previous research utilizing the TPB model, Chouhan et al. [3] found that behavioral intention significantly forecasts unsafe riding behavior, and that hazardous riding behavior is linked to traffic infractions and accident participation.

MRBQ is a commonly utilized tool for evaluating risky driving behaviors among motorcyclists in various countries, was used to evaluate the construct of "riding behavior." Based on empirical data indicating that these behavioral dimensions are consistently associated with a higher risk of accidents and unsafe riding circumstances, the categories "traffic violations," "speeding," "control errors," and "stunt behavior" were chosen for the current study [8]. Traffic offenses are one of the most accurate predictors of motorcycle collision involvement, according to Chouhan et al. [3] research in India. Likewise, research conducted in Belgium by Schereurs et al. [5] and in Thailand by Utra et al. [18] found that violations, control failures, and stunt activity are important contributors to hazardous riding circumstances and road accidents. Riding behavior was measured using the MRBQ. Respondents rated each item using a five-point Likert scale ranging from 1 (Never), 2 (Rarely), 3 (Sometimes), 4 (Often), to 5 (Nearly Always). Higher scores indicate a greater frequency of risky riding behaviors.

Based on the research framework, the researcher can formulate tentative hypotheses to be achieved. The following is a description of the research hypotheses:

- H1: Traffic errors mediate the relationship between risky riding intention and safety incidents among housewife motorcyclists in Jabodetabek.
- H2: Speed violations mediate the relationship between risky riding intention and safety incidents among housewife motorcyclists in Jabodetabek.
- H3: Control errors mediate the relationship between risky riding intention and safety incidents among housewife motorcyclists in Jabodetabek.
- H4: Stunt behavior mediates the relationship between risky riding intention and safety incidents among housewife motorcyclists in Jabodetabek.

The availability of comprehensive population statistics is not always required for the non-probabilistic sampling technique used in this study. This aligns with the unknown population size in this study. Therefore, the number of participants was established according to the lowest threshold criteria according to the statistical analysis technique used PLS-SEM. The minimum sample size was calculated using the inverse root method formula, requires a smallest possible sample utilizing a 0.95 confidence degree or a margin of error of 0.05, with a testing power of 80% and a path coefficient value of 0.20 as the lower limit of the relevant influence, resulting in a total requirement of 155 respondents [25].

The data collection process in this research utilized a non-probability sampling method with a purposive sampling design because the researchers had specific considerations regarding population characteristics deemed representative of the research objectives [26]. The selection of respondents in this study was based on several criteria, 1) Women aged 26 years and older who are housewives; 2) Actively riding a motorcycle for daily activities (picking up and dropping off children and other informal activities); 3) Residing in Greater Jakarta (Jabodetabek).

The age criteria for those aged 26 years and older in this study were determined based on the age classification according to the Indonesian Ministry of Health, 26-35 years old is considered early adulthood, 36-45 years old is considered late adulthood, and 45 years old is considered elderly. According to Adamczyk et al. [27] and Geraci [28] this age group enters the phases of "intimacy vs. isolation" and "generativity vs. stagnation" which are related to the psychological maturity that has been achieved in this age group so that they are more likely to make responsible decisions and consider the consequences and behavior. This age category has a primary focus of activities that are centered on the family with orderly rationality. This is in line with the population of housewife respondents. In addition, based on BPS data [29], this age group shows that this age group has a fairly large proportion, namely around 30% of the total female population in Indonesia. The research location is the Greater Jakarta area.

Primary data collection in this study was conducted both online and offline. Via the "Google Forms" platform, a questionnaire was used for online data collection, while a paper-based questionnaire was employed for offline data collection. Using a Likert scale and short replies, respondents answered a range of closed-ended and open-ended questions on the survey. Diverse sources, such as academic publications, specialized literature, earlier studies, the internet, and a range of websites on the subjects of motorcycle riding behavior, MRBQ, and safety occurrences, were used to acquire the secondary data for this investigation.

