MOTORCYCLE COURIERS' JOB DEMANDS, JOB RESOURCES, AND RIDING BEHAVIORS

A THESIS SUBMITTED
TO
THE GRADUATE SCHOOL OF SOCIAL SCIENCES
OF
MIDDLE EAST TECHNICAL UNIVERSITY

BY

GÖZDE ATALAN

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR
THE DEGREE OF MASTER OF SCIENCE
IN
THE DEPARTMENT OF PSYCHOLOGY

OCTOBER 2023

Approval of the thesis:

MOTORCYCLE COURIERS' JOB DEMANDS, JOB RESOURCES AND RIDING BEHAVIORS

submitted by **GÖZDE ATALAN** in partial fulfillment of the requirements for the degree of **Master of Science in Psychology, the Graduate School of Social Sciences of Middle East Technical University** by,

Prof. Dr. Sadettin KİRAZCI
Dean
Graduate School of Social Sciences _____

Prof. Dr. Mine MISIRLISOY BIYIKOĞLU
Head of Department
Department of Psychology _____

Assoc. Prof. Dr. Bahar ÖZ
Supervisor
Department of Psychology _____

Examining Committee Members:

Assist. Prof. Dr. Derya AZIK ÖZKAN (Head of the Examining Committee)
Turkish National Police Academy
Department of Transportation Safety and Administration _____

Assoc. Prof. Dr. Bahar ÖZ (Supervisor)
Middle East Technical University
Department of Psychology _____

Prof. Dr. Türker ÖZKAN
Middle East Technical University
Department of Psychology _____

I hereby declare that all information in this document has been obtained and presented in accordance with academic rules and ethical conduct. I also declare that, as required by these rules and conduct, I have fully cited and referenced all material and results that are not original to this work.

Name, Last Name: Gözde ATALAN

Signature:

ABSTRACT

MOTORCYCLE COURIERS' JOB DEMANDS, JOB RESOURCES AND RIDING BEHAVIORS

ATALAN, Gözde

M.S., The Department of Psychology

Supervisor: Assoc. Prof. Bahar ÖZ

September 2023, 109 pages

The aim of the study is to be the first comprehensive study to examine job demands and resources in relation to motorcycle riding behaviors of motorcycle couriers. An online study was devised to present participants with a demographics form, Job Demands and Resources Scale, and Motorcycle Rider Behavior Questionnaire (MRBQ). 135 participants participated in the study. The dimensions for job demands were workload, emotional demands, emotional dissonance, and organizational changes. The dimensions for job resources were autonomy, social support, supervisory coaching, and opportunities for professional development. The factors for the MRBQ were traffic errors, control errors, speed violations, stunts, and safety equipment. Hierarchical multiple regression analyses were carried out by controlling for the statistical effects of age, overall riding experience (in years), and couriers' experience (in years). The results revealed that job demands significantly predicted traffic errors, control errors, and safety equipment use. Job resources significantly predicted traffic errors, control errors, speed violations, and stunts. In addition, moderation analyses were carried out to analyze the interaction between job demands and resources in relation to riding behaviors. Fifteen moderation analyses between

individual job demands, job resources and riding behaviors subscales yielded significant interaction effects. In the discussion chapter, the results and limitations of the study, recommendations for future studies and implications for fast-delivery services are discussed in detail.

Keywords: Motorcycle couriers, job demands, job resources, rider behavior, delivery riders

ÖZ

MOTO KURYELERİN İŞ TALEPLERİ, İŞ KAYNAKLARI VE SÜRÜŞ DAVRANIŞLARI

ATALAN, Gözde
Yüksek Lisans, Psikoloji Bölümü
Tez Yöneticisi: Doç. Dr. Bahar ÖZ

Eylül 2023, 109 sayfa

Bu çalışma, moto kuryelerin iş talepleri ve iş kaynaklarının sürüş davranışları ile olan ilişkisi detaylı olarak inceleyen ilk çalışma olmayı amaçlamaktadır. İnternet üzerinden yürütülen çalışmada katılımcılara demografik bilgi formu, İş Talepleri ve İş Kaynakları Ölçeği ve Motosiklet Sürüş Davranışları Anketi sunulmuştur. Çalışmaya 135 katılımcı katılmıştır. İş talepleri kapsamında ölçülen alt boyutlar şöyledir: iş yükü, duygusal talepler, duygusal uyuşmazlık ve kurumsal değişikler. İş kaynakları kapsamında ölçülen alt boyutlar şöyledir: otonomi, sosyal destek, amir koçluğu ve profesyonel gelişim için olanaklar. Motosiklet sürüş davranışları kapsamında ölçülen faktörler şöyledir: trafik hataları, kontrol hataları, hız ihlalleri, akrobatik sürüş ve güvenlik ekipmanı kullanımı. Yaş, toplam sürüş deneyimi süresi ve kuryelik süresi değişkenleri sabit tutularak çoklu hiyerarşik regresyon analizi yürütülmüştür. Analiz sonucunda iş taleplerinin trafik hatalarını, kontrol hatalarını ve güvenlik ekipmanı kullanımını yordadığı bulunmuştur. İş kaynaklarının ise trafik hatalarını, kontrol hatalarını, hız ihlallerini ve akrobatik sürüş davranışlarını yordadığı bulunmuştur. Buna ek olarak, iş talepleri ve kaynaklarının motosiklet sürüş davranışları üzerindeki etkileşimini inceleme amacıyla moderasyon analizleri

yürütülmüştür. İş talepleri, iş kaynakları ve motosiklet sürüş davranışları alt boyutlarının ayrı ayrı incelendiği moderasyon analizlerinin on beşinin istatistiksel olarak anlamlı çıkması sonucunda, iş talepleri ve iş kaynakları arasında anlamlı etkileşim ilişkisi bulunduğu sonucuna varılmıştır. Çalışmanın sonuçlarına, kısıtlamalarına, gelecek çalışmalar için ve hızlı teslimat hizmeti sağlayan firmalar için önerilere tartışma bölümünde yer verilmiştir.

Anahtar Kelimeler: Moto kuryeler, iş talepleri, iş kaynakları, motosiklet sürüş davranışları, teslimat çalışanları

To My Dear Family and Friends

ACKNOWLEDGMENTS

The author would like to express her regards and respect for her supervisor Assoc. Prof. Bahar Öz, for their unyielding support and guidance throughout this challenging process.

The author also wishes to express her gratitude towards Prof. Türker Özkan and Assist. Prof. Derya Azık Özkan for their comments and suggestions.

The emotional and practical support offered by Fatma Atalan, Ayhan Atalan, Özge Atalan Loomis, Robert Loomis, and Olivia Vera Loomis was very much appreciated. The author also wishes to thank her close friends, coworkers, and the Traffic and Transportation Psychology team.

Special thanks are in order for the emotional comfort dear Badem and Beagle provided.

TABLE OF CONTENTS

PLAGIARISM iii
ABSTRACT iv
ÖZ vi
DEDICATION viii
ACKNOWLEDGMENTS ix
TABLE OF CONTENTS x
LIST OF TABLES xiii
LIST OF FIGURES xiv
CHAPTERS
1. INTRODUCTION 1
1.1. Overview 1
1.2. Basic Statistics on Non-Professional and Professional Motorcycle Riders in Türkiye 2
1.3. General Understanding on the Operation of Fast-Delivery Services around the World and in Türkiye 4
1.4. Motorcycle Rider Behaviors 7
1.4.1. Factors Related to Safe Riding Behaviors 9
1.4.2. Factors Related to Safe Driving and Riding Behaviors of Professional Drivers and Riders 10
1.5. Job Demands and Resources (JD-R) Model 13
1.5.1. Job Demands 15
1.5.2. Job Resources 17
1.6. The Aim of the Study 19
2. METHOD 22
2.1. Participants and Procedure 22
2.1.1. Participants 22
2.1.2. Procedure 24
2.2. Measures 25

2.2.1. Demographic Form 25
2.2.2. Job Demands and Job Resources Scale 25
2.2.3. Motorcycle Rider Behavior Questionnaire (MRBQ) 27
3. RESULTS 28
3.1. Preparing the Data for Analyses 28
3.2. Bivariate Correlations Between Study Variables 29
3.3. Hierarchical Regression Analysis of Job Demands and Resources and Motorcycle Riding Behaviors 34
3.3.1. Testing the Relationships Between Variables 34
3.3.2. Hierarchical Regression Analyses of Job Demands and Riding Behaviors 35
3.3.2.1. Job Demands and Traffic Errors 35
3.3.2.2. Job Demands and Control Errors 36
3.3.2.3. Job Demands and Speed Violations 36
3.3.2.4. Job Demands and Stunts 37
3.3.2.5. Job Demands and Safety Equipment 37
3.3.3. Hierarchical Regression Analyses of Job Resources and Riding Behaviors 39
3.3.3.1. Job Resources and Traffic Errors 39
3.3.3.2. Job Resources and Control Errors 40
3.3.3.3. Job Resources and Speed Violations 41
3.3.3.4. Job Resources and Stunts 41
3.3.3.5. Job Resources and Safety Equipment 42
3.4. The Moderation Role of Job Resources on the Relationship Between Job Demands and Riders Behaviors 44
3.4.1. Autonomy as the Moderator in the Relationship Between Job Demands and Riding Behaviors 44
3.4.2. Social Support as the Moderator in the Relationship Between Job Demands and Riding Behaviors 48
3.4.3. Supervisory Coaching as the Moderator in the Relationship Between Job Demands and Riding Behaviors 52
3.4.4. Opportunities for Professional Development as the Moderator in the Relationship Between Job Demands and Riding Behaviors 54

4. DISCUSSION 56
4.1. Interpretation of the Results 56
4.1.1. Results for the Bivariate Correlation Analysis 56
4.1.2. Results for the Hierarchical Regression Analysis 58
4.1.3. Results for the Moderation Analyses 60
4.2. Critical Remarks 64
4.3. General Evaluation of the Findings and Recommendations for Future Studies 66
4.4. Implications for Fast-Delivery Services 69
4.5. Conclusion 70
REFERENCES 72
APPENDICES 88
A. APPROVAL OF THE METU HUMAN SUBJECTS ETHICS COMMITTEE 88
B. INFORMED CONSENT FORM 89
C. DEMOGRAPHIC INFORMATION FORM 91
D. JOB DEMANDS AND JOB RESOURCES SCALE 93
E. MOTORCYCLE RIDER BEHAVIOR QUESTIONNAIRE 96
F. TURKISH SUMMARY / TÜRKÇE ÖZET 99
G. THESIS PERMISSION FORM / TEZ İZİN FORMU 109

LIST OF TABLES

Table 1. Quantitative Sample Variables 23
Table 2. Bivariate Correlations of Variables 32
Table 3. Summary of Individual Hierarchical Regression Analyses Between Job Demands and MRBQ Factors (Representing Rider Behaviors) 38
Table 4. Summary of Individual Hierarchical Regression Analyses Between Job Resources and MRBQ Factors (Representing Rider Behaviors) 43

LIST OF FIGURES

Figure 1. Moderation Effect of Autonomy on the Emotional Demands and Traffic Errors Relationship 45
Figure 2. Moderation Effect of Autonomy on the Workload and Speed Violations Relationship 46
Figure 3. Moderation Effect of Autonomy on the Workload and Stunts Relationship 46
Figure 4. Moderation Effect of Autonomy on the Workload and Safety Equipment Relationship 47
Figure 5. Moderation Effect of Autonomy on the Emotional Demands and Safety Equipment Relationship 48
Figure 6. Moderation Effect of Social Support on the Organizational Changes and Control Errors Relationship 49
Figure 7. Moderation Effect of Social Support on the Emotional Demands and Speed Violations Relationship 49
Figure 8. Moderation Effect of Social Support on the Emotional Demands and Stunts Relationship 50
Figure 9. Moderation Effect of Social Support on the Organizational Changes and Stunts Relationship 51
Figure 10. Moderation Effect of Social Support on the Emotional Dissonance and Safety Equipment Relationship 51
Figure 11. Moderation Effect of Supervisory Coaching on the Organizational Changes and Traffic Errors Relationship 52
Figure 12. Moderation Effect of Supervisory Coaching on the Workload and Safety Equipment Relationship 53
Figure 13. Moderation Effect of Supervisory Coaching on the Emotional Demands and Safety Equipment Relationship 54
Figure 14. Moderation Effect of Opp. For Professional Development on the Workload and Speed Violations Relationship 55
Figure 15. Moderation Effect of Opp. For Professional Development on the Emotional Dissonance and Speed Violations Relationship 55

CHAPTER 1

INTRODUCTION

1.1. Overview

The COVID-19 pandemic which started in the March of 2020 has affected not only people's lifestyles and consuming habits but also industries such as fast-delivery services. Individuals obligated to avoid public places like grocery stores and restaurants during the lockdowns were urged to use home delivery services for their grocery and fast food needs. Even though the pandemic was declared to have ended by the World Health Organization by May of 2023 (WHO, 2023), the increased demand for fast-delivery services prevailed afterward. It has been reported that the number of online fast-delivery users, after having reached 1.55 billion USD in 2019, are expected to grow at a rate of 24.5% each year (800 million USD growth per year) by 2024 (Future Market Insights, 2023). Following the changing industry trends that came with the COVID-19 pandemic, the numbers and varieties of fast-delivery riders showed an increase as well. In light of these circumstances, the need to identify the determinants contributing to the growing fast-delivery rider population's traffic safety, and its implications for the wider traffic system becomes imminent.

Fast-delivery services may be defined in various ways depending on which aspects of them are in the focus of a research subject. In the context of this thesis, fast-delivery services refer to the delivery of groceries, food, or items of high importance (e.g., important documents, money, or items of great monetary value) within a short period (i.e., minutes or hours in the longest). The most advertised aspect of the services fast-delivery firms provide is their speediness. These firms often provide mobile applications or websites where the customers can put in their orders and follow the state of their orders (i.e., order confirmation stage, preparation stage, and

delivery stage). Some firms also provide the means for customers to monitor their delivery worker's location and speed of delivery. After the delivery is completed, customers are urged to evaluate or rate their delivery rider's service on the application. The evaluation often includes (1) order ratings which indicate whether the correct order was delivered, (2) speed ratings which indicate how fast the order was delivered, and (3) customer service ratings which indicate whether the customer was satisfied with the overall service the delivery worker provided. These ratings or evaluations are then used to assess the performance of the delivery worker by the fast-delivery companies. The fast performance expectations imposed upon delivery riders make this group particularly at risk from a traffic safety perspective. To make their deliveries on time, the riders head into traffic and engage in the one behavior in traffic that is regularly cited as being the most dangerous one, speeding (Steg & van Brussel, 2009; National Highway Traffic Safety Administration, 2023). This situation entails an increased risk for both riders, who are vulnerable road users by nature, and other road users that are part of the traffic system. The consideration of the changing roles delivery riders occupy within fast-delivery service industries and traffic systems highlights the need to understand, explain, and evaluate the relationship between delivery riders' work conditions and their traffic safety outcomes both in Türkiye, and around the world.

1.2. Basic Statistics on Non-Professional and Professional Motorcycle Riders in Türkiye

Prior to mentioning about basic statistical facts and elaborating on the general operation of fast-delivery riders, it is essential to explain why the riders, whose numbers, industry demands, and needs have significantly escalated in the recent years, should be considered operating under a "professional drivers/riders" category. Non-professionals drivers/riders are those who frequently drive for their own requirements at their own pace; whereas, professional drivers/riders are those "drivers whose profession is to drive in a vehicle for working purposes" (Rosenbloom, 2011, p. 389). Truck drivers, bus drivers and taxi drivers are some of the most widely studied groups among individuals who drive for a living. Professional drivers are characterized by spending long hours in traffic, and being

exposed to a variety of risky and non-risky traffic situations. Similar to professional drivers, professional riders regularly spend exceeding amounts of time in traffic for their occupation. However, unlike the official categorization and certification that professional driver groups have, motorcycle couriers are yet to be categorized as "professional riders", "self-employed workers" or "employed workers" legally (Defossez, 2021).

According to the Turkish Statistical Institute, the total number of motorcycles registered to traffic has increased from 3.5 million in 2020 to 4.1 million in 2022 (TURKSTAT, 2020; TURKSTAT, 2022). In 2020, 18.8% of fatal or injury-related traffic accidents involved motorcycles (TURKSTAT, 2021). This ratio increased to 20.9% in 2021, and 22.2% in 2022 (TURKSTAT, 2022; TURKSTAT, 2023). Since the number of fatal and non-fatal accidents involving motorcycle couriers is not formally reported by authorities, it is not possible to account for the true numbers and characteristics of accidents involving motorcycle couriers. The scarce sources on the matter are reported by workers' associations who compile their data through informal channels such as union reports, newspaper reports and reports from social media groups. It has been reported by news organizations that since the start of the pandemic in March 2020 until March 2021, 190 motorcycle couriers lost their lives during line of work ("Pandemide motokurye ölümleri", 2021). According to Türkiye's Health and Labour Safety Watch ([İşçi Sağlığı ve İş Güvenliği Meclisi], 2022), in 2021, 186 workers working in the transportation industry lost their lives. They have further reported that at least 30 of the 186 workers worked as motorcycle couriers ("2021 yılında en az 30 moto kurye", 2022). According to Türkiye's Couriers' Rights Association's ([Kurye Hakları Derneği], 2023) 2022 Motorcycle Couriers' Fatality Report, 58 motorcycle couriers have lost their lives within the same year. The report further details that, of the 58 lives lost, seven were between the ages of 18 and below; twenty-six were between the ages of 19-27; twenty-two were between the ages of 28-50; one was 58 years old and one was undetermined. The characteristics of the courier deaths were listed as: the courier being hit by another vehicle (34%), collision with another vehicle (29%), the courier losing control of the motorcycle (14%), the influence of environmental factors such as weather conditions, presence of barriers and bad road infrastructure (7%), skidding and

rolling under heavy vehicles (5%), non-traffic related deaths (7%) and unknown reasons (7%).

In the conclusion of the mentioned fatality report, it is speculated that company and customer demand for fast delivery may induce couriers to err, and engage in violations. However, including the study presented in this thesis, there have only been few scientific studies which examined motorcycle couriers in relation to their job and work related factors such as workload, time pressure, traffic errors and violations. The lack of sufficient scientific literature on the issue makes it more critical to investigate this road user group in detail.

1.3. General Understanding on the Operation of Fast-Delivery Services around the World and in Türkiye

Although the existing literature on commercial vehicle operators tend to heavily focus on professional operators of four-wheeled vehicles, they should be referred to when intending to introduce a "professional rider" group to the literature. The significant rise in the number and crash involvement of motorcycle couriers in Türkiye after the COVID-19 pandemic made it clear that there is a need to examine motorcycle couriers under a distinctive "professional rider" lens (Tuncer, 2020; "Türkiye'de", 2023).

The financial problems and lockdowns that gave rise during and following the pandemic period, may have increased interest in the delivery riding profession. As a consequence, young people who specifically obtained motorcycle licenses to start working as couriers entered the fast-paced profession without sufficient experience in riding (especially, riding under time pressure). Even prior to the pandemic and the additional workforce that came along, the reports were indicating a rise in the number of accidents involving delivery riders (Romero, 2019). It is further essential to investigate whether factors such as age, experience, vehicle, environment and social-context related factors play a role in the traffic safety of motorcycle couriers.
There are multiple reasons why motorcycles are preferred as a mode of transportation in fast-delivery services. Motorcycles have several practical advantages over four-wheeled vehicles such as being compact in size, more fuel-

efficient, and requiring less maintenance. Accompanied by their fast nature, motorcycles became favorable modes of transportation to be deployed by fast-delivery firms. Since the most advertised aspect of fast-delivery services is their speediness, companies prefer their deliveries be made by powered two wheelers which operate fast on less amounts of fuel, are less likely to be stuck in traffic (due to their easier maneuverability), and are easier to park when making the deliveries. Furthermore, they are cheaper to purchase for both companies and individuals who are planning on becoming partner workers as couriers.

Although there is a general increase in the number of delivery service providers around the world, the modes of transportation employed in these services differ from country to country. For example, in the US, fast-delivery firms predominantly employ automobile drivers as delivery workers. In some European countries such as Germany and The Netherlands, delivery workers essentially complete their deliveries with bicycles, e-bikes, and motorcycles (which occupy a smaller percentage of use). In countries such as Türkiye, Greece, and Spain, as well as some Latin American (e.g., Brazil), East Asian (e.g., Taiwan, Vietnam), and South Asian (e.g., India) countries, fast-delivery services of food and groceries are mostly carried out via motorcycles. Since the study conducted for this thesis was carried out in Türkiye, motorcycle riders working in the fast-delivery industry will be its focus.

In Türkiye, there are three main modes of employment motorcycle couriers work. The first mode of employment is fast-delivery companies employing couriers as workers on the company payroll. The second mode of employment is companies hiring out "independent contractors" or "partner workers" ("esnaf kurye" in Turkish) who generally bring in their own motorcycles, and are paid by the hour or per package they deliver. The latter mode of working for couriers is a gig economy practice. It offers viable opportunities for young and elderly people seeking to get into a flexible work schedule, where they can work in a low-cost labor market that does not require high levels of education or certification. The companies who hire workers working in a gig economy style, advertise working with them (or for them) as a system where the workers can act "as their own bosses" since they have the means to choose when, where, and how much they are willing to work. However, in

order to maintain a sufficient wage, their ‘partner couriers’ need to work full-time and for long hours following an intense delivery schedule. According to the Turkish Couriers’ Rights Association ("Kurye Hakları Derneği’nden", 2023), companies used to hire more payroll employees in the past, compared to the current preference of hiring partner workers who pay for their own insurance, vehicle maintenance, and fuel costs. Therefore, the number of partner couriers has overtaken the number of payroll employees working for fast-delivery companies. Christie and Ward (2023) reported that riders working in the second mode of employment were three times more likely to report damage to their vehicle in a collision, and twice as likely to report an injury compared to the riders working in the first mode of employment.

The third mode of employment is when independent workers make unofficial working arrangements with hiring parties (e.g., restaurants or other package delivery businesses). This mode of employment can either entail full-time work or part-time work. Occasionally, company employees or ‘partner couriers’ work in these unofficial arrangements for extra work after their obligation to delivery companies are fulfilled for the day or the week.

Regardless of the mode of employment motorcycle couriers work in, the quick-delivery orders generally follow four stages in Türkiye: (1) the preparation of the order, (2) the assignment of the order to a courier, (3) the courier commuting to restaurants or company dark stores to pick up the order, (4) courier getting on the road and commuting to the customer’s house with their motorcycle, and then, via foot to the customer’s door. Although companies hire couriers to primarily work within a limited geographical area, traffic conditions and hard-to-access customer locations may result in the delivery arriving later than expected. Most companies expect couriers to complete their deliveries within 15-20 minutes, unless the rider is a novice. Depending on the company, expectations for delivery time may be more lenient for novice couriers. Busy traffic and environmental factors such as road and weather conditions may prolong the completion of deliveries as well as posing a risk to couriers’ traffic safety. Couriers need to navigate through environmental challenges and their own safety in order to meet the speed demands of companies.

Keeping the general work conditions and forms of motorcycle couriers in mind, conducting studies with them is essential as they have become a critical road user group in traffic safety terms. Examination of this group on the basis of their behaviors, which are the most basic human factors in traffic, and other related variables will lay the groundwork for future studies.

1.4. Motorcycle Rider Behaviors

Regardless of the professional or non-professional status of the rider, motorcycle riders are considered to be one of most the vulnerable road users, due to the fact that they operate powered two wheelers that go at high speeds, which do not possess a protective barrier like four-wheeled vehicles do (Houston, 2011). The range of behaviors individuals display when riding a motorcycle are named as motorcycle rider behaviors which have their roots in the aberrant driver behavior differentiation of Reason et al (1990).

Errors and violations were first classified by Reason et al. (1990) as aberrant behaviors within a traffic system when deviations from what is commonly deemed as safe practice occur. Errors are explained as unintentional aberrant behaviors that are further classified into two categories: slips and lapses (i.e., the inadvertent divergence of action from the intention), and mistakes (i.e., the failure of planned action to reach the desired goal). Violations were defined as intentional deviations from safe practices. Rule breaks and intentionally dangerous behaviors such as speeding, red-light violations, and illegal maneuvering were categorized under violations. Reason et al. (1990) used their classification of aberrant behaviors to examine the behaviors of four-wheeled drivers in the Driver Behavior Questionnaire (DBQ).

In order to study riding behaviors in motorcycle users, Elliott et al. (2007) made appropriate alterations with the DBQ. The aim of the alterations was to accommodate the operation of two-wheeled motorcycles which are more challenging to control and balance compared to four-wheeled vehicles. Safe riding practices also differed from safe driving practices due to motorcycles' operation principles. Hence, Elliott et al. (2007) presented the Motorcycle Rider Behavior Questionnaire (MRBQ). According

to the dimensions Elliott et al. (2007) proposed motorcycle rider behaviors could be investigated under five main factors of traffic errors, control errors, speed violations, stunts and safety equipment.

In the MRBQ, errors are regarded under two categories: traffic errors and control errors. Traffic errors included slips and lapses (e.g., failing to notice a pedestrian), as well as mistakes (e.g., inaccurately estimating the speed of another vehicle) which shared similarities with the error items in the DBQ. Whereas, control errors are mainly concerned with the ability of the riders to control their motorcycles while maneuvering, or trying not to lose control in the face of bad weather and road conditions. Control errors is a distinctive dimension from the MRBQ, since it aims to measure how well the users can operate a powered two-wheeler.

In the MRBQ, items measuring violations can be located under three factors: speed violations (i.e., speeding during inappropriate traffic situations and in general), stunts (i.e., engaging in dangerous maneuvers such as wheeling and spinning), and safety equipment. However, not all items under these dimensions refer to deliberate actions or violations. Although the safety equipment factor inquires about mandatory practices such as wearing a motorcycle helmet; it also includes safety equipment items that are customary to wear for full protection but not mandatory. Moreover, some items under the stunt factor such as "Unintentionally do a spin" refer to an undeliberate action.

Previous studies established a relationship between aberrant riding behaviors and motorcycle accidents. For instance, Rutter et al. (1995) found that violations regarding law and safe behavior were the strongest predictors of accidents. Petridou and Moustaki (2000) concluded that aberrant behaviors such as risk-taking, breaking traffic rules and not using safety equipment strongly influence crash involvement, and the magnitude of crashes for motorcycle riders. Moreover, Chouhan et al. (2021) reported that speed violations had the highest incident rate, and traffic errors were the most significant crash predictors. Chang and Yeh (2007) reported that error and violation behaviors elevated the likelihood for riders to be involved in traffic accidents. Other studies reported the link between aberrant riding behaviors and

accidents (Moller & Haustein, 2016; Stephens et al., 2017; Sumit et al., 2021). Since riding behaviors (aberrant riding behaviors, in particular) are predictors of motorcycle accidents, they might play an incremental role in motorcycle courier safety. Therefore, it is essential to identify predictors for motorcycle riding behaviors in order to reinforce the traffic and work safety of delivery riders.

1.4.1. Factors Related to Safe Riding Behaviors

Previous studies showed that there are different factors affecting the riding behaviors of motorcycle users. These factors could be classified by their nature in different groups (e.g., factors relating to rider characteristics, factors relating to the physical environment, and social factors). For example, age, gender, riding experience, and personality can be listed as factors relating to rider characteristics. Chouhan et al. (2021) reported that young male riders were more likely to report aberrant riding behaviors. Wong et al. (2010) found that personality traits such as sensation-seeking and impatience related to the unsafe riding behaviors. Moreover, Özkan et al. (2012) examined the relationship between passive and active accidents involving motorcycle riders in relation to annual mileage, age, and riding behaviors. The authors found that accidents were related to annual mileage (positively), age (negatively) and stunts (positively). They also found that speeding violations were predictors for offences.

Among the factors relating to the physical environment, lack of road maintenance, and infrastructure that was not designed to maximize the safety of motorcycle users (e.g., sharp roadside barriers which can injure or kill motorcycle riders, and sharp turns which can throw riders off balance) pose a threat to rider safety (Navarro-Moreno et al., 2023). Additionally, bad weather conditions such as heavy rain, snow, and storm (which creates slippery roads and strong winds) make riders vulnerable to lose their balance, and fall or crash (Maze et al., 2006).

Studies showed that some social environment related factors are also related riding behaviors. For example, the Theory of Planned Behavior (TPB), Health Belief Model (HBM) and Locus of Control (T-LOC) were investigated by Özkan et al. (2012) to help explain motorcycle riding behaviors. In the results, it was revealed that stunts

and speed violations were related to belief in fate, subjective norms, attitudes, and intentions; safety equipment use was related to (high levels of) perceived behavioral control and intentions; traffic errors were related to perceived barriers and cues to action; and control errors were related to vehicle and environment factors. Shen et al. (2020) also linked TPD to the red-light violations of delivery workers. For professional riders, social environment might cover a broader scope of factors such as work conditions, professional norms and attitudes, organizational safety climate, and social expectations regarding safe riding behavior pose a greater significance compared to non-professional riders. Therefore, it is important to examine professional rider behaviors and related factors under a specific focus.

1.4.2. Factors Related to Safe Driving and Riding Behaviors of Professional Drivers and Riders

Previous literature has established that, professional drivers differed from non-professional drivers by their increased likelihood of crash involvement (Dorn & Brown, 2003; Tsai et al., 2022), and stress related aberrant behaviors in traffic (Öz et al., 2010; Rowden et al., 2011; Useche et al., 2017; Montoro et al., 2018). Therefore, when examining predictors for professional driver behaviors and other psychological or physiological outcomes, it is important to focus on their work factors such as long working hours, workload, and work-related stress. In their review that was conducted to assess the psychosocial work factors relating to risky driving behaviors in professional drivers in low- and middle-income countries, Amoadu et al. (2023) stated that job strain, workload, lack of autonomy, lack of social support from coworkers and supervisors were identified to be the most influential factors. Wagstaff and Sigstad (2011) found that long working hours increased traffic accident risk in professional drivers. Moreover, other studies found them to be prone to driver fatigue which in turn influences driver performance (Matthews et al., 1999; Davidovic, 2018). Singh and Kathuria (2023) also found that professional drivers being motivated to adhere to their work time schedule had higher intentions to commit traffic violations while working.

Organizational safety climate was reported to be a significant influencing factor on professional driver stress, driving behaviors and performance (Wills et al.,2006; Öz,

2011; Öz et al., 2014). An example of organizational and national safety climate indicators for professional riders in Türkiye could be the developments following the snow and rain storms that occurred between the years 2021-2023. During these storms, companies providing delivery services were put in the limelight for failing to cease operations even though repeated warnings were made by the Turkish State Meteorological Service prior. Similar criticisms by the general public were raised towards governor's offices for failing to demand a cease operation for motorcycle couriers during troubling weather. In these instances, the governor's offices were expected to regulate or compensate companies' lack of discretion for courier safety. Following the public reaction, some fast-delivery companies announced a cease operation, and in place of other companies who did not, the governor's offices declared a cease operation ("İstanbul Valiliği'nden", 2021; "İzmir Valiliği", 2022; "İstanbul Valiliği'nden", 2023). However, in violation of the cease operation, some companies continued to urge their workers to work in bad weather without strict policing (Kurye Hakları Derneği, 2023).

Another example of organizational climate indicators for professional riders could be that although "partner couriers" or "independent contractors" are expected to adhere to company rules by wearing their uniforms, and strictly following company delivery and customer service policies, they do not benefit from the same advantages offered to payroll employees such as job security, social benefits, and regulated work hours. The "partner worker" system aids companies in avoiding being held responsible and accountable when it comes to ensuring rider safety in traffic. Supported by such a system, companies often argue that independent workers are majorly liable for their own traffic safety, which in turn allows these companies to dodge obligations towards monetary compensation and emotional support in cases of traffic accidents during work hours. Organizations' lack of discretion for rider safety may be an indicator of their safety climate, making it worthwhile to study work and organizational factors as possible hindrances against safe riding behaviors in professionals.

In light of this, studies focusing on the antecedents of professional rider (i.e., motorcycle, bike, and e-bike riders) behaviors were conducted. For example,

Papakostopoulos and Nathanael (2021) reported that young age was associated with red-light violations and lack of helmet use. The same study concluded that lack of experience, and hourly payment rates were associated with red-light violations; and that workload and low concern for vehicle condition were associated with lack of helmet use. Tran et al. (2022) reported that in Vietnam, riders who were more lenient on safety measures were the individuals who had lost large incomes during the pandemic, and struggled financially. They were also found to be under greater work pressure due to financial factors. According to a review that surveyed risk factors and injuries of delivery riders, the most common risk factors were being young, lacking experience, experiencing time-pressure and failing to wear adequate safety equipment (McKinlay et al., 2022).

In 2021, Huang reported a qualitative study conducted with Chinese delivery workers where they identified rising "work insecurity, financial instability, and subservient class identity" among the profession. Multiple other studies emphasizing the role of time pressure and fatigue on risky riding behaviors of delivery riders were also conducted (Zheng et al., 2019; Rusli et al., 2022; Salmon et al., 2023). Drawing upon the pre-existing literature on fast-delivery workers, it can be concluded that time pressure, workload, and financial instability are common themes in delivery rider behavior antecedents research. Supporting further, Kaya et al. (2022) carried out qualitative research to identify work-related complaints of motorcycle couriers; and determined job tasks, weather conditions, problems with employers, traffic, and road infrastructure problems as some of the leading problems couriers faced in Türkiye. Kavurmacı (2023) carried out another qualitative research to identify how the work factors surrounding motorcycle couriers' work can be improved in Türkiye. The study identified work factors such as workload, time pressure, weather conditions, other drivers' disregard for riders in traffic, and an increase in the number of incompetent couriers as negative work factors.

Considering the influence of work and organizational factors on delivery riders' riding behaviors, some studies specifically focused on the relationship between job demands and risky riding behaviors. Chen (2023) reported the finding that workload, and time pressure were significantly associated with risky riding behaviors in food

delivery riders through the mediation of job stress. Nguyen-Phuoc et al. (2023) found that job demands and resources, and job burnout significantly predicted risky riding behaviors.

It can be argued that the demand for fast and consequent deliveries may induce time pressure and stress on couriers. In turn, time pressure and stress may influence their behaviors in traffic such as violations and errors. The stress that time pressure and workload induce on the workers may be amplified by their lack of job security working in a gig economy. In this system, companies can easily choose to stop working with their 'partner workers' without having to face monetary repercussions for terminating an employee's job. The anxiety and emotional demands accompanied by being reprimanded for late deliveries, and not being willing to work when called in to work on leave days or national or religious holidays can also contribute to the stress. Therefore, there is a need for a framework that will assemble and conceptualize the negative and positive job conditions that may influence safe riding behaviors. For the purposes of predicting the work related antecedents of motorcycle couriers' riding behaviors, Job Demands and Resources (JD-R) model was employed in this thesis to establish a framework for negative and positive job conditions.

1.5. Job Demands and Resources (JD-R) Model

The Job Demands and Resources (JD-R) model was originally proposed to explain burnout symptoms in workers who worked in the service industry (Demerouti et al., 2001). In the model, both job demands and job resources are regarded as external sources that affect the cognitive and psychology equilibrium workers have. Increased job demands and lacking job resources shifts the worker's state of well-being from equilibrium to negative. In certain contexts, job resources are proposed to serve as buffers against the effects of job demands. The shift in the equilibrium may be affected by physiological and psychological costs directly related to working conditions, as well as the workers' personal resources such as performance capacities and coping strategies. However, the JD-R model primarily focuses on work conditions rather than workers' personal parameters.

Karasek's Job Demands-Control (JDC) model (1979) suggested first that work-related stress is most prevalent under high demand-low autonomy work conditions. Other studies supported the link between job demands and stress (Warr, 1990; MacDonald, 2006; Topcic et al., 2016; Kim & Tak, 2010). The accumulation of studies examining the relationship between job demands and stress suggests a positive relationship between them. Additionally, Demerouti et al.'s (2001) JD-R model associated job demands and job resources with burnout symptoms such as emotional exhaustion and depersonalization (i.e., disengagement from work tasks and cynicism towards the job and the worker's role in the job). Emotional exhaustion was linked to fatigue, stress, and anxiety by other studies in the literature as well (Bunk et al., 1998; Michielsen et al., 2004; Seidler et al., 2014). The conclusion that work conditions are influential on the well-being, and motivation of workers underlines the link between these work conditions, and on the clock behaviors of workers.

The JD-R model was applied to the traffic behaviors professionals in the past literature. For instance, Zhang et al. (2022a) investigated whether the JD-R model predicted burnout in delivery drivers, and whether this relationship was moderated by mindfulness. In another study, Zhang et al. (2022b) investigated whether the JD-R model was related to the positive and negative affect of delivery drivers. They found that job resources were positively associated with positive affect and negatively associated with negative affect; and job demands were positively associated with negative affect. One of the few studies which attempted to explain the work factors of delivery riders based on the JD-R model was the study conducted by Nguyen-Phuoc et al. (2022). The authors investigated the JD-R model in relation to job strain, attitudes towards risk-taking and road safety compliance. They found that (1) there was a direct relationship between job resources and safety compliance, and (2) there was an indirect relationship between job demands and safety compliance through the mediation of job strain and attitudes towards risk-taking. Although this study is incremental in establishing the relationship between job demands, job resources and safety attitudes, there is a need to identify how job demands and resources influence motorcycle couriers' and their behaviors on road.

1.5.1. Job Demands

Job demands refer to the physical, social and organizational work conditions that may induce feelings of stress and emotional exhaustion in workers. Challenging work environments, high workload, time pressure and organizational instability constitute as job stressors. Job stressors are associated with psychological (e.g., mental effort), emotional and physiological (e.g., physical effort) costs in workers. For delivery riders, navigating delivery addresses, planning routes and riding motorcycles require certain levels of mental effort. Galy et al. (2012) reported that time pressure, task difficulty and alertness required employees to allocate extra mental resources when carrying out a task. They concluded that mental overload was associated with psychophysiological workload. Also, Ghanavati et al. (2019) found a negative relationship between mental workload and work ability.

Moreover, interacting with other road users, customers, coworkers, and supervisors require emotional and psychological effort. Van Jaasveld et al. (2010) found that uncivil customer behaviors towards workers was related with emotional exhaustion. Ma et al. (2019) found that the relationship between customer-related social stressors and emotional exhaustion was moderated by worker emotional intelligence. Rhee et al. (2017) reported a relationship between coworker incivility and emotional exhaustion. Wu et al. (2013) reported that workload demands from supervisors predicted workers' emotional exhaustion.

Riding a motorcycle in hot weather and cold weather, carrying heavy packages, walking and climbing stairs to deliver them require physical effort. The relationship between physical effort and job demands was supported by literature (Halpern et al., 1997; Yu et al., 2013). Calatayud et al. (2022) related prolonged exposure to job demands such as high physical demands with lower scores in cognition and lower functional performance in some physical activities.

The dimensions examined under job demands are workload, emotional demands, emotional dissonance, and organizational changes. The workload dimension explores job aspects such as time pressure at work, and the total amount of work that needs to

be done within a timeframe. The demand for motorcycle couriers to complete their deliveries within short timeframes constitutes as workload. Another aspect of courier workload is having to work for long hours, and make consecutive deliveries without taking adequate breaks. As an example of the safety implications of this argument, Zheng et al. (2019) found that physical and mental workload was associated with crash involvement of delivery riders.

The emotional demands dimension explores the emotionally demanding aspects of a job such as intense emotion eliciting work tasks or relationships with customers that may affect the workers' emotional wellbeing. As part of the delivery process, couriers deal with disagreeable customers on a regular basis who can make them feel disrespected or unimportant. For instance, most mobile applications for fast-delivery companies have the option to leave a note the courier. Customer notes such as "If the food is not hot, you and I are going to have a problem" (Moto Kurye Haber-Yorum, 2023), and "If the delivery is not made in time, I will be waiting at the door with my baseball bat" (Moto Kurye Haber-Yorum, 2023) were posted to social media platforms by motorcycle couriers. Some couriers also face situations that make their job even more challenging, and make them feel reproached while trying to offer their services. For example, some motorcycle couriers posted their experiences of not being allowed inside an apartment complex with their work vehicles or being restricted from using the elevator and having to climb five or six flight of stairs in order to make a delivery on social media platforms (Moto Kurye Haber-Yorum, 2023a, 2023b).

The emotional dissonance dimension explores whether a job requires the worker to mask their true emotions (e.g., anger or frustration) or moods. Since couriers work in the service industry, they may feel the need to mask their emotions or emotional reactions in order to avoid negative customer ratings, or to secure tips from customers.

Finally, the organizational changes dimension explores the organizational aspects (e.g., structural changes, role changes and product changes) of a job that may create role ambiguity or adaptation anxiety in a worker. Although job tasks for motorcycle

couriers seem fairly stagnant (i.e. delivering a package from point A to point B within a certain timeframe), changes in team structures, company performance expectations or the product (e.g., company mobile applications) may have an effect on the worker.

The cumulative effects of job demands on work and employee outcomes were reported in previous literature. Wright and Cropanzano (1998) found that job demands such as emotional exhaustion were negatively associated with job performance. Moreover, Lu et al. (2017) found that job demands diminished job performance of employees with lower job security. De Neve et al. (2013) suggested that occupational well-being which is associated with job demands and resources play an important role in job performance and overall human functioning. Bakker and Demerouti (2018), the authors of the original JD-R model, detail further the relationship between job demands, resources and job performance. A link between job demands and fatigue was also established by previous studies. De Croon et al. (2002) found that quantitative workload in lorry drivers was associated with fatigue. De Lange et al. (2009) found significant relationships between job demands, sleep quality and fatigue. LeGal et al. (2019) concluded that long-term psychological demands had an effect on chronic fatigue symptoms. Other studies also supported the relationship between job demands and fatigue (Jalilian et al., 2019; Bazazan et al., 2023). Job demands were also associated with safety compliance. For instance, Nguyen-Phuoc et al. (2022) concluded that job demands and resources were associated with road safety compliance. Bronkhorst (2015) reported that job demands were directly associated with physical and psychosocial safety behaviors. Job demands were associated with lower levels of safety behaviors. Likewise, Chen et al. (2017) found a significant relationship between job demands and counterproductive work behaviors (e.g., indifference and violating safety procedures).

1.5.2. Job Resources

Job resources refer to the social, psychological and organization-related work conditions that may facilitate worker wellbeing, productivity and motivation. Job

resources may also serve as a buffer in alleviating some of the psychological and physiological costs associated with job demands (Demerouti et al., 2001).

The dimensions examined under job resources are autonomy, social support, supervisory coaching, and opportunities for professional development. The autonomy dimension explores whether a worker has control over their work (e.g., having a personal input in the decision-making stage or the execution stage). Autonomy was associated with safety performance, and proactive work behavior (Parker et al., 2001; Ko et al., 2018; Haas et al., 2018). Apart from payroll employees who need to fulfil the wage requirements in order to get paid, partner couriers and independent workers have seeming work flexibility. Ideally, they can choose when they want to work, for how long they want to work and how many packages they are willing to deliver. However, in reality, the work flexibility opportunities associated with being a partner courier stays merely on paper. Due to the hourly rate and pay per package delivery system, partner couriers and independently working couriers are motivated to make as many deliveries as they possibly can to earn livable wages. This motivation may yield the work flexibility opportunities of being a partner courier ineffective.

The social support dimension explores the social relationships workers have with their coworkers. Coworker social support was found to offer a buffering role between task demands and emotional exhaustion in the past literature (Baeriswyl et al., 2017; Xiu et al., 2019; Han et al., 2023). Most motorcycle couriers have a network of people who have the same occupation as they do. They are often involved in social media groups and communication application groups where they can exchange information on their work opportunities and experiences (with their employers, customers and vehicles). Courier groups are also active when it comes to warning their members against unsafe motorcycle riding practices, bad road conditions, and possible dangers in traffic (e.g., avoiding riding between heavy vehicles and metal roadside barriers).

The supervisory coaching dimension explores workers' social relationships with their supervisors. Previous research established a relationship between supervisory

relationships, emotional costs and behaviors at work (Wilk & Moynihan, 2005; Whitman et al., 2022; Rafique, 2023). Payroll employees and partner couriers hired by companies generally have supervisors who are in charge of scheduling work days, allocating deliveries among couriers, and making sure that deliveries are completed in time and without problem. Couriers can also bring up their problems to their supervisors' attention and demand resolution. If the couriers get into traffic accidents or encounter unsafe situations, supervisors are generally the ones who hear about it first. However, supervisory relationships may not be pertinent to the independent workers since they work with employers for short periods of time (i.e., for a couple of hours or a day or several days), which prevents them from forming valid supervisor-subordinate relationships.

Finally, the opportunities for professional development dimension explores whether a job stimulates personal development and growth in workers. Repeated exposure to work conditions and accumulation of experience may promote couriers to become more time-efficient workers (Quinones et al., 1995), and better communicators, as well as motorcycle riders (Hosking et al., 2010; Crundall et al., 2013; Crundall et al., 2014).

The cumulative effects of job resources on work and employee outcomes was reported in previous literature. Turner et al. (2012) found that job resources like social support, and job control were positively related with safety participation. Furthermore, Bronkhorst (2015) reported that job resources were directly associated with physical and psychosocial safety behaviors. Job resources were associated with higher levels. Other studies have also supported the link between job demands, job resources and safety behaviors in employees (Turner et al., 2005; Hansez & Chmiel, 2010; Nahrgang et al., 2011).

1.6. The Aim of the Study

Based upon existing literature and field reports of motorcycle couriers, it can be concluded that the increasing number of motorcycle couriers in traffic without the

accompanying job and traffic safety regulations in place poses a safety threat for motorcycle couriers and other road user groups both in Türkiye and around the world. The fast-delivery companies' emphasis on the urgent and busy nature of their services, accompanied by their relative indifference towards establishing organizational safety cultures that would facilitate rider safety, can conjure negative work conditions that may influence the safe riding behaviors of delivery riders. However, it is also important to acknowledge the effects of positive work conditions may have on safe riding behaviors as well.

In order to examine negative and positive work conditions within a well-structured framework, the JD-R model seems suitable to employ when researching the antecedents of riding behaviors of delivery riders. So far in the literature, only two studies attempted to explain the work factors of delivery riders based on the JD-R model. First, Nguyen-Phuoc et al. (2022) investigated job demands and job resources in relation to job strain, attitudes towards risk-taking and road safety compliance. They found that (1) there was a direct relationship between job resources and safety compliance, (2) there was an indirect relationship between job demands and safety compliance through the mediation of job strain and attitudes towards risk-taking. Although this study is incremental in establishing the relationship between job demands, job resources and safety attitudes, there is need for further scientific evidence to establish how job demands and resources influence motorcycle couriers' behavior on road. Second, Nguyen-Phuoc et al. (2023) investigated job demands and resources in relation to risky riding behaviors in delivery riders. However, their riding behavior measure was a limited measure with 6 items that examined riding on pavement, speeding, lapses, mobile phone use, red-light violations and road direction violations with one question per behavior. The risky riding behavior measure of this study may not be adequate at exploring riding behaviors in depth. Therefore, there is a need to investigate job demands and resources of delivery riders in relation to in-depth motorcycle riding behaviors. The present study aims to fill in some of the gaps between the job demands and resources, attitudes, safety compliance, motorcycle riding behaviors and motorcycle courier accidents pipeline.

In summation, the aim of the present study is to examine the relationship between job demands, job resources and motorcycle riding behaviors of motorcycle couriers in detail. The interaction nature of job demands and resources to the rider behaviors path is also examined in detail. By the means of this study and its results, it is aimed to establish a comprehensive understanding of work-related stressors and resources in relation to the motorcycle riding behaviors of motorcycle couriers for the first time.

CHAPTER 2

METHOD

2.1. Participants and Procedure

2.1.1. Participants

A total of 188 participants have taken the questionnaire, of which 53 were deemed incomplete data and eliminated. After the elimination of incomplete data, the final sample size was 135. All the participants who participated in the study were individuals who actively worked as motorcycle couriers at the time of the conduction of the study. The age of participants ranged between 17 to 52 (M = 27.1, SD = 7.1). All participants were men. The distribution in the education level of the participants was as follows: primary school graduate (N = 1, 0.7%), middle school graduate (N = 9, 6.7%), high school graduate (N = 57, 42.2 %), college graduate (N = 22, 16.3%), and university graduate (N = 46, 34.1%).

The participants were asked about their mode of employment. Of the 135 participants, 36 indicated that they worked as a payroll employee for an organization; 84 indicated that they work as partner workers; and 27 indicated that they worked independently (i.e., doing extra work or working through unofficial arrangements with employers). Among the 135 participants, 3 (2.2%) of them indicated that they worked extra (i.e., independently) while also being a payroll employee, and 4 (2.9%) of them indicated that they worked extra while working as partner workers. 128 (94.8%) participants indicated that they either worked as a payroll employee, partner worker, or independent courier as their sole mode of employment. The participants were also asked; how long they have been holding a motorcycle license, the number of years they have been riding a motorcycle, the number of years working as a

motorcycle courier, the number of kilometers they have ridden a motorcycle in their lifetime, and in the past year working as a courier, how long they work on average in a day, and how many packages they deliver on average in a day on (See Table 1).

Table 1. Quantitative Sample Variables

Variables	N	Mean	Standard Deviation	Min-Max
Age	135	27.13	7.15	17-52
License Ownership (in Years)	129	5.64	5.224	0-32
Rider Experience (in Years)	131	7.56	6.070	1-35
Courier Experience (in Years)	120	4.50	4.537	1-30
Rider Experience (km)	127	240770.55	605247.847	1000-6000000
Courier Experience (km)	132	36606.06	42867.545	800-362000
Work Hours (per day)	126	10.26	2.740	2-17
Active Accidents	133	1.62	2.48	0-17
Passive Accidents	135	2.01	3.19	0-20

88.1% of the participants (N = 119) worked in metropolitan cities in Türkiye, and 1.5% of the participants (N = 2) worked in small cities. The participants were asked whether they currently held motorcycle licenses. 96.3% of the participants (N = 130) indicated that they did, whereas 3.7% of the participants (N= 5) indicated that they did not. Moreover, the participants were asked whether their licenses were ever seized while working. 99.3% of the participants (N= 134) participants indicated that they never had their licenses seized while working, whereas 0.7% of the participants (N = 1) indicated that they had. The participants were also asked about the frequency of their work. 68.1% of the participants (N = 92) indicated that they worked every day; 25.2% of the participants (N = 34) indicated that they worked nearly every day; 4.4% of the participants (N = 6) indicated that they worked 3-4 days a week; and 1.5% of the participants (N = 2) indicated that they worked 1-2 days a week. 93.3% of the participants (N = 126) indicated that they rode motorcycles outside of work, and 6.7% of the participants (N = 9) indicated that they did not.

Among the 135 participants, 57 indicated that they were given motorcycle helmets, 14 indicated that they were given motorcycle gloves, 9 indicated that they were given protective riding goggles, 7 indicated that they were given motorcycle boots, and 70 indicated that they were given jackets by the organizations they worked for/with. Furthermore, the participants were asked how frequently they wore helmets while working. 86.7% of the participants (N = 117) indicated that they always wear helmets, 10.4% (N = 14) indicated that they usually wear helmets, 1.5% (N = 2) indicated that they sometimes wear helmets, 0.7% (N = 1) indicated that they seldom wear helmets, and 0.7% (N = 1) indicated that they never wear helmets. The participants were asked whom the motorcycle they used for work purposes belonged to. 74.1% of the (N = 100) participants indicated that they owned the vehicle, 22.2% (N = 30) indicated that it was owned by the company they work for/with, and 3.7% (N = 5) indicated that it was owned by someone else. The participants were asked what kind of transmission the motorcycles they used for work had (i.e., automatic or manual). 69.6% of the participants (N = 94) indicated that they used an automatic transmission motorcycle, and 30.4% (N = 41) indicated that they used a manual transmission motorcycle.

Finally, the participants were asked how many traffic accidents they have actively (i.e., hitting someone or something) or passively (i.e., being hit by someone) been involved in, in the past three years. The mean of active accidents was 1.62 (SD = 2.476) with a minimum number of zero accidents and a maximum number of 17 accidents. The mean of passive accidents was 2.01 (SD = 3.190) with a minimum number of 0 accidents and a maximum number of 20 accidents.

2.1.2. Procedure

Ethical approval for the study was acquired from the METU Human Research Ethics Committee. The participants participated in the study by filling out an online questionnaire. They were recruited through social media platforms and via hand flyers featuring the study link and QR code handed out to couriers at fast-delivery company dark store locations and at different locations throughout Ankara, Türkiye. 40% (N = 54) of the participants reported working in Ankara.

In the study, the participants were first asked for their informed consent. Then, they were asked to fill out the demographic information form. They were presented with the Job Demands and Job Resources Scale (Xanthopoulou et al., 2007; Metin, 2010) and the Motorcycle Rider Behavior Questionnaire (Elliott et al., 2007; Özkan et al., 2012). After they completed the questionnaire, they were presented with the debriefing form which informed them of the purpose of the study. The participants who chose to share their mailing contact information were sent a 50 TL gift card from Amazon.

2.2. Measures

2.2.1. Demographic Form

The demographic form included questions concerning participant age, gender, occupation, education level, motorcycle license ownership information, motorcycle riding experience, professional experience as a motorcycle courier, mode of employment, work metrics such as frequency of work and daily package delivery numbers, safety equipment information, work vehicle ownership information, and (active and passive) accident rates.

2.2.2. Job Demands and Job Resources Scale

The Job Demands and Job Resources scale was used to assess motorcycle couriers' perception of job demands and job resources. In this study, the Turkish version of the Job Demands and Job Resources scale (Xanthopoulou et al., 2007) was used. The scale was translated into Turkish by Metin (2010). The scale assesses how often the participants experience the item questions. The 5-point Likert-type anchors range from (1) *never* to (5) *always*. The scale, which includes thirty-six items in total, features four subscales investigating job demands, and four subscales investigating job resources. Job demands subscales are workload, emotional demands, emotional dissonance, and organizational changes. The workload subscale is a four-item scale. The subscale aims to measure the participants' perceived frequency of experiencing

time pressure, and overworking. An item example is ‘Do you have too much work to do?’. The emotional demands subscale is a six-item scale. The subscale aims to measure the participants’ perceived frequency of experiencing intense emotion eliciting work tasks and situations. An item example is ‘Is your work emotionally demanding?’. The emotional dissonance subscale is a five-item scale. The subscale aims to measure the participants’ perceived frequency of experiencing the need to mask their emotions or moods while working. An item example is ‘How often do you suppress your emotions in order to seem unaffected? (e.g., Anger)’. The organizational changes subscale is a seven-item scale. The subscale aims to measure the participants’ perceived frequency of experiencing changes in their role, their organizations’ structure and the product they work with. An item example is ‘Has there been a change in your work’s structure recently?’. In this study, each job demands subscale yielded internal consistencies of .81, .71, .70, and .80 respectively.

Job resources subscales are autonomy, social support, supervisory coaching, and opportunities for professional development. The autonomy subscale is a three-item scale. The subscale aims to measure the participants’ perceived frequency of experiencing decisional and executive control over their work. An item example is ‘Do you have control over how the work is done?’. The social support scale is a three-item scale. The subscale aims to measure the participants’ perceived frequency of receiving support from their coworkers. An item example is ‘Could you trust your coworkers to help you when you are experiencing challenges at work?’. The supervisory coaching scale is a five-item scale. The subscale aims to measure the participants’ perceived frequency of receiving support and adequate feedback from their supervisors. An item example is ‘My supervisor shows interest in my problems and wishes regarding my work’. Finally, the opportunities for professional development scale is a three-item scale. The subscale aims to measure the participants’ perceived frequency of encountering opportunities that could help them improve professionally. An item example is ‘My job offers me opportunities to improve my qualifications’. In this study, each job resources subscale yielded internal consistencies of .69, .85, .93, and .80 respectively.

2.2.3. Motorcycle Rider Behavior Questionnaire (MRBQ)

The Motorcycle Rider Behavior Questionnaire (MRBQ) was used to assess motorcycle couriers' riding behaviors in traffic. The original questionnaire was developed by Elliott et al. (2007), and it was translated to Turkish by Özkan et al. (2012). The scale assesses how often the participants experience the item questions. The 6-point Likert-type anchors range from (1) *never* to (6) *almost always.* The scale includes forty-three questions in total. The scale has five factors: traffic errors, control errors, speed violations, stunts, and safety equipment. The traffic errors factor is comprised of ten items. The subscale aims to measure the participants' frequency of experiencing slips, lapses and mistakes while riding. An item example is 'Fail to notice that pedestrians are crossing when turning into a side street from a main road'. The control errors factor is comprised of five items. The subscale aims to measure the participants' frequency of experiencing problems with controlling the motorcycle. An item example is 'Skid on a wet road or manhole cover'. The speed violations factor is comprised of twelve items. The subscale aims to measure the participants' frequency of engaging in excess speeding. An item example is 'Disregard the speed limit late at night or in the early hours of the morning'. The stunts factor is comprised of six items. The subscale aims to measure the participants' frequency of engaging in stunts. An item example is 'Get involved in unofficial 'races' with other riders or drivers'. Finally, the safety equipment factor is comprised of eight items. The subscale aims to measure the participants' frequency of safety equipment use. An item example is 'Wear bright/fluorescent strips/patches on your clothing'. In this study, each factor yielded internal consistencies of .82, .55, .88, .78, and .72, respectively.

CHAPTER 3

RESULTS

In this chapter, analyses conducted and the relevant results are presented. First, in order to examine the general relationships between the variables, a bivariate correlation analysis was conducted, and the significant correlations were reported (see Section 3.2.). Second, in order to examine the research question of this thesis, hierarchical regression analyses were conducted by controlling for the statistical effects of possible confounding variables, and the significant results were reported (see Section 3.3.). Finally, in order to assess whether job resources had moderation effects on the relationships between job demands and motorcycle rider behaviors, moderation analyses were conducted, and the significant results were reported (see Section 3.4.). All analyses were conducted by using the 26th version of the SPSS program (IBM, 2019). G*Power analysis (Faul et al., 2007) conducted to reveal the ideal sample size for the intended analyses confirmed that the final sample size of the study was sufficient for the purposes of the study.

3.1. Preparing the Data for Analyses

In order to examine the relationship between demographic variables, job demands and job resources subscales and MRBQ factors, several analyses were conducted. The job demands and job resources subscales, as well as MRBQ factors, were computed by calculating the means of each subscale/factor. Higher scores indicate higher levels on the relevant subscales/factors. In more specific terms, the participants who scored higher levels of the job demands and job resources subscales, and MRBQ factors, experienced relevant behaviors or situations more frequently. The original factor structures for the Job Demands and Resources Scale, and the MRBQ were preserved while computing the subscales and the factors.

3.2. Bivariate Correlations Between Study Variables

In order to examine the correlations between the variables of the study, bivariate correlation analysis was conducted with the following variables; age, education level, duration of license ownership (i.e., license ownership in years), overall riding experience (i.e., rider experience in years and rider experience in km), riding experience as a courier (i.e., courier experience in years and courier experience in km), how often the participant works in a week (i.e., work frequency per week), how long the participant works in a day (i.e., work hours per day), number of packages delivered in a day, active and passive accident numbers, all subscales of job demands (i.e., workload, emotional demands, emotional dissonance, and organizational changes) and all subscales of job resources (i.e., autonomy, social support, supervisory coaching, and opportunities for professional development), and all factors of the MRBQ (i.e., traffic errors, control errors, speed violations, stunts, and safety equipment) (see Table 2).

According to the bivariate correlation analysis, it was found that age was positively correlated with the duration of license ownership (r = .837, p < .001), overall riding experience in years (r = .678, p < .001) and courier experience in years (r = .546, p < .001). Furthermore, age was negatively correlated with emotional dissonance (r = -.176, p < .05), supervisory coaching (r = -.268, p < .001), speed violations (r = -.232, p < .001) and stunts (r = -.264, p < .001). Education level was found to be negatively correlated with overall riding experience (r = -.174, p < .05); and positively correlated with social support (r = .170, p < .05). Duration of license ownership was found to be positively correlated with age, overall riding experience in years (r = .796, p < .001), courier experience in years (r = .822, p < .001), overall riding experience in km (r = .294, p < .001), and workload (r = .185, p < .05); and negatively correlated with supervisory coaching (r = -.179, p < .05) and stunts (r = -.203, p < .05). Overall riding experience in years was found to be positively correlated with age, duration of license ownership, courier experience in years (r = .757, p < .001) and overall riding experience in km (r = .299, p < .001); and negatively correlated with educational level, supervisory coaching (r = -.190, p < .05) and stunts (r = -.220, p < .05). Courier experience in years was found to be

positively correlated with age, duration of license ownership, overall riding experience in years, overall riding experience in km (r = .349, p < .001), workload (r = .199, p < .05), and opportunities for professional development (r = .216, p < .05); and negatively correlated with stunts (r = -.213, p < .05). Work frequency per week was found to be negatively correlated with work hours per day (r = -390., p < .001), courier experience in km (r = -.185, p < .05) and speed violations (r = -.169, p < .05). Work hours per day was positively correlated with courier experience in km (r = .215, p < .05), number of packages delivered per day (r = .420, p < .001), passive accidents (r = .176, p < .05), workload (r = .212, p < .05), and speed violations (r = .259, p < .001); and negatively correlated with work frequency per week. Overall rider experience in km was found to be positively correlated with duration of license ownership, overall riding experience in years, courier experience in years, courier experience in km (r = .203, p < .05), number of packages delivered per day (r = .231, p < .001), workload (r = .176, p < .05); and negatively correlated with social support (r = -212., p < .05). Courier experience in km was found to be positively correlated with overall riding experience in km, and work hours per day; and negatively correlated with work frequency per week. Number of packages delivered in a day was found to be positively correlated with work hours per day and overall riding experience in km. Active accidents were found to be positively correlated with passive accidents (r = .245, p < .001), emotional demands (r = .292, p < .001), emotional dissonance (r = .217, p < .05), supervisory coaching (r = .208, p < .05) and speed violations (r = .245, p < .001); and negatively correlated with autonomy (r = -.257, p < .001), and opportunities for professional development (r = -.265, p < .001). Passive accidents were found to be positively correlated with work hours per day (r = .176, p < .05), active accidents, control errors (r = .188, p < .05); and negatively correlated with autonomy (r = -.203, p < .05).

Furthermore, concerning the job demands subscales, workload subscale was found to be positively correlated with duration of license ownership (r = .185, p < .05), courier experience in years, work hours per day, overall rider experience in km, emotional demands (r = .515, p < .001), emotional dissonance (r = .329, p < .001), organizational changes (r = .417, p < .001), traffic errors (r = .225, p < .001), control errors (r = .297, p < .001) and speed violations; and negatively correlated with

autonomy (r = -.370, p < .001) and social support (r = -.235, p < .001). Emotional demands subscale was found to be positively correlated with active accidents, workload, emotional dissonance (r = .450, p < .001), organizational changes (r = .312, p < .001), traffic errors (r = .197, p < .05), control errors (r = .412, p < .001), and speed violations (r = .178, p < .05); and negatively correlated with autonomy (r = -.321, p < .001). Emotional dissonance subscale was found to be positively correlated with active accidents, workload, emotional demands, organizational changes (r = .250, p < .001), traffic errors (r = .270, p < .001), and control errors (r = .264, p < .001); and negatively associated with age, and autonomy (r = -.311, p < .001). Organizational changes subscale was found to be positively correlated with workload, emotional demands, emotional dissonance, traffic errors (r = .302, p < .001) and control errors (r = .185, p < .05); and negatively correlated with autonomy (r = -.311, p < .001).

Moreover, concerning the job resources subscales, autonomy subscale was found to be positively correlated with social support (r = .320, p < .001), and opportunities for professional development (r = .300, p < .001); and negatively correlated with workload, emotional demands, emotional dissonance, organizational changes, traffic errors (r = -.200, p < .05), and control errors (r = -.187, p < .05). Social support subscale was found to be positively correlated with education level, autonomy, opportunities for professional development (r = .291, p < .001), and safety equipment (r = .195, p < .05); and negatively correlated with rider experience in km, workload, and supervisory coaching (r = -.176, p < .05). Supervisory coaching subscale was found to be positively correlated with active accidents, traffic errors (r = .338, p < .001), control errors (r = .274, p < .001), speed violations (r = .691, p < .001), and stunts (r = .943, p < .001); and negatively associated with age, duration of license ownership, overall riding experience in years, and social support. Opportunities for professional development subscale was found to be positively correlated with courier experience in years, autonomy and social support; and negatively correlated with active accidents.

Table 2. Bivariate Correlations of Variables

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
1. Age	1																								
2. EL	-.073	1																							
3. LO	**.695** **	-.092	1																						
4. RE (Y)	**.678** **	**-.174** *	**.796** **	1																					
5. CE (Y)	**.546** **	-.155	**.822** **	**.757** **	1																				
6. WF (p/w)	-.028	.115	-.052	-.164	-.172	1																			
7. WH (p/d)	-.103	-.078	-.055	.025	.025	**-.390** **	1																		
8. RE (km)	.170	-.022	**.294** **	**.299** **	**.349** **	-.084	.089	1																	
9. CE (km)	.068	-.126	.144	.128	.139	**-.185** *	**.215*** *	**.203*** *	1																
10. PN (p/d)	.003	.045	.021	.022	.087	-.050	**.420** **	**.231** **	.131	1															
11. AA	-.094	-.121	-.010	.048	.044	-.057	.126	.014	.023	.047	1														
12. PA	-.095	-.045	-.075	-.030	-.084	.029	**.176*** *	-.033	.102	.029	**.245** **	1													
13. WL	.008	-.104	**.185*** *	.107	**.199*** *	.031	**.212*** *	**.176*** *	.105	.116	.128	.156	1												

Table 2. (continued)

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
14. ED1	-.085	-.130	.043	.082	.137	-.084	.117	-.001	.041	.022	**.292****	.127	**.515****	1											
15. ED2	**-.176***	-.120	-.050	-.050	.045	-.103	.146	.069	-.117	.088	.217*	.094	**.329****	**.450****	1										
16. OC	.057	-.098	.097	.163	.151	.018	.008	.081	.045	.062	.049	.056	**.417****	**.312****	**.250****	1									
17. AUT	.044	-.025	-.017	-.016	.021	-.135	-.055	-.047	-.039	.010	**-.257****	**-.203***	**-.370****	**-.321****	**-.311****	**-.311****	1								
18. SS	.038	**.170***	.018	.014	.029	-.065	-.022	**-.212***	-.112	-.026	-.141	-.151	**-.235****	-.074	-.002	-.137	**.320****	1							
19. SC	**-.268****	.037	**-.179***	**-.190***	-.172	-.073	.127	-.009	-.044	.010	**.208***	.084	.155	.152	.150	.035	-.103	**-.176***	1						
20. OPD	.076	-.147	.053	.140	**.216***	-.073	.076	-.013	-.017	.000	**-.265****	-.100	-.132	.027	-.100	.073	**.300****	**.291****	-.143	1					
21. TE	-.088	-.059	.043	.011	.084	-.119	.082	-.063	-.077	.034	.013	.137	**.225****	**.197***	**.270****	**.302****	**-.200***	-.093	**.338****	.056	1				
22. CE	-.123	-.108	-.152	-.142	-.106	-.131	.033	-.134	-.096	.078	.165	**.188***	**.297****	**.412****	**.264****	**.185***	**-.187***	-.039	**.274****	-.033	**.338****	1			
23. SV	**-.232****	.004	-.146	-.145	-.137	**-.169***	**.259****	-.075	.019	.017	**.245****	.117	**.219***	**.178***	.091	.121	-.065	-.150	**.691****	-.053	**.442****	**.286****	1		
24. ST	**-.264****	.023	**-.203***	**-.220***	**-.213***	-.059	.058	-.086	-.082	.004	.161	.001	.116	.130	.144	.057	-.079	-.155	**.943****	-.139	**.331****	**.292****	**.630****	1	
25. SE	.117	.151	.063	.076	.067	.098	.029	-.066	-.170	-.013	.021	.139	-.103	-.138	.099	-.025	-.014	**.195***	-.121	.051	-.089	-.051	**-.202***	-.077	1

*Correlation is significant at the 0.05 level. **Correlation is significant at the 0.01 level.

*Note: **(2)** EL: Educational Level, **(3)** LO: License Ownership (in Years), **(4)** RE (Y): Rider Experience (in Years), **(5)** CE (Y): Courier Experience (in Years), **(6)** WF (p/w): Work Frequency (per week), **(7)** WH (p/d): Work Hours (per day), **(8)** RE (km): Rider Experience (km), **(9)** Courier Experience (km), **(10)** PN (p/d): number of package deliveries (per day), **(11)** AA: Active Accidents, **(12)** PA: Passive Accidents, **(13)** WL: Workload, **(14)** ED1: Emotional Demands, **(15)** ED2: Emotional Dissonance, **(16)** OC: Organizational Changes, **(17)** AUT: Autonomy, **(18)** SS: Social Support, **(19)** SC: Supervisory Coaching, **(20)** OPD: Opportunities for Professional Development, **(21)** TE: Traffic Errors, **(22)** CE: Control Errors, **(23)** SV: Speed Violations, **(24)** ST: Stunts, **(25)** SE: Safety Equipment*

Finally, concerning the MRBQ factors, traffic errors factor was found to be positively correlated with workload, emotional demands, emotional dissonance, organizational changes, supervisory coaching, control errors (r = .338, p < .001), speed violations (r = .442, p < .001), and stunts (r = .331, p < .001); and negatively correlated with autonomy. Control errors factor was found to be positively correlated with passive accidents, workload, emotional demands, emotional dissonance, organizational changes, supervisory coaching, traffic errors, speed violations (r = .286, p < .001), and stunts (r = .292, p < .001); and negatively correlated with autonomy. Speed violations factor was found to be positively correlated with work hours per day, active accidents, workload, emotional demands, supervisory coaching, traffic errors, control errors, and stunts (r = .630, p < .001); and negatively correlated with age, work frequency per week, and safety equipment (r = -.202, p < .05). Stunts factor was found to be positively correlated with supervisory coaching, traffic errors, control errors, and speed violations; and negatively correlated with age, duration of license ownership, overall riding experience in years, and courier experience in years. Safety equipment factor was found to be positively correlated with supervisory coaching; and negatively correlated with speed violations.

3.3. Hierarchical Regression Analysis of Job Demands and Resources and Motorcycle Riding Behaviors

3.3.1. Testing the Relationships Between Variables

Hierarchical regression analysis was conducted by controlling for the statistical effects of possible confounding variables. Age, overall rider experience in years, and courier experience in years were determined to be possible confounding variables based on their correlative relationships with independent and dependent variables (see Table 2).

In the first step of the hierarchical regression analysis, age, overall rider experience in years, and courier experience in years were entered as control variables. In the second step of the analysis, job demands or job resources dimensions were entered in order to reveal their predictive relationships to each riding behavior of the MRBQ

once the control variables were regulated. First, the relationship between job demands and each MRBQ factor (i.e., traffic errors, control errors, speed violations, stunts, and safety equipment) were studied individually. Then, the relationship between job resources and each MRBQ were studied individually. A total of ten analyses were performed. The results of hierarchical regression analyses between job demands and motorcycle riding behaviors, and job resources and motorcycle riding behaviors are further elaborated.

3.3.2. Hierