

## Drive Distraction and Risky Driving Behavior: A Meta-analysis Study

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### Abstract

This study fills a research gap by extending previous studies on driver distraction and risky driving behavior beyond specific contexts or distraction types. This meta-analysis assesses the strength of the relationship, heterogeneity, publication bias, and moderators. The literature was searched through PubMed, ScienceDirect, and Elsevier (2015-2025). Of 128 articles, 10 cross-country studies with samples of 165-21,000 respondents passed PRISMA selection. Random-effects analysis with Fisher's z transformation showed a heterogeneity ( $I^2 = 99.63\%$ ;  $Q = 2394.305$ ;  $p < .001$ ). Publication bias tests (Fail-safe  $N = 12,234$ ; Egger  $p = 0.861$ ; Begg  $p = 0.381$ ; trim-and-fill = 0) showed no bias, and the association between variables remained consistent. Visual, manual, and cognitive distractions increase risky driving behavior. Findings support educational policies, stricter regulations, and distraction-mitigation technologies, and offer novelty in synthesizing the latest cross-national evidence.

**Keywords:** drive distraction, risky driving behavior, meta-analysis, traffic safety, driver attention

### Abstrak

Penelitian ini mengisi celah riset karena studi terdahulu tentang drive distraction (gangguan mengemudi) dan risky driving behavior (perilaku berisiko) masih terbatas pada konteks negara atau jenis distraksi tertentu. Meta-analisis ini menilai kekuatan hubungan, heterogenitas, bias publikasi, serta faktor moderator. Literatur ditelusuri melalui PubMed, ScienceDirect, dan Elsevier (2015–2025). Dari 128 artikel, 10 studi lintas negara dengan sampel 165–21.000 responden lolos seleksi PRISMA. Analisis random-effects dengan transformasi Fisher's z menunjukkan korelasi signifikan ( $r = 0,381$ ; 95% CI [0,146–0,617];  $p = 0,002$ ), dengan heterogenitas tinggi ( $I^2 = 99,63\%$ ;  $Q = 2394,305$ ;  $p < .001$ ). Uji bias publikasi (Fail-safe  $N = 12.234$ ; Egger  $p = 0,861$ ; Begg  $p = 0,381$ ; trim-and-fill = 0) tidak menunjukkan bias, dan efek hubungan antara kedua variabel tetap konsisten. Distraksi visual, manual, dan kognitif meningkatkan perilaku berisiko. Temuan ini mendukung kebijakan edukatif, regulasi ketat, serta teknologi mitigasi distraksi, dengan kebaruan berupa sintesis bukti lintas negara terkini.

**Kata kunci:** drive distraction, risky driving behavior, meta-analisis, keselamatan lalu lintas, perhatian saat mengemudi

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## INTRODUCTION

Land transportation is an essential part of modern human life. The number of motorized vehicles continues to grow annually, both in developed and developing countries. This increase facilitates mobility and economic growth but also creates major problems, including the high number of traffic accidents. According to the World Health Organization (2023), each year, approximately 1.19 million people die in traffic accidents, while another 20 to 50 million suffer non-fatal injuries that often lead to long-term disabilities (World Health Organization, 2023). Of these, approximately 92% of these deaths occur in low- and middle-income countries, even though these countries only have about 60% of the world's vehicles. This situation highlights a significant disparity in traffic safety, with countries with limited infrastructure and regulations bearing the highest burden of accidents.

Furthermore, traffic accidents are also a leading cause of death among young people. The World Health Organization (2023) confirms that traffic accidents are the leading cause of death among the 5–29 age group. This has serious implications because it reduces the potential of the younger generation, who should be the backbone of a country's economic and social development. Therefore, traffic safety is not just a transportation issue, but also a public health and sustainable development issue.