This study focuses on exploring predictive links among interrelated variables, the influence of risky driving intentions, driving behavior, and safety incidents. To achieve this PLS-SEM is applied as an analytical tool to examine relationships among latent constructs. PLS-SEM is widely used because it can accommodate

smaller sample sizes and does not assume normal data distribution [25]. PLS-SEM places more emphasis on predictive ability than CB-SEM, and also has strong statistical testing power for hypothesis testing.

3. RESULTS

3.1 Characteristics Respondent

The results of data collection that meet the criteria will be analyzed to determine the characteristics of respondents in this study, which consist of age, city of domicile, number of motorbikes owned, driving license ownership, number of trips per week, and the main purpose of using a motorbike. The results of data collection obtained the characteristics of the respondents' ages with a range of 26-35 years as many as 83 respondents or 44%, 36-45 years as many as 74 respondents or 39%, and > 45 years as many as 32 respondents or 17%. domiciled in Jakarta City as many as 35 respondents or can be presented as much as 18%, domiciled in Bogor City as many as 30 respondents or can be presented as much as 16%, domiciled in Depok City as many as 87 respondents or can be presented as much as 46%, domiciled in Tangerang City as many as 19 respondents or can be presented as much as 10%, and domiciled in Bekasi City as many as 18 respondents or can be presented as much as 10%. the number of respondents who own 1 unit of motorcycle as many as 123 respondents or can be presented as much as 65%, and respondents who own > 1 unit as many as 66 respondents or can be presented as much as 35%. The number of respondents who have a driving license is 127 respondents or can be represented by 67%, and the number who do not have a driving license is 62 respondents or can be represented by 33%. The number of trips < 5 times is 31 respondents or can be represented by 16%, the number of trips 5-7 times is 60 respondents or can be represented by 32%, and trips > 7 times is 98 respondents or can be represented by 52% as presented in [Table 1](#).

Table 1. Characteristics respondent

	N	%		N	%
Age			Trips in a Week		
26-35	83	44%	<5 times	31	16%
36-45	74	39%	5-7 times	60	32%
>45	32	17%	>7 times	98	52%
Motorcycle Ownership			Driving license ownership		
Have > 1 Unit	66	35%	Have	127	67%
Have 1 Unit	123	65%	Haven't	62	33%
Domicile			Driving Purpose		
Jakarta	35	19%	Shuttle	115	61%
Bogor	30	16%	Shopping	53	28%
Depok	87	46%	Other	21	11%
Tangerang	19	10%			
Bekasi	18	10%			

3.2 Outer Model

Testing the measurement model and the structural model are two components of data processing for the PLS-SEM study. The indicator reliability analysis findings in this study show that Indicator 3 of the "Control Errors" variable and Indicator 10 of the "Speeding" variable were deleted or removed, respectively, since their external loadings were less than 0.40. Internal consistency is evaluated through Composite Reliability (CR) for each variable along with the Cronbach's alpha value. A reliability value of 0.60–0.70 is deemed acceptable, and a range of 0.70 is considered good. Every tested variable in this study fulfilled the acceptable criteria.

The AVE value requirement is ≥ 0.50 for an indicator to be considered valid. The findings from the convergent validity analysis conducted in this research indicate that each indicator has a value above 0.50. Thus, each indicator in each variable is considered valid as presented in [Table 2](#).

Table 2. Convergent validity

Variable	AVE	Explanation
Control Errors (CE)	0.501	Valid
Safety Incident t (SI)	0.568	Valid
Risky Riding Intention (RRI)	0.876	Valid
Stunt (ST)	0.763	Valid
Speed Violations (SV)	0.712	Valid
Traffic Errors (TE)	0.646	Valid

A measurement of discriminant validity value of < 0.85 indicates that the constructs are conceptually different. The data derived from the discriminant validity assessment in this paper indicate that all constructs have values < 0.85 . Thus, all constructs can be considered valid as presented in Table 3.

Table 3. Discriminant validity

Variable	Control error	Safety incident	Risky riding intention	Stunt	Speed violations	Traffic errors
CE						
SI	0.234					
RRI	0.783	0.257				
ST	0.569	0.122	0.525			
SV	0.557	0.405	0.561	0.473		
TE	0.272	0.347	0.349	0.200	0.675	

This study's multicollinearity test findings indicate that the VIF values for each indicator are inside a safe range, indicating that there are no major multicollinearity issues. Thus, the findings of this study are not prejudiced. This study's findings indicate that the R-squared value is within acceptable ranges as presented in Table 4.

Table 4. Multicollinearity test and R-Square

Variable	VIF	Variable	R-square	R-square adjusted
CE -> SI	1.401	SI	0.116	0.093
RRI -> CE	1.000	RRI	0.106	0.089
RRI -> ST	1.000	ST	0.232	0.227
RRI -> SV	1.000	SV	0.281	0.277
RRI -> TE	1.000	TE	0.130	0.125
ST -> SI	1.355	CE	0.422	0.418
SV -> SI	2.337			
TE -> SI	1.843			

The relevance assessment is seen based on the path coefficient values which show the direction and magnitude of the influence between constructs. Effect size (f^2) is utilized to assess how much each exogenous construct influences the endogenous construct. The results from the effect size test in this research reveal a significant relationship between RRI on TE is 0.149, RRI on SV is 0.391, RRI on CE is 0.729 and RRI on stunts ST is 0.302. The relationship between TE and SI is 0.009, SV and SI is 0.031, CE and SI is 0.001, and stunts and safety incidents is 0.003. The largest effect size is the relationship between RRI and CE of 0.729 as presented in Table 5.

Table 5. Effect size

Variabel	CE	SI	RRI	ST	SV	TE
CE		0.001				
SI						
RRI	0.729			0.302	0.391	0.149
ST		0.003				
SV		0.031				
TE		0.009				

3.3 Inner Model

The structural model, as presented in Figure 2, was assessed to examine the hypothesized relationships among the constructs and to evaluate the predictive capability of the proposed research model.

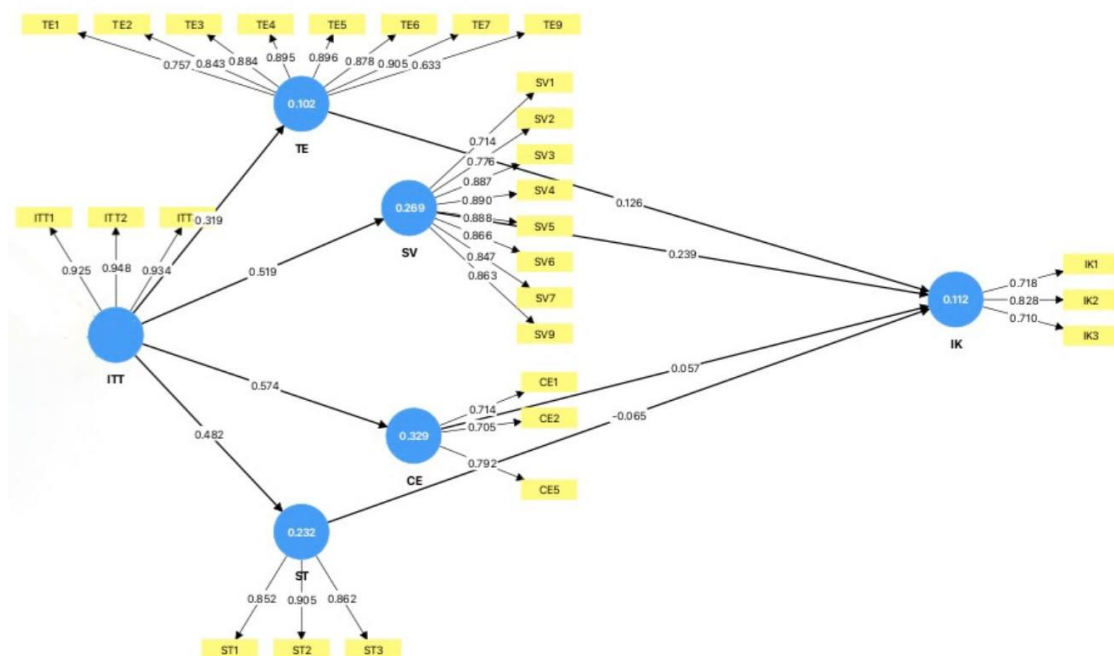


Figure 2. Structural model PLS-SEM

The proposed model positions Risky Riding Intention (RRI) as the main exogenous construct, while Control Errors (CE), Stunts (ST), Speed Violations (SV), Traffic Errors (TE), and Safety Incidents (SI) function as endogenous constructs. RRI is hypothesized to influence the four dimensions of risky riding behavior, namely CE, ST, SV, and TE. Subsequently, these behavioral dimensions are hypothesized to influence SI. Path coefficients are a test used to predict the relationship between structural models to test predetermined hypotheses. The results of the path coefficient test in this study can be seen in Table 6.

Table 6. Path coefficients

	T statistics (O/STDEV)	P values	Explanation
CE -> SI	0.395	0.693	Insignificant
RRI -> CE	15.648	0.000	Significant
RRI -> ST	7.455	0.000	Significant

	T statistics (O/STDEV)	P values	Explanation
RRI -> SV	10.390	0.000	Significant
RRI -> TE	5.447	0.000	Significant
ST -> SI	0.688	0.492	Insignificant
SV -> SI	2.075	0.038	Significant
TE -> SI	0.866	0.386	Insignificant

The data in [Table 6](#) are the results of direct hypothesis testing between variables. CE was found to have no significant effect on SI directly because the p-value was above 0.05 (0.693) and this also occurred with similar results between the direct relationship of ST to SI with a p-value of 0.492 and the variable TE to SI with a p-value of 0.386. It can be elaborated that E that does not significantly affect safety incidents (SI is that housewives riding motorbikes in Jabodetabek who experience errors in controlling the vehicle do not necessarily result in safety incidents. One possible cause is that the control error that occurs is mild and can still be corrected by the driver before it develops into an accident, near-miss, or traffic violation. In the relationship between ST and SI, the insignificance is because the research respondents are housewives, so extreme behavior such as performing acrobatic stunts, racing, or high-risk maneuvers is of course relatively rare in daily driving activities. Traffic errors that have no significant impact indicate that traffic errors made by housewife motorcyclist do not necessarily lead to direct safety incidents. Dense urban traffic conditions (Jabodetabek) force drivers to travel at lower speeds and be more cautious due to the high level of interaction with other road users.

Continuing the results of direct testing between variables, significant results were found between RRI on CE (0.000), ST (0.000), SV (0.000), and TE (0.000) partially with a significance below 0.05. The intention to engage in risky driving behavior is a factor that encourages the emergence of various forms of risky driving behavior among housewife motorcyclist in Jabodetabek. Individuals who have a higher tendency to engage in risky driving behavior will be more prone to making vehicle control errors, speed violations, traffic errors, and dangerous driving behavior. And there is a significant relationship between SV on SI with a significance value also below 0.05 (0.038) which can be interpreted as speed violations being a risky driving behavior that contributes to the occurrence of safety incidents among housewife motorcyclist in Jabodetabek. Although most respondents use motorbikes for daily activities such as taking children, shopping, or fulfilling household needs, time pressure and daily mobility demands can encourage riders to drive faster, which ultimately increases the possibility of accidents, near-miss incidents, and traffic violations. The results of the mediation test of this study can be seen in [Table 7](#).

Table 7. Mediation result

	T statistics (O/STDEV)	P values	Explanation
RRI -> CE -> SI	0.388	0.698	Insignificant
RRI -> TE -> SI	0.846	0.398	Insignificant
RRI -> ST -> SI	0.674	0.500	Insignificant
RRI -> SV -> SI	2.012	0.044	Significant

Based on [Table 7](#), the results of the indirect effect test show that not all mediation paths in the model have a significant role in explaining the relationship between RRI and SI. The mediation path through CE is not significant (t statistics = 0.388; p value = 0.698 > 0.05) so that the CE mediation path is unable to bridge the influence of risky riding intention on safety incidents. Increased risky riding intention does not indirectly increase safety incidents through control errors in housewife motorcyclist in Jabodetabek. Similar findings are also seen in the mediation paths through TE (t statistics = 0.846; p value = 0.398) and ST (t statistics = 0.674; p value = 0.500) which are both insignificant. Although the direction of the relationship in each path is positive, the strength of the influence is weak and does not meet the criteria for statistical significance. The two dimensions of MRBQ, namely traffic error and stunt, have not been able to act as effective mediators in explaining how risky riding intention leads to safety incidents among housewife motorcyclist in Jabodetabek.

The mediation pathway through SV obtained significant results (t statistics = 2.012; p value = 0.044 < 0.05) so that it is different from other MRBQ dimensions, speed operates as a mediator in the link between risky driving intentions and safety incidents, as evidenced by the significant p -value. Individuals with a higher intention to drive recklessly are more likely to exceed speed limits, which subsequently raises the risk of safety incidents among housewife motorcyclist in the Greater Jakarta area (Jabodetabek).

It can be concluded that not all dimensions of the MRBQ have the same mediating function. Speed violations emerged as the only effective mediator, while other dimensions such as control errors, traffic errors, and stunt behaviors did not show a mediating role. This finding leads to the interpretation that the mechanism of safety incident occurrence is more sensitive to direct, high-risk behaviors such as speed violations compared to other forms of errors or behaviors

4. DISCUSSION

The results of the research derived from the path hypothesis test data processing stated that H1 was rejected because the mediation path through traffic errors was not significant (p -value > 0.05) so that traffic errors were not able to be a mechanism that bridged the influence of risky riding intention on safety incidents. Prior research, which indicates that traffic infractions are among the accident predictors, is not entirely consistent with this discovery. The MRBQ's traffic mistakes, according to a meta-analysis by Chouhan et al. [3], are one of the variables that predict crashes. This research found that traffic errors are typically unintended and do not always result in accidents, particularly when traffic circumstances are still manageable. Therefore, although they occur frequently, traffic errors are not strong enough as a mediator in explaining safety incidents in the context of housewife motorcyclist in Jabodetabek.

Consequently, Hypothesis 2 is supported, as the mediation path through risky riding intention on safety incident, speed violations significantly mediate the relationship. These findings align with earlier studies indicating that risky intentions or psychological predispositions affect speeding behavior. A recent study in Seefong et al. [30] shows that speeding behavior is one manifestation of risky riding behavior and is a dominant factor in accidents. Another study conducted by Chouhan et al. [3] showed that speed violations have a significant influence on crashes. Intention is a direct predictor of actual behavior, where individuals with high-risk driving intentions tend to commit intentional violations, such as exceeding the speed limit.

The results show that H3 is rejected because control errors do not act as a significant mediator between risky riding intention and safety incidents. However, these results do not completely align with previous research that viewed control errors as a critical element of risky behavior. Driving errors contribute to accident risk. A study in Indonesia by Sagala [21] showed that unsafe behavior, including errors, has a positive relationship with accident involvement. The insignificant control errors as mediators are more likely to reflect skill limitations or situational conditions, rather than intentional behavior [21]. This is in line with the characteristics of the MRBQ which distinguishes between errors (unintentional) and violations (intentional) [31] so control errors do not have sufficient power to explain how risky intentions are transformed into accidents.

The results of the study indicate that H4 is rejected because stunt behaviors do not act as a significant mediator. This finding can be explained by the characteristics of the respondents, namely housewives who usually rarely engage in extreme behavior such as stunts, so this variable has a very small contribution to safety incidents. However, these results are not entirely in line with previous research that stated that deliberate risky behavior such as stunts is included in the category of violations that have the potential to increase the risk of accidents [31]. However in this study the low frequency of stunting meant that this variable lacked sufficient statistical power. This means that, although theoretically dangerous, this behavior is empirically irrelevant in the population of housewives in Greater Jakarta.

Since speeding was identified as the sole significant mediator between the desire to drive carelessly and safety incidents, prevention strategies should not solely rely on law enforcement but also address the psychological factors underlying the intention to drive recklessly. Previous studies based on the TPB have shown that motorcyclists' intentions to engage in dangerous behaviors, such as speeding and traffic violations, are greatly influenced by attitudes, subjective norms, and perceived behavioral control [32], [33]. Interventions ought to be geared toward changing these psychological determinants. Safety-oriented social norms among family and community members can be promoted via awareness campaigns, which can also increase knowledge of the repercussions of speeding and foster a more optimistic view toward safe driving habits.

Drivers can maintain safer driving practices in spite of daily mobility pressures and time restrictions by increasing their perceived behavioral control via traffic education and self-regulation training. According to earlier research, psychological influences that affect the desire to speed are crucial entry points for initiatives aimed at altering behavior and improving road safety [34], [35].

The significant mediating role of speed violations suggests that risky riding intention influences safety incidents through specific behavioral manifestations rather than through intention alone. Among housewife motorcyclists, risky riding intentions may arise from daily mobility demands, including transporting children, shopping for household necessities, and fulfilling family-related responsibilities within limited time frames. Under such circumstances, the intention to prioritize efficiency and punctuality may be translated into speeding behavior, which subsequently increases the likelihood of safety incidents. This provides a clear behavioral mechanism through which psychological predispositions toward risk are converted into actual unsafe riding practices. The open-ended responses further suggest that some respondents frequently experience time pressure related to household and family obligations, which may encourage them to travel faster in order to complete multiple tasks within a limited period. In densely populated traffic environments such as Jabodetabek, this tendency may increase exposure to hazardous traffic situations and reduce the time available to respond to unexpected road conditions. Interventions should not focus solely on law enforcement targeting speeding behavior. Preventive efforts should also address the psychological and situational factors underlying risky riding intentions, particularly perceptions regarding time urgency, attitudes toward speeding, and beliefs about the necessity of taking risks to fulfill daily household responsibilities. Consistent with the TPB, modifying attitudes, subjective norms, and perceived behavioral control may reduce risky riding intentions and ultimately decrease speed-related safety incidents.

Because housewife motorcyclists frequently balance multiple daily mobility responsibilities, such as transporting children, shopping, and managing household-related activities, they may experience considerable time pressure during travel. This situation may encourage speeding behavior as a means of completing multiple tasks efficiently. Therefore, safety interventions should not only focus on traffic law enforcement but also promote time management skills, safety awareness, and family-oriented road safety practices. By addressing the psychological and situational factors that contribute to risky riding intentions, these interventions may help reduce speeding behavior, traffic violations, near-miss incidents, and road crashes among housewife motorcyclists.

5. CONCLUSION

This study concludes that housewife motorcyclists in Greater Jakarta (Jabodetabek) are predominantly aged 26–35, reside in Depok, hold a driver's license, and ride more than seven times per week, primarily for school commutes and domestic errands. Empirically, traffic errors, speed violations, and control errors are the most frequent behaviors, whereas stunt behaviors are virtually non-existent. From a structural modeling perspective, risky riding intention directly drives all four MRBQ dimensions. However, speed violation is the sole behavioral mechanism that significantly mediates the relationship between risky riding intention and safety incidents, demonstrating that psychological risk translates into actual crashes primarily through intentional speeding.

Several targeted recommendations can be proposed to enhance road safety among housewife motorcyclists in Jabodetabek. Given that speed violations serve as the primary mediating mechanism driving safety incidents, road safety policies and enforcement strategies must prioritize targeted speed management. Beyond conventional law enforcement, interventions should address the underlying psychological drivers of risky intentions, aligned with the TPB. Collaborative initiatives involving traffic police, transportation authorities, and community organizations should focus on reshaping safety attitudes, promoting family-oriented social norms against speeding, and enhancing perceived behavioral control under daily time pressures. Stricter speed limit enforcement, particularly through traffic calming measures (such as speed bumps, automated monitoring, and clear signage) in residential zones and school areas, is critical given this demographic's frequent child-transportation duties. Infrastructure improvements must also adopt a user-centric approach for women and children, including safer drop-off zones and high-visibility road markings along frequent daily travel routes. Finally, future research should expand the current structural model by incorporating additional environmental and situational variables to further explain traffic safety incidents.

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DECLARATION OF AI-TOOL USAGE

The author declares that artificial intelligence (AI) tools were used in the preparation of this manuscript. ChatGPT and SciSpace AI were utilized to assist in language editing, paraphrasing, and improving the clarity of written content. All substantive aspects of the research were conducted solely by the author. The author takes full responsibility for the accuracy, integrity, and originality of the work presented in this manuscript.