

RESEARCH ARTICLE

Fear of Crime in Traffic: An Analysis of Gender-Based Perceptual Differences in the Case of İzmir*

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Abstract

This study examines gender differences in fear of crime within traffic settings. To address the scarcity of traffic-specific research, we developed a 26-item Fear of Crime in Traffic Scale and surveyed 1,505 active drivers in İzmir (768 women; 737 men) using purposive and quota sampling. Exploratory factor analysis supported a three-factor structure—Perceived Individual Insecurity in Traffic, Fear Related to Vehicle Types, and Spatio-Temporal Perceptions of Safety—explaining 79.19% of the variance (KMO = .973; Bartlett $p < .001$). Reliability was high for the total scale ($\alpha = .96$) and strong across subdimensions ($\alpha = .95, .90, .88$). Given non-normal distributions, gender comparisons employed Mann-Whitney U tests. No significant gender differences emerged for Perceived Individual Insecurity ($U = 271,314, z = -1.388, p = .165$) or Spatio-Temporal Perceptions of Safety ($U = 273,649, z = -1.118, p = .265$). However, men scored higher on Fear Related to Vehicle Types ($U = 250,234, z = -3.919, p < .001, r = .101$). Item-level patterns indicate women report greater concern about sexual harassment and verbal abuse, while men report higher concerns tied to public/heavy vehicles and the perceived effectiveness of enforcement. These results nuance the gender-fear literature by showing that, in “mobile public spaces” like traffic, gendered threat perceptions vary by subdimension. The findings inform transportation safety by highlighting the need for gender-sensitive interventions that address both interpersonal risks and vehicle/structural risks.

Keywords: fear of crime, gender, traffic safety, driver perceptions, scale development

Öz

Bu çalışma, trafikte suç korkusuna ilişkin cinsiyet farklılıklarını incelemektedir. Trafik bağlamına özgü araştırma eksikliğini gidermek üzere 26 maddelik Trafikte Suç Korkusu Ölçeği geliştirilmiş ve İzmir’de aktif sürücülük yapan 1.505 kişi (768 kadın; 737 erkek) amaçlı ve kota örnekleme ile ulaşılarak araştırmaya dâhil edilmiştir. Açımlayıcı faktör analizi üç faktörlü yapıyı doğrulamıştır: Trafikte Algılanan Bireysel Güvensizlik, Araç Türlerine Bağlı Korku ve Zamansal-Mekânsal Güvenlik Algıları. Üç faktör toplam varyansın %79,19’unu açıklamıştır (KMO = ,973; Bartlett $p < ,001$). Ölçeğin tümünde ($\alpha = ,96$) ve alt boyutlarında ($\alpha = ,95; ,90; ,88$) güvenirlik yüksektir. Dağılımlar normal olmadığından cinsiyet karşılaştırmalarında Mann-Whitney U testi kullanılmıştır. Algılanan Bireysel Güvensizlik ($U = 271.314, z = -1,388, p = ,165$) ve Zamansal-Mekânsal Güvenlik Algıları ($U = 273.649, z = -1,118, p = ,265$) için anlamlı fark bulunmamıştır. Buna karşılık, Araç Türlerine Bağlı Korku alt boyutunda erkeklerin puanları daha yüksektir ($U = 250.234, z = -3,919, p < ,001, r = ,101$). Madde düzeyinde kadınlar cinsel taciz ve sözlü saldırı kaygılarını daha fazla bildirirken, erkekler kamu/ağır vasıtalar ve yaptırım-denetimin etkililiğine ilişkin kaygılarda daha yüksek puanlar vermiştir. Bulgular, “hareketli kamusal mekân” olarak trafik bağlamında cinsiyete bağlı tehdit algılarının alt boyutlara göre farklılaştığını göstermekte ve hem kişilerarası risklere hem de araç/strüktürel risklere duyarlı politikaların gerekliliğine işaret etmektedir.

Anahtar Kelimeler: suç korkusu, toplumsal cinsiyet, trafik güvenliği, sürücü algıları, ölçek geliştirme

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Introduction

The concept of fear of crime, long debated in the criminology literature, is now widely accepted as a significant variable influencing many aspects of life—from daily routines to social interactions and even political preferences. Numerous studies have documented that this fear varies systematically with demographic factors such as age, gender, socioeconomic status, and place of residence, and can restrict individuals' mobility, social participation, and sense of well-being (Farrall, Bannister, Ditton, & Gilchrist, 1997; Hale, 1996; Innes, 2004; Warr, 1984). Much of this work focuses on urban living, walking alone at night, and general safety perceptions, consistently showing that women tend to report higher levels of fear than men (Stanko, 1990; Ferraro, 1996; Sutton & Farrall, 2005). While these contexts have been widely examined, little research has investigated how fear of crime emerges in traffic environments, where mobility, exposure to strangers, and structural safety conditions intersect in distinctive ways.

The traffic environment has evolved from a simple area for mobility to a complex social arena where perceptions of safety are continuously renegotiated in today's urban life due to the growing number of vehicles, increased driver density, and traffic-related tensions. In this situation, incidents like verbal abuse, reckless driving, the possibility of collisions, or harassment based on a person's gender greatly influence the development of a fear of crime. This is particularly noticeable in the case of women, whose insecurities, whether when using private vehicles or public transportation, highlighted the crucial role that gender plays in influencing fear of crime.

Women report higher levels of fear of crime than men, according to gender-related literature, which emphasizes that this fear is rooted in structural injustices as well as physical threats (Stanko, 1990; Pain, 2001; Ferraro, 1996). Women's strategies, such as being more cautious in public, avoiding certain times of day, or selecting alternative routes, provide important insights into how this fear functions at a behavioral level (Pain, 2001; Loukaitou-Sideris, 2006). Yet little is known about how these tactics operate specifically within traffic environments.

Within the Turkish context, there exists a significant gap in the research on feelings of insecurity and fear of crime in traffic environments. The fear individuals experience in traffic is often discussed in relation to the risk of accidents or violations of traffic regulations. Yet, studies that seek to develop measurement tools for crime-based experiences—such as verbal abuse, physical assault, sexual harassment, or property damage—and their impact on drivers' fear levels are notably scarce. This gap points to a clear shortcoming in the academic literature and simultaneously limits the potential for evidence-based policymaking in the field of traffic safety.

The primary aim of this study is to develop a unique measurement scale for assessing fear of crime in traffic settings and to use this tool to conduct a comparative analysis of perceived safety among male and female drivers. In line with this goal, the study seeks to answer the following research questions:

- Is there a statistically significant difference between female and male drivers in terms of their fear of being victimized by crime in traffic? In which dimensions of perceived safety does this difference become most pronounced?
- Through which types of crimes do male and female drivers most commonly express concern about victimization in traffic? How can these concerns be understood in relation to social, psychological, or structural factors?
- How do individual factors (e.g., driving experience, tendency to take safety precautions) and environmental factors (e.g., time of day, presence of heavy vehicles) shape fear of crime in traffic, and in what ways do these differ between men and women?

This study aims to contribute to the fear of crime literature from a theoretical standpoint, while also offering a practical, evidence-based tool that can inform future traffic safety policies.

Gender-Based Fear of Crime: Differences Between Women and Men

One of the demographic factors that is most commonly studied in the literature on crime fear is gender. Women report higher levels of fear of crime

than men do, according to numerous studies (Stanko, 1990; Ferraro, 1996; Sutton & Farrall, 2005). These findings show psychological threats and a general feeling of insecurity in public places, in addition to fears of physical violence.

Women's fear of crime is frequently interpreted in terms of both the perceived seriousness of the possible outcomes and the probability of becoming victims. Women are perceived as more vulnerable and easily targeted, which increases their sense of threat, according to Ferraro (1996). The social vulnerability hypothesis is commonly cited in this context as a major explanation for why women typically experience higher levels of physical and symbolic fear.

In addition to fearing victimization itself, women also tend to express deeper concerns about the lack of adequate support mechanisms following victimization and a general distrust in the justice system (Pain, 2001; Gilchrist et al., 1998). This perspective reframes fear of crime not merely as an individual emotion, but as a broader social space in which gender roles are reproduced and reinforced.

Men's fear of crime is typically linked to concrete threats such as physical assault, carjacking, or theft, and is generally reported at lower levels than among women. Yet several studies indicate that men also experience notable levels of fear—particularly in situations involving nighttime travel, deserted environments, or the use of public transportation (Sutton & Farrall, 2005; Warr, 2000).

The findings of our study are largely consistent with this body of literature. Female participants, for instance, perceived the presence of heavy vehicles—such as trucks and lorries—as a greater source of threat and were more likely to adopt in-vehicle safety measures. The fact that fear of sexual harassment emerged with notably high scores exclusively among women further highlights the influence of gender roles in shaping the experience of traffic environments. Among male participants, a sense of safety was more often tied to the perceived effectiveness of legal sanctions. In this context, structural measures appear to play a more significant role for men, while for women, both structural solutions and personal safety strategies emerge as key protective factors.

Taken together, our evidence suggests that fear of crime cannot be reduced to urban security conditions or aggregate crime rates; gendered roles and the safety strategies people adopt are integral to how fear is formed. Feminist criminology has long argued that women's fear in public spaces is shaped by patriarchal relations and wider social inequalities (Stanko, 1990; Pain, 2001). From this point, our results show a clear, subdimension-specific pattern: women report greater concern with interpersonal harms within Perceived Individual Insecurity (e.g., verbal/sexual harassment), whereas men score higher on Fear Related to Vehicle Types, pointing to vehicle/structural risks and a greater emphasis on enforcement. In short, within these “mobile public spaces” of traffic, gendered threat appraisals are context dependent.