In Indonesia, conditions are not much different from global trends. Data from the Asian Transport Outlook (2025) indicates that in 2021, approximately 31,000 fatalities occurred in traffic accidents, equivalent to 2% of the national death toll. Other research suggests that in 2022, approximately 131,500 traffic accidents occurred, of which 74.35% involved two-wheeled vehicles (motorcycles) (Kurohman et al., 2025). This indicates that motorcyclists are the most vulnerable group on the road. Furthermore, the death toll in 2021 reached 25,266, with an estimated 11.3 deaths per 100,000 population, a relatively high figure compared to developed countries (Kurohman et al., 2025)

Beyond the number of fatalities, traffic accidents also have a significant economic impact. Losses due to traffic accidents in Indonesia are estimated to reach 2.8% of Gross Domestic Product (GDP), including medical costs, victim recovery, and lost work productivity (Kurohman et al., 2025). This indicates that traffic accidents are not only a health threat but also a macroeconomic problem that can hamper national development.

Judging by annual trends, the number of traffic accidents in Indonesia remains high. In 2019, 116,441 accidents were recorded, with 30,568 fatalities (Kusumastutie et al., 2024). This data shows that despite various policies such as electronic ticketing, infrastructure development, and road safety campaigns, human factors remain the dominant cause of accidents. This aligns with a 2020 report from the National Highway Traffic Safety Administration (NHTSA) in the United States, which recorded 3,308 fatal accidents directly related to distracted driving. This fact demonstrates that distracted driving is a universal problem (National Highway Traffic Safety Administration, 2020).

One of the main factors causing accidents is risky driving behavior. Operationally, risky driving behavior is defined as incorrect driving habits due to a lack of driving knowledge and experience. This behavior is reflected in various dangerous actions, such as violating traffic rules, using a cell phone while driving, driving at high speeds, and other risky behaviors that can increase the likelihood of an accident (Yang et al., 2019). It can also be defined as a driver's involvement in at least one of five categories of dangerous behavior in the past 12 months. These categories include driving at speeds exceeding the legal limit, driving after consuming alcohol, not wearing a seatbelt, driving



while drowsy, and violating traffic regulations (Mekonnen et al., 2019). These behaviors can be categorized into three main dimensions. First, aggressive behavior, such as speeding, running red lights, failing to signal, and reckless driving. Second, violations of safety rules, such as not wearing a seatbelt, not wearing a helmet, driving while drowsy, drunk, or using a cell phone while driving. Third, psychosocial risk-taking, which is influenced by personality factors (sensation seeking, extroversion, low risk perception, or overconfidence) (Kalantari et al., 2021). This dimension indicates that risky driving behavior is a combination of external factors (traffic environment, regulations) and internal factors (individual psychology).

Besides risky behavior, driver distraction is a significant factor that often triggers accidents. Operationally, driver distraction is defined as a condition in which a driver's attention is diverted from the primary task of controlling the vehicle (Qi et al., 2020). Distraction can be divided into three main dimensions. First, visual distraction, which occurs when the eyes are not focused on the road, for example, looking at a GPS, a billboard, or reading a message on a cell phone. Second, manual distraction, which occurs when the hands are off the wheel, for example, while eating, drinking, or texting. Third, cognitive distraction, which occurs when the mind is distracted, for example, daydreaming, talking to passengers, or thinking about personal problems (Guo et al., 2017). Although often considered trivial, distraction has been shown to reduce concentration, slow reaction time, and increase the risk of risky behavior that can lead to accidents (Abojaradeh et al., 2024).

The relationship between drive distraction and risky driving behavior can be understood through the theoretical framework of cognitive psychology. Attention-resource theory explains that human attention capacity is limited, so when attention is divided between driving and a secondary activity, the ability to process traffic information is significantly reduced (Throuvala et al., 2021). Dual-task interference theory holds that performing two complex tasks simultaneously reduces the performance quality of one or both (Strayer & Johnston, 2001). In the context of driving, secondary activities such as using a cell phone or texting will interfere with the primary task of maintaining road safety. Furthermore, risk compensation theory explains that some drivers feel more willing to take risks when they perceive safety due to safety technologies, such as ABS or rearview cameras. However, this perception of safety makes them more likely to multitask, thus increasing their vulnerability to distraction (Jadaan et al., 2022). Conceptually, the following pathway can be drawn: distraction, reduced attentional capacity, weakened driving control, increased risky behavior, and an increased risk of an accident.

Various empirical studies support this link. Zhu et al. (2018) found that mobile phone use while driving can simultaneously impair visual, manual, and cognitive control, increasing the likelihood of accidents. Guo et al. (2017) showed that young drivers are more susceptible to distraction than older drivers. Jannusch et al. (2021) reported that sending voice messages while driving carries risks nearly equivalent to drunk driving. Kashevnik et al. (2021) identified that smartphone sensor data can detect risky behavior caused by distraction. In Indonesia, Asyari et al. (2022) found that smartphone use while driving, especially in heavy traffic, is a major contributing factor to accidents. These varying results demonstrate that the impact of distraction is not uniform but is influenced by driver age, type of distraction, traffic regulations, and cultural context.



In cognitive psychology, drive distraction is explained through several important theories. Attention-resource theory emphasizes that human attention capacity is limited, so when attention is divided between driving and other activities, the ability to process traffic information decreases (Throuvala et al., 2021). Dual-task interference theory explains that when someone performs two complex tasks simultaneously, performance on one or both tasks will be impaired (Strayer & Johnston, 2001). In the context of driving, using a cell phone, listening to loud music, or talking to passengers becomes a secondary tasks that detract from the quality of the primary task, which is to control the vehicle safely.

Despite the abundance of empirical evidence available, previous research still has limitations. First, most studies focus solely on specific types of distractions, particularly mobile phone use. Second, research is still limited to specific country contexts, making cross-cultural comparisons difficult. Third, there has been no comprehensive synthesis integrating various cross-national studies to obtain a general picture of the relationship between driver distraction and risky driving behavior. Furthermore, the high heterogeneity in the literature suggests that moderating factors (driver age, distraction type, regulatory context) warrant further exploration. Therefore, a meta-analytic approach is essential to systematically combine findings across studies and generate more robust and generalizable conclusions.

Various studies have shown a close relationship between distracted driving and risky driving behavior. However, previous research has been limited to individual studies within specific countries. Most studies have examined only one type of distraction, such as mobile phone use, and there has been no comprehensive synthesis that combines these studies to provide a clear picture. In Indonesia, meta-analyses examining the relationship between the two remain very limited, even though this approach is crucial for integrating research findings and identifying common patterns.

Thus, it can be concluded that driving distraction and risky driving behavior are closely related. Distractions while driving, whether visual, manual, or cognitive, increase the likelihood of risky behavior by weakening concentration, slowing responses, and reducing self-control. These two phenomena reflect that traffic accidents are caused not only by technical factors but also by psychological factors, personality traits, and social influences that shape driver behavior on the road.

This study was designed to answer whether there is a significant relationship between driver distraction and risky driving behavior, while also assessing the level of heterogeneity and potential publication bias across the studies reviewed. The main objectives were to measure the strength of this relationship through meta-analysis, to analyze differences in results across studies, and to explore possible moderating factors such as age, type of distraction, and cultural context. In terms of benefits, this study provides theoretical contributions by strengthening empirical evidence for cognitive psychology theories such as the attention-resource theory and dual-task interference, and by enriching the traffic psychology literature. In practice, these findings are useful for increasing driver awareness of the dangers of distraction, supporting the development of stricter traffic policies on smartphone use, and providing a basis for data-driven road safety education and campaigns.



## METHOD

This study uses a quantitative meta-analysis approach, following the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analysis) guidelines as the main guide for compiling and reporting the literature synthesis. Meta-analysis was chosen because it systematically and quantitatively combines the results of multiple previous studies to estimate the combined effect (effect size) of the relationship between drive distraction and risky driving behavior (Borenstein et al., 2011). PRISMA is used to ensure transparency and reproducibility in reporting and comprises four stages: identification, screening, eligibility, and inclusion (Moher et al., 2009).

The study selection process carried out included identification using three main databases, namely PubMed, ScienceDirect, and Elsevier, using the keywords "drive distraction" and "risky driving behavior", with a total of 128 initial articles found. The second stage, filtering, found 48 articles, which were then removed due to duplication, irrelevance to the title or abstract, or failure to match other keywords, namely "cross-selection". The third stage, eligibility, involved reading 70 articles in full to determine the suitability of the content to the criteria; as many as 60 articles were eliminated because they did not meet the methodological criteria or did not report correlation data. The fourth stage, inclusion, involved processing 10 selected studies using the meta-analysis method in Jamovi with a random-effects model.

The population in this study comprises all empirical studies that examine the relationship between driver distraction and risky driving behavior published between 2015 and 2025. The primary focus is on motor vehicle drivers, both two- and four-wheeled, without restrictions on gender or country of origin, with an emphasis on the use of measurement instruments relevant to both variables. The sample consists of 10 scientific articles that met all inclusion and exclusion criteria and were processed through systematic stages according to the PRISMA protocol (Moher et al., 2009). These studies involved empirical respondents with the following characteristics: 1) aged between 18 and 35 years, 2) using two-wheeled or four-wheeled vehicles, 3) coming from various countries (cross-cultural studies), 4) The research design used is cross-sectional, and 5) reporting correlation values or data that allow calculations of the effect size towards the relationship drives distraction and risky driving behavior. The sampling technique used is systematic purposive sampling, based on the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) protocol.

The author conducted a literature search using the software Publish or Perish to collect bibliographic metadata. Search criteria include the term 'drive distraction,' as shown in the table search string, with a period limit of 2015-2025, searched through [pubmed.ncbi.nlm.nih.gov](http://pubmed.ncbi.nlm.nih.gov), [elsevier.com](http://elsevier.com), and [sciencedirect.com](http://sciencedirect.com). The time span was chosen to maintain relevance with existing phenomena over the past few years. The following are the inclusion criteria: 1) research journals published in indexed scientific journals such as Scopus, Semantic Scholar, and PubMed, 2) studies that focus on drivers as the main population, 3) Research with a cross-sectional study design, 4) has a correlation value, 5) has indicators in the form of factors that influence distraction and risky driving behavior, and 6) publication time limit of the last 10 years (2015-2025) for relevance and updates. As for the exclusion criteria, 1) the studies conducted came from various samples, and 2) research that discussed driving disorders directly related to the concept of driving distraction and risky driving behavior.



**Table 2.**  
 Search String in Publish or Perish Database

No.	Keywords	Justification
1.	Drive distraction	identify related literature on driver distraction
2.	Risky driving behavior	identify literature related to risky behavior, especially when driving

Participants in each of the studies reviewed were diverse, encompassing a wide range of populations, including teenagers, university students, parents, and professional drivers from various countries (Romania, Spain, New Zealand, Iran, Ghana, Cambodia, Finland, France, Saudi Arabia, and Qatar), with the number of participants ranging from 165 to over 21,000 people depending on the study. The studies reflected a diversity of age groups, social statuses, and driving contexts.

Data analysis was performed using Jamovi 2.6.44 with the MAJOR (Meta Analysis for JAMOVI) module. The techniques used include 1) Random-Effects Model: used to calculate the combined effect size, because it is assumed that there is real heterogeneity between studies, 2) Heterogeneity: analyzed through statistics Q, I<sup>2</sup>, and Tau<sup>2</sup>, 3) Publication Bias Test: conducted using the method Fail-safe N, Egger's Regression Test, And Begg and Mazumdar Rank Correlation, and 4) Visualization: using Forest Plot and Funnel Plot to depict the distribution and stability of study results.

## RESULTS AND DISCUSSION

### Results

The results in table 1 indicate that the analyzed studies exhibit significant differences. The tau value is 0.377, and the tau<sup>2</sup> value is 0.1419 (SE = 0.068). The very high I<sup>2</sup> percentage, 99.63%, indicates that almost all variation stems from significant differences between studies, not chance. This is supported by the high H<sup>2</sup> value (272.333) and the substantial Q statistic (2394.305; p < .001), indicating heterogeneity. The degrees of freedom (df = 9) indicate that 10 studies were analyzed, while the R<sup>2</sup> value is unavailable because no moderator analysis was performed.

**Tabel 1.**  
 Heterogeneity Statistics

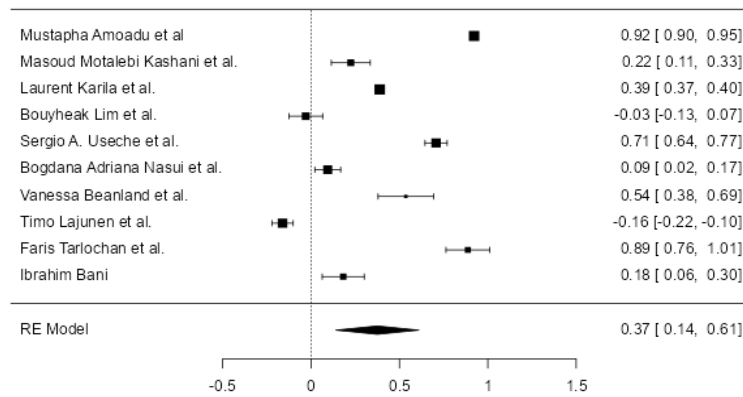
Tau	Tau <sup>2</sup>	I <sup>2</sup>	H <sup>2</sup>	R <sub>2</sub>	df	Q	p
0.377	0.1419 (SE= 0.068 )	99.63%	272.333	.	9.000	2394.305	<.001

Based on the graph 1, the forest plot displays the meta-analysis results of the ten studies examined. Each row shows the author's name, effect size, and 95% confidence interval (CI). The black box represents the estimated effect of each study, with the box size corresponding to the study's weight, and the horizontal line indicates the CI. For example, Mustapha Amoada et al. reported an effect size of 0.92 with a CI of [0.90; 0.95], while Bouyheak Lim et al. reported an effect size of -0.03 with a CI of [-0.13; 0.07], indicating the results were not significant. Some studies, such as Timo Lajunen et al. (-0.16 [-0.22; - 0.10]), suggest an adverse effect, while most other studies show a positive



impact. At the bottom, the black diamond (RE Model) represents the combined results from a random effects model, namely an effect size of 0.37 with a CI of [0.14; 0.61], indicating that, overall, the studied variables have a significant and positive effect.

**Graph 1.**  
 Forest Plot



Based on table 2, the publication bias test results indicate several vital indicators. The Fail-Safe N value is 12,234 ( $p < .001$ ). The Begg and Mazumdar Rank Correlation test produces a correlation value of 0.244 with  $p = 0.381$ , indicating no significant indication of publication bias. Egger's Regression test gives a value of -0.175 with  $p = 0.861$ , also indicating no evidence of publication bias. Furthermore, the Trim and Fill method shows no studies that need to be added or corrected (0.000), indicating a relatively symmetrical distribution of studies. Overall, these results confirm that the meta-analysis findings are not significantly influenced by publication bias.

**Table 2.**  
 Publication Bias Assessment

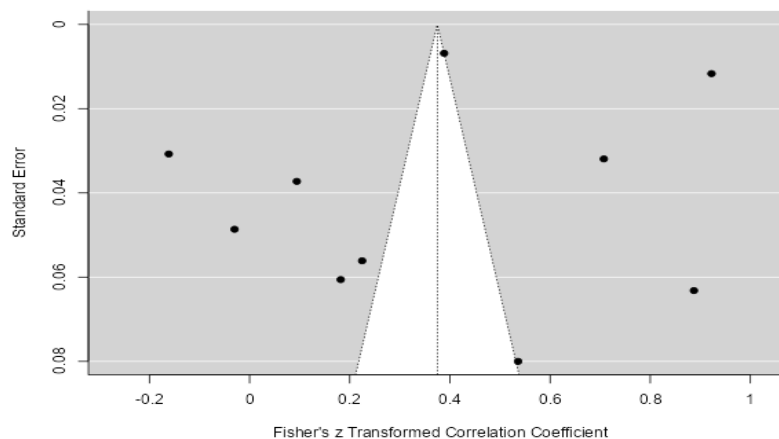
Test Name	Value	p
Fail-Safe N	12234.000	<.001
Begg and Mazumdar Rank Correlation	0.244	0.381
Egger's Regression	-0.175	0.861
Trim and Fill Number of Studies	0.000	.

*Note.* Fail-safe N Calculation Using the Rosenthal Approach



Based on graph 2, a funnel plot is used to assess the potential for publication bias in meta-analysis. The horizontal axis shows Fisher's z Transformed Correlation Coefficient (effect size), while the vertical axis shows Standard Error (estimation accuracy). The inverted triangle (funnel) plot shows the distribution of studies if there were no publication bias. The black dots represent the analyzed studies, and most fall within the funnel area, although some are spread to the right and left. The relatively symmetrical distribution around the midline (with an effect size of 0.37) indicates no strong evidence of publication bias, consistent with the results of previous statistical tests.

**Graph 2.**  
Funnel Plot



This meta-analysis aims to evaluate the relationship between drive distraction and risky driving behavior, based on 10 empirical studies systematically selected using the PRISMA protocol. The results of this study confirmed a significant relationship between the two variables and evaluated the level of heterogeneity and possible publication bias.

## Discussion

The results of the random-effects model indicate a significant relationship between drive distraction and risky driving behavior, with an estimated value of 0.381 and a p-value of 0.002, suggesting that this relationship is not due to chance. The Z-value of 3.17 also strengthens the significance of this relationship. The confidence interval (CI) of 0.146 to 0.617 indicates that the correlation effect remains within the positive, significant range across the studies analyzed. This finding strengthens the main hypothesis that distraction while driving, whether visual, manual, or cognitive, can increase the likelihood of drivers engaging in risky behaviors such as speeding, running red lights, using a cell phone while driving, and driving while drowsy. This aligns with the attention-resource theory (Strayer & Johnston, 2001), which posits that human attention is limited; when divided by distractions, the capacity to drive safely decreases.

The inter-study heterogeneity analysis indicated a very high level of heterogeneity, with an  $I^2$  value of 99.63%, a Q of 2394.305, and  $p < .001$ . This suggests that there are significant differences between studies that are not solely due to random variation. Furthermore, the  $\tau^2$  value of 0.1419 indicates the presence of true effect variance between the studies analyzed. This high level of heterogeneity suggests that other factors (moderators) influence the relationship between drive distraction and risky driving behavior, such as driver age, traffic culture, vehicle type, or the measurement



method used in each study. Therefore, although the meta-analysis provides a general picture of the effect, it is essential to recognize that these results can vary across contexts and populations.

Publication bias tests were conducted to identify potential publication bias. Several tests were conducted: Fail-Safe N, Egger's Regression Test, and Begg and Mazumdar Rank Correlation. 1) Fail-Safe N showed a value of 12.234 with  $p < .001$ , which means that it would take more than 12,000 studies with zero effect to negate the significance of the results of this meta-analysis. This shows the stability and strength of the effect found. 2) Egger's Regression Test produces a regression value of -0.175 with  $p = 0.861$ , indicating no statistical evidence of publication bias. This is supported by the results of the Begg and Mazumdar test, which showed a correlation of 0.244 ( $p = 0.381$ ). 3) Visualization with a funnel plot also shows a symmetrical distribution of studies, indicating the absence of systematic bias towards studies with significant results only.

Thus, there is no significant publication bias, and the results of this meta-analysis have quite strong methodological validity. This meta-analysis has not conducted explicit statistical moderator tests (e.g., meta-regression or subgroup analysis). Still, several factors are strongly suspected to act as moderators based on high heterogeneity ( $I^2 = 99.63\%$ ) and the literature reviewed 1) driver age: studies show that young drivers (18–35 years) are more susceptible to drive distraction, especially those related to the use of mobile phones and social media while driving (Zhu et al., 2018). 2) Type of distraction: visual distractions (e.g., looking at GPS) tend to cause delayed responses; manual distractions (holding a mobile phone) affect vehicle control; and cognitive distractions (thinking about something else) impact decision making (Guo et al., 2017). 3) Emotional conditions: drivers with high stress, anger, or emotional disturbances are more easily distracted and show risky driving behavior (Abojaradeh et al., 2024). 4) Vehicle type and geographic context: driving behavior in developing countries tends to show a higher level of drive distraction due to the lack of regulations and driving safety education (Asyari et al., 2022).

The findings of this study provide empirical support for theories in cognitive and social psychology. Dual-task interference theory explains how a secondary task (e.g., cell phone use) interferes with the primary task (driving), thereby increasing the likelihood of errors. This theory is also relevant to the study's dimensions of visual, manual, and cognitive distraction.

This study also confirms previous findings from Guo et al. (2017) and Jadaan et al. (2022), showing that driver behavior is significantly influenced by distractions from both internal (emotions, thoughts, stress) and external (cell phones, advertisements, GPS) factors. Furthermore, these results are relevant to the socio-cognitive approach, which emphasizes that risk perception and social norms shape a person's driving behavior. In this regard, distracted driving is not only an individual issue but also related to a country's social structure and traffic safety culture.

The findings of this study provide a significant contribution to the development of scientific knowledge. Evidence of a significant positive relationship between drive distraction and risky driving behavior strengthens the foundation of cognitive and behavioral theories, particularly those that highlight the importance of attention and self-control in driving situations. Driver distractions, whether visual, manual, or cognitive, have been shown to impair decision-making and reactions to dynamic traffic situations, thereby increasing the risk of deviant or unsafe behavior on the road. These results align



with attention-resource theory and dual-task interference, which state that human attention capacity is limited, and external distractions can divide or divert cognitive resources essential for driving. This study also provides empirical support for the concept of risky behavior in social and cognitive psychology, adding evidence that situational and environmental factors (such as distractions) can increase the probability of risky behavior. Therefore, this study can serve as a reference for developing a more comprehensive model of driving behavior that integrates both internal (emotions, impulsivity) and external (distractions, traffic conditions) variables.

In practice, these findings emphasize the importance of interventions targeting driver distraction as a primary strategy for preventing traffic accidents. Some recommended approaches include 1) education and safety campaigns: educating drivers about the impact of distraction while driving, especially related to mobile phone use, entertainment devices, or emotional states, can increase risk awareness. 2) Safer vehicle technology design: The results of this study encourage the automotive industry to develop safety-supporting technologies such as hands-free systems, driver attention alert features, and restrictions on access to entertainment features while the vehicle is moving. 3) Stricter legal policies: These findings can support government regulations in prohibiting the use of mobile phones or other devices while driving, as well as increasing monitoring of driver behavior using traffic camera technology and driver monitoring systems.

## CONCLUSION

A meta-analysis of 10 empirical studies from 2015 to 2025 consistently confirms a significant positive association between distracted driving and increased risky driving behavior, thereby reinforcing the initial hypothesis. The results of this synthesis unequivocally affirm that any form of distraction, whether cognitive, visual, or manual, substantially increases the likelihood of traffic violations and accidents. In practical terms, these findings underscore the urgency of interventions to reduce distraction as a core accident prevention strategy. Policy recommendations that can be derived include risk-awareness education, the development of vehicle technologies that support safety, such as driver-attention alert systems, and the implementation and enforcement of stricter legal regulations. Implications for future research include the need to focus on identifying moderator factors and to apply a longitudinal design to clarify causal relationships. Overall, the study concludes that managing driving distractions is an integral component of systematic efforts to improve road safety. Therefore, integrating educational, technological, and regulatory approaches is imperative.

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