Perceptions of Safety and Fear of Crime in Traffic Environments

For many years, fear of crime research has primarily focused on traditional public spaces such as streets at night, parks, or other urban environments. In recent years, transportation settings and traffic environments have increasingly been recognized as important components of individuals' safety perceptions (Ceccato & Newton, 2015). Incidents such as road rage, aggressive driving, harassment, assault, or damage to vehicles may result in either direct or indirect forms of victimization for drivers.

One important finding is that female drivers frequently feel more vulnerable in traffic, especially when driving at night or in rural areas. Additionally, women's fear of being victimized tends to increase when large or unfamiliar vehicles like trucks, lorries, or commercial taxis are present. Scholars like Ceccato and Loukaitou-Sideris (2020) contend that transportation safety should be evaluated not only in terms of traffic accidents but also in relation to people's perceptions of security, despite the paucity of research in this particular area.

The Fear of Crime in Traffic Scale developed within the scope of this study represents one of the first systematic tools designed to measure individuals' feelings of fear, threat, and insecurity experi-

enced during transportation. This research contributes to the literature by highlighting that transportation is not merely a technical domain, but also a social and psychological space shaped by subjective experiences.

Methods

This section outlines the research design, characteristics of the study group, the development process of the data collection instrument, and the techniques used for data analysis.

Research Design

Within the parameters of a descriptive survey model, a quantitative research approach was used to conduct this study. Assessing people's perceptions of their fear of crime in traffic environments and determining whether these perceptions vary by gender were the primary goals of the study. A new measurement tool was created as part of the study to gauge people's fear of crime, and its reliability and validity were examined. Descriptive statistics, factor analysis, reliability testing, and non-parametric difference tests were all used in the data analysis process.

Study Group and Sampling Procedure

The study group consisted of individuals residing in İzmir, Turkey, who actively drive motor vehicles. A purposive sampling method was employed to ensure the inclusion of participants who hold a valid driver's license and regularly operate a vehicle. In addition, due to the study's focus on gender-based analysis, quota sampling was also used to achieve a balanced distribution between female ($n = 768$) and male ($n = 737$) participants. This approach ensured that gender-based comparisons could be conducted with statistical reliability.

In total, data was collected from 1,505 participants. The sample includes individuals from diverse age groups, educational backgrounds, and occupational sectors.

Data Collection Instrument and Scale Development Process

Based on the literature review, a 26-item scale was developed to measure fear of crime in traffic environments, encompassing physical, psychological, and structural insecurity perceptions. Expert opinions from law enforcement and academics played a key role in establishing content validity.

Before launching the main study, we conducted a pilot survey in İzmir with 200 participants—100 women and 100 men—who met the eligibility criteria. Prior to fielding, we held consultation meetings with both field practitioners and subject-matter experts to develop the questionnaire. These consultations involved personnel from the Traffic Department of the Turkish National Police, academics specializing in transport safety, and professional psychologists. We also reviewed widely used fear-of-crime scales in the literature and drew them conceptually (scope, wording) when drafting items tailored to the traffic context. In this process, we conceptually reviewed some of the most widely used measures of fear of crime, such as Ferraro's *Fear of Crime Scale* (1995), Ferraro & LaGrange's measures (1987), and the *British Crime Survey* fear-of-crime questions. These instruments were not directly adopted; instead, they were used as conceptual references to design new items tailored to the traffic context.

During recruitment, we prioritized active drivers. Individuals who did not actively drive were excluded and replaced with new participants. This decision extended the fieldwork, but it strengthened the fit between the sample and the study's objectives.

As part of the scale development process, an exploratory factor analysis (EFA) was carried out, revealing a three-factor structure. These factors were identified as: Perceived Individual Insecurity in Traffic, Fear Related to Vehicle Types in Traffic, and Spatio-Temporal Perceptions of Safety in Traffic. The factor structure was supported by high Kaiser-Meyer-Olkin ($KMO = 0.973$) and statistically significant Bartlett's Test of Sphericity values ($p < .001$). The three sub-dimensions together explained 79.18% of the total variance, indicating a satisfactory level of construct validity.

Reliability analysis further confirmed the internal consistency of the scale. The Cronbach's alpha coefficient was calculated as .96 for the overall

scale, .95 for the first sub-dimension, .90 for the second, and .88 for the third—suggesting that the scale demonstrates high reliability across all dimensions.

Data Analysis

The data collected were analyzed using SPSS 23.0 software. Initially, descriptive statistics (mean, standard deviation) were calculated. To examine the construct validity of the scale, Exploratory Factor Analysis (EFA) was performed. The reliability of each sub-dimension was assessed using Cronbach's alpha coefficients.

The assumption of normality was evaluated through histogram plots and the Shapiro-Wilk test. For sub-dimensions where normal distribution was not observed, gender-based comparisons were conducted using the Mann-Whitney U test.

Factor Analysis

The sample demonstrated excellent suitability for factor analysis (KMO = 0.973), and Bartlett's test of sphericity was significant ($\chi^2(325) = 38,775.276$, $p < .001$). These results confirm that the dataset is highly appropriate for multivariate analysis (Kaiser, 1974).

The exploratory factor analysis revealed a three-factor structure. The eigenvalues of the first three factors were 17.360, 2.084, and 1.145, respectively, with a cumulative variance explanation of 79.19%. This level is well above the commonly accepted threshold of 60% in the social sciences, indicating strong structural validity of the scale. The first factor alone explained 66.8% of the variance, while the second and third factors contributed 8.0% and 4.4%, respectively. This structure demonstrates that the scale is built around a strong core dimension while also incorporating meaningful subdimensions that enrich its thematic depth.

Table 1. Perceived Individual Insecurity in Traffic

Item No	Summary of Statement	Factor loading value
S.16.1	Fear of being physically assaulted in traffic	0.750
S.16.2	Fear of being verbally harassed in traffic	0.767
S.16.3	Fear of experiencing sexual harassment in traffic	0.438

S.16.4	Concern caused by witnessing crimes while in traffic	0.788
S.16.5	Fear increased by victimization stories in media/social media	0.774
S.16.6	Impact of victimization stories heard from close contacts	0.790
S.16.7	Behavior changes in traffic due to fear	0.692
S.16.8	Taking in-vehicle safety precautions	0.664
S.16.9	Taking additional personal safety measures	0.663
S.16.11	Impact of structural safety measures on perceived traffic security	0.650
S.16.12	Effectiveness of awareness campaigns in reducing fear	0.628
S.16.13	Effectiveness of enforcement and penalties in reducing fear	0.694
S.16.24	Increased fear after being involved in a traffic accident	0.610
S.16.25	Fear of financial damage to the vehicle	0.629
S.16.26	Impact of dangerous driving behaviors on fear	0.673

This sub dimension focuses on personal risks encountered while driving and the related safety concerns. It includes fears stemming from both direct personal experiences and indirect exposure through media and social environments, such as risks of sexual harassment, verbal harassment, and physical assault.

Specifically, the high factor loading of item S.16.6 (0.790) suggests that people's fear is significantly influenced by victimization stories they hear from close friends and family. This construct also includes behavioral changes (S.16.7), media-induced fears (S.16.5), and the propensity to take different safety precautions (S.16.8–S.16.9).

Individual fear is strongly associated with both personal experiences and public security policies and governmental strategies, as evidenced by the loading of structurally oriented safety measures (such as lighting and police presence), awareness campaigns, and punitive sanctions onto this factor.

Table 2. Fear Related to Vehicle Types in Traffic

Item No	Summary of Statement	Factor loading value
S.16.19	Fear of commercial taxis	0.735
S.16.20	Fear of minibuses	0.776
S.16.21	Fear of shuttle vehicles (e.g., employee transport)	0.771
S.16.22	Fear of public buses	0.751
S.16.23	Fear of trucks and lorries	0.647

All things considered, this factor comprehensively captures how people react to social and environmental cues as well as direct victimization experiences. This suggests that the measure successfully captures individual perceptions of insecurity related to traffic.

Participants' opinions about the safety of various vehicle types and their fear of victimization related to them are captured by this factor. Notably, buses, shuttle services, and minibuses show high factor loadings. These vehicle types are often associated with aggressive driving behaviors, overcrowding, and insufficient regulation, which contribute to a pronounced sense of insecurity among people regarding these modes of transportation

Minibuses (0.776) and shuttle vehicles (0.771) are the most fear-inducing vehicles due to driver behavior and passenger safety concerns, while trucks and lorries (0.647) are mainly associated with physical danger and accident risk.

Fear of victimization is shaped by both personal experiences and social perceptions of different vehicle types, highlighting the need to consider vehicle distinctions in traffic safety.

Table 3. Perceived Safety by Time and Location in Traffic

Item No	Summary of Statement	Factor loading value
S.16.10	Driving experience reduces fear	0.645
S.16.14	Feeling safer while driving at night	0.766
S.16.15	Feeling safer while driving during the day	0.580
S.16.16	Feeling more secure while driving in the city center	0.759
S.16.17	Feeling more secure in intercity traffic	0.737
S.16.18	Feeling more secure while driving in rural areas	0.724

This factor captures how participants' sense of safety is influenced by the traffic environment and time of driving, reflecting perceptions across different times (day/night) and places (urban, intercity, rural). High factor loadings show that people feel safer driving at night (0.766) and in city centers (0.759), with similar safety perceptions in intercity (0.737) and rural areas (0.724). Driving experience also plays a key role in reducing fear (0.645), likely by increasing familiarity, control, and self-efficacy. Overall, this sub dimension highlights that fear in

traffic is shaped by context and experience, not just specific events or vehicle types.

Reliability Analysis

The reliability coefficients of the subscales were found to be at high levels. For the Individual Traffic Insecurity subscale, Cronbach's α was .964 (15 items), which is considered "excellent" in the social sciences. The Fear Related to Vehicle Types subscale demonstrated a similarly high coefficient (α = .952, 5 items), indicating strong conceptual consistency. Finally, the Spatio-Temporal Safety Perception subscale yielded Cronbach's α = .885 (6 items), confirming that this dimension also maintains a coherent structure. Overall, these results indicate that all three subscales are both theoretically consistent and statistically reliable measurement tools.

Descriptive Statistics

Table 4. Descriptive Statistics of the Scale by Gender

Subdimensions	Gender	n	$\bar{X}$	SD
Perceived Individual Insecurity in Traffic	Female	768	3.77	0.85
	Male	737	3.78	0.97
Fear Related to Vehicle Types in Traffic	Female	768	3.69	0.98
	Male	737	3.56	1.02
Spatio-Temporal Perceptions of Safety in Traffic	Female	768	3.92	0.79
	Male	737	4.06	0.76

The mean scores for female ($\bar{X}$ = 3.77, SD = 0.85) and male ($\bar{X}$ = 3.78, SD = 0.97) participants are highly similar. This finding suggests that gender does not produce a notable difference in perceptions of individual insecurity in traffic. Nevertheless, the slightly higher standard deviation among male participants points to greater variability in their responses.

The average score for female participants was 3.69 (SD = 0.98), compared to 3.56 (SD = 1.02) for male participants. This suggests that women expressed greater fear of particular vehicle types, such as heavy-duty vehicles or public transportation. The trend indicates a higher perceived fear among female drivers, even though the difference was not statistically tested.

Table 6. Descriptive Statistics for the Subdimension "Fear Related to Vehicle Types in Traffic" by Gender

Gender	N	X	SD	Median	Variance	Skewness	Kurtosis
Female	768	3.69	0.98	4.00	0.961	-0.707	0.120
Male	737	3.84	1.06	4.00	1.124	-0.847	0.052

This subdimension gauges people's sense of safety based on the time of day (day vs. night) and location (city, rural roads, or intercity travel) in which they drive.

Table 7. Descriptive Statistics for the Subdimension "Spatio-Temporal Perceptions of Safety in Traffic"

Gender	N	X	SD	Median	Min	Max	Skewness	Kurtosis
Female	768	3.57	0.86	3.67	1.00	5.00	-0.494	0.053
Male	737	3.53	0.98	3.67	1.00	5.00	-0.352	-0.374

Higher scores in this dimension reflect a stronger sense of safety than in the other subdimensions, where higher scores indicate greater fear, concern, or negative perceptions.

According to the results, male participants reported a significantly higher sense of safety in this subdimension, with a mean score of 4.06 compared to 3.92 for female participants. This suggests that men feel less threatened—particularly in conditions such as nighttime driving, intercity travel, or rural environments.

This difference may be linked to broader social dynamics, such as the influence of gender roles on perceptions of driving safety, the structural insecurity women face in public spaces, and the heightened risk of potential victimization that women are often socially conditioned to anticipate.

Normality Test

Table 5. Descriptive Statistics for Traffic Insecurity Subdimensions by Gender

Gender	N	X	SD	Min	Max
Female	768	3.77	0.85	1.20	5.00
Male	737	3.78	0.98	1.00	5.00

For the Individual Traffic Insecurity subscale, the mean score was 3.77 (SD = 0.85) for females and 3.78 (SD = 0.98) for males. The Shapiro–Wilk tests were significant for both groups (Females: $W = 0.957$, $p < .001$; Males: $W = 0.916$, $p < .001$), indicating that the distributions deviated from normality. Therefore, non-parametric tests (Mann–Whitney U) were employed for gender-based comparisons.

For the Fear Related to Vehicle Types in Traffic subscale, the normality assumption was tested for both female and male participants.

Both the Kolmogorov–Smirnov and Shapiro–Wilk tests were significant ($p < .001$), indicating that the distributions deviated from normality. Therefore, non-parametric tests (Mann–Whitney U) were employed to examine gender differences.

For the Spatio-Temporal Safety Perception subscale, the normality assumption was tested for both female and male participants. Both the Kolmogorov–Smirnov and Shapiro–Wilk tests were significant ($p < .001$), indicating deviations from normality. Therefore, non-parametric tests (Mann–Whitney U) were employed for gender-based comparisons.

Findings and Analyses

Descriptive Profile of Participants

Table 8. Gender Distribution of the Sample

Gender	Frequency	Percent
Female	768	51.0%
Male	737	49.0%
Total	1505	100.0%

Median	Skewness	Kurtosis
3.93	-0.592	-0.023
4.00	-0.974	0.471

As shown in Table 8, the sample consists of a nearly equal distribution of female (51.0%) and male (49.0%) participants. This balanced gender representation strengthens the reliability of gender-based comparisons throughout the study.

Table 9. Age Distribution of Participants

Age Group	Frequency	Percent
18–24	163	10.8%
25–34	459	30.5%
35–44	392	26.0%
45–54	301	20.0%
55–64	157	10.4%
65+	33	2.2%
Total	1505	100.0%

Most participants were between the ages of 25 and 44, accounting for more than half of the total sample. This suggests that the study primarily reflects the experiences and perceptions of adults in their early to mid-adulthood.

Table 10. Duration of Driver's License Ownership Among Participants

Driving Experience	Frequency	Percent
1 year or less	63	4.2%
2–3 years	368	24.5%
4–6 years	368	24.5%
7–10 years	213	14.2%
11 years and above	493	32.8%
Total	1505	100.0%

The data indicate that a large portion of participants have held a driver's license for a considerable length of time. Over 70% have been licensed for more than three years, and nearly one-third (32.8%) for over a decade.

Table 12. Mann–Whitney U Test Results for Perceived Individual Insecurity in Traffic by Gender

Gender	N	Mean Rank	Rank Sum	U	z	p-value	Effect Size
Female	768	737.77	566,610	271,314	–1.388	.165	0.036
Male	737	768.87	566,655				

While license duration does not necessarily equate to active driving, it does provide an important indicator of participants' potential exposure to traffic environments over time.

Table 11. Frequency of Active Driving Among Participants

Vehicle Ownership Duration	Frequency	Percent
1 year or less	93	6.2%
2–3 years	453	30.1%
4–6 years	354	23.5%
7–10 years	223	14.8%
11 years and above	382	25.4%
Total	1505	100.0%

Based on the definition of active driving as operating a vehicle at least twice per week, the data show that a substantial majority of participants engage in regular driving.

Table 13. Mann–Whitney U Test Results for Fear Related to Vehicle Types in Traffic by Gender

Gender	N	Mean Rank	Rank Sum	U	z	p-value	Effect Size
Female	768	710.33	545,530	250,234	–3.919	.000	0.101
Male	737	797.47	587,735				

Over half have been active drivers for more than four years, and one in four participants report over a decade of consistent driving. This suggests

that the sample represents individuals with sustained and practical driving experience, which enhances the validity of their perspectives on traffic safety and crime-related concerns.

Analyses

As shown in Table 12, the mean rank for female participants residing in İzmir regarding perceived individual insecurity in traffic (737.77) is slightly lower than that of male participants (768.87). The absolute difference between the two groups is relatively small. According to the results of the Mann–Whitney U test, this difference is not statistically significant ($U = 271314$, $z = -1.388$, $p = .165$).

Therefore, the null hypothesis (H_0)—which states that there is no statistically significant difference between men and women in terms of perceived individual insecurity in traffic, the first subdimension of the Fear of Crime in Traffic Scale—was accepted.

H_0 : There is no statistically significant difference in perceived individual insecurity in traffic between female and male residents of İzmir.

As shown in Table 13, the mean rank for female participants residing in İzmir regarding fear related to vehicle types in traffic (710.33) is lower than that of male participants (797.47). This suggests that women exhibit higher levels of fear toward public transportation or large vehicles (e.g., buses, minibuses, trucks) compared to men.

According to the Mann–Whitney U test results, this difference between gender groups is statistically significant ($U = 250234$, $z = -3.919$, $p < .001$). Although the effect size ($r = .101$) is small, it indicates a meaningful trend. This finding aligns with

existing literature suggesting that the types of vehicles encountered in traffic environments tend to evoke greater fear among women.

In conclusion, a statistically significant gender difference was found in the second subdimension of the Fear of Crime in Traffic Scale—Fear Related to Vehicle Types. Accordingly, the null hypothesis (H_0) is rejected, and the alternative hypothesis (H_a) is accepted.

H_a : There is a statistically significant difference between female and male residents of İzmir in their levels of fear related to vehicle types in traffic.

Gender	N	Mean Rank	Rank Sum	U	z	p-value	Effect Size
Female	768	765.19	587,663	273,649	-1.115	.265	0.029
Male	737	743.30	545,602				

As shown in Table 14, the mean rank for female participants in the subdimension Spatio-Temporal Perceptions of Safety in Traffic (765.19) is slightly higher than that of male participants (743.30). However, the results of the Mann–Whitney U test indicate that this difference is not statistically significant ($U = 273649$, $z = -1.118$, $p = .265$).

These findings suggest that there is no significant difference in perceived safety related to time and location in traffic between genders. Moreover, the effect size ($r = .029$) is very small, indicating that the practical significance of the observed difference is also minimal.

Therefore, the null hypothesis (H_0) was accepted for this subdimension as well.

H_0 : There is no statistically significant difference in spatio-temporal safety perceptions in traffic between female and male residents of İzmir.

Discussion

This study, conducted with a sample from İzmir using a newly developed measurement tool, aimed to explore gender-based differences in fear of victimization in traffic settings. The findings reveal noteworthy insights when interpreted in light of the broader fear of crime literature. A consistent body of research has shown that women tend to report higher levels of fear compared to men, partic-

ularly in situations involving a risk of physical victimization such as the threat of sexual violence (Stanko, 1995; Pain, 2001; Warr, 1984).

By contrast with much of the public-space literature, a gender difference emerged on one domain only: men scored higher on the Fear Related to Vehicle Types subdimension ($U = 250,234$, $z = -3.919$, $p < .001$, $r = .10$). For Perceived Individual Insecurity, the small male advantage in mean ranks was not statistically significant ($U = 271,314$, $z = -1.388$, $p = .165$, $r = .04$).

For Spatio-Temporal Perceptions of Safety, gender differences were also non-significant ($U = 273,649$, $z = -1.118$, $p = .265$).

Note that higher scores on the Spatio-Temporal scale indicate greater perceived safety, not fear. Taken together, the results suggest that, in traffic settings, gendered threat appraisals hinge more on vehicle/structural cues for men, while women's elevated concerns concentrate on interpersonal harms.

This finding opens new avenues for discussion by highlighting not only the way gender roles are manifested in traffic environments but also the dynamic and context-dependent nature of fear of crime itself.

In order to completely comprehend this discrepancy, fear of crime needs to be taken into account in combination with contextual factors as well as gender identity. Traffic environments are defined by mobility, speed, and high levels of interaction, in contrast to traditional public spaces that are often studied in the literature on crime fear. Both social roles and disparities in lived experience may be responsible for the finding that male participants reported higher perceptions of risk in traffic. One of the main causes of a fear of crime is a sense of danger that can be triggered by this increased exposure. Because of the bad experiences they have as active participants in traffic, men tend to become afraid, whereas women are frequently seen as possible victims.

Additionally, it is clear from looking at the sub-dimensions where men expressed higher levels of fear that big vehicles like trucks and lorries are seen as dangerous. Additional concerns include behaviors that compromise traffic safety (e.g., tailgating, aggressive overtaking), as well as the perceived inadequacy of enforcement and penalty mechanisms. These items reflect threats rooted directly in driving experience and vehicle control. Taken together, these results suggest that male participants associate fear in traffic more with technical and mechanical risks, rather than interpersonal or symbolic threats.

In the fear of crime literature, women have consistently reported higher levels of fear—a trend attributed to both social roles and a culturally reinforced expectation of victimization shaped by patriarchal norms (Stanko, 1995; Pain, 2001). Factors such as physical power differentials, the risk of sexual assault, and gender norms contribute to women feeling more vulnerable in many public contexts (Warr, 1984; Madriz, 1997). Yet the finding in this study—that women reported lower fear scores than men—appears, at first glance, to contradict this well-established pattern. This discrepancy can be better understood by considering the specific context of the research: the traffic environment.

Although traffic spaces are technically public, they provide a degree of personal enclosure and physical separation. Being inside a vehicle may enhance the sense of safety for women, in contrast to open public settings. The social pressures of visibility and the constant sense of being “threatenable” that many women experience in daily life may be diminished while driving. This could help explain the lower levels of reported fear. Additionally, women are often more cautious drivers and tend to avoid high-risk areas, which may further reduce their perceived likelihood of victimization (Loukaitou-Sideris, 2006).

In this study, female participants tended to emphasize forms of personal victimization such as verbal harassment, sexual assault, and physical aggression, whereas male participants focused more on issues related to traffic regulation, aggressive driver behavior, and mechanical threats. This divergence highlights how gender shapes not only

the intensity but also the nature and content of fear of crime.

These differences suggest that fear of crime is not merely about how much fear is experienced, but also about what people fear and how they interpret it. Existing literature has consistently shown that women report higher levels of fear. For instance, Warr (1984) argues that women’s elevated fear levels stem from the perceived risk of sexual assault. Ferraro (1996) similarly emphasizes that fear of crime is not only linked to physical threat but also to social vulnerability—positions in which women have traditionally been viewed as more fragile or exposed.

Conversely, the fact that men in this study reported higher fear scores in certain subdimensions suggests that fear of crime is not always one-dimensional or strictly bound to gender stereotypes. In particular, in “mobile public spaces” like traffic environments, men’s fears may become more prominent. One reason may be their greater active presence and exposure in traffic. Men are often more frequently involved in driving and may encounter situations such as road rage, disputes over right-of-way, or general tensions among drivers more regularly. Their higher fear scores may therefore reflect direct experiences or witnessed incidents, rather than generalized anxieties.

On the other hand, the concept of the victimization paradox—widely discussed in the literature—can be revisited in light of these findings. This paradox suggests that although women are statistically less likely than men to be victims of crime, they tend to report higher levels of fear (Young, 1988). However, the traffic context of this study appears to reverse that paradox. In this environment, the threats that men actually face may be more direct and frequent. Behaviors such as aggressive overtaking, road rage incidents, and physical confrontations on the road are often more commonly experienced—or even enacted—by men. As a result, men may find themselves positioned simultaneously as potential offenders and potential victims in traffic scenarios.

In summary, the results of this study show that fear of crime is influenced by situational dynamics, context, and environment rather than being a fixed, gender-based phenomenon. This adds a local perspective to the literature on crime fear and

offers fresh perspectives on how fear appears in various social contexts, including parks, traffic, nightlife, and homes. Furthermore, the findings lend credence to the notion that fear of crime is a complex construct influenced by social roles, societal expectations, and perceived risk exposure rather than just being an individual psychological state.

Conclusion and Recommendations

This study makes a distinctive contribution to literature by examining fear of crime in the traffic context through a gender lens. The findings suggest that the long-standing assumption that women consistently report higher levels of fear may not hold true across all domains. This indicates the need to revisit theoretical frameworks considering changing gender roles and the structural and environmental risks that men may encounter more frequently in traffic.

The study also highlights how aggressive driving behaviors, systemic safety deficiencies, and media portrayals shape perceptions of fear in traffic environments. These insights underscore that fear of crime is not only rooted in the risk of physical harm but also in its psychological and symbolic dimensions.

Limitations include the fact that the sample was drawn solely from İzmir and that the measurement tool was applied for the first time. Future research should therefore extend the analysis to different regions and more diverse populations to enhance generalizability.

Looking ahead, further studies should integrate gender equality perspectives and explore fear perceptions across various modes of transportation and socio-demographic groups. From a policy standpoint, transportation strategies and safety campaigns should consider not only objective risk indicators but also individuals' subjective perceptions in order to improve social well-being. In this way, the study demonstrates how the traffic environment influences individual experiences of fear and provides both theoretical and policy-relevant insights.

Declarations

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Ethical Approval: *This study was approved by the Scientific Research and Publication Ethics Committee of the Turkish National Police Academy (Decision No: 2024/02, dated March 11, 2024).*

Informed Consent: *Informed consent was obtained from all participants prior to data collection. Participation was voluntary, and confidentiality and anonymity were strictly maintained.*

Data Availability: *The datasets generated and analyzed during the current study are not publicly available due to privacy and confidentiality restrictions but are available from the authors on reasonable request.*

Authors' Contributions: *All authors contributed to the conception, design, data collection, analysis, and writing of the study. The corresponding author coordinated the research process. All authors read and approved the final version of the manuscript.*

AI Disclosure: *No artificial intelligence-based tools or applications were used in the preparation of this study. All content of the study was produced by the authors in accordance with scientific research methods and academic ethical principles.*

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Appendix 1: Mean Scores of Female and Male Participants Regarding Items of Fear of Crime in Traffic

<i>Item</i>	<i>Female Mean</i>	<i>Male Mean</i>
Driving in a manner that endangers traffic safety (e.g., reckless lane changes, drifting, improper overtaking) increases my fear of being a victim of crime.	3.99	3.90
Measures that enhance traffic safety (e.g., better lighting, increased police presence) positively affect my sense of security.	3.94	3.92
Traffic enforcement, including penalties and sanctions, is effective in reducing my fear of victimization in traffic.	3.77	3.98
Trucks and trailers increase my fear of being a victim of crime in traffic.	3.81	3.92
Due to safety concerns, I take in-vehicle precautions (e.g., dashboard camera, window tinting).	3.80	3.90
Crimes I witness in traffic increase my safety concerns.	3.80	3.90
Actions that may cause material damage to the vehicle increase my fear of being victimized.	3.80	3.86
Being involved in a traffic accident increases my fear of victimization.	3.79	3.84
I feel safer while driving during the day.	3.81	3.82
The fear of being physically assaulted in traffic causes me concern.	3.74	3.86
Public awareness campaigns (e.g., PSAs, events) reduce my fear of being a victim in traffic.	3.74	3.85
Victimization stories I hear from people close to me (family, friends) increase my concern about encountering crime in traffic.	3.69	3.86
Taxis increase my fear of being a victim of crime in traffic.	3.69	3.84

Victimization stories I see/hear in the media or on social media increase my concern about experiencing crime in traffic.	3.74	3.79
Due to fear of victimization, I modify my behavior in traffic.	3.70	3.82
I take additional safety precautions (e.g., pepper spray) to feel more secure.	3.72	3.78
Minibuses increase my fear of being a victim of crime in traffic.	3.65	3.84
Shuttle buses increase my fear of being a victim of crime in traffic.	3.65	3.85
The fear of being verbally abused in traffic causes me concern.	3.71	3.76
Buses increase my fear of being a victim of crime in traffic.	3.65	3.79
As my driving experience increases, my fear of being a victim in traffic decreases.	3.74	3.54
I feel safer when driving on intercity roads.	3.53	3.60
I feel safer when driving in city centers.	3.64	3.39
I feel safer when driving in rural areas.	3.45	3.54
I feel safer when driving at night.	3.26	3.27
The fear of being sexually harassed in traffic causes me concern.	3.69	2.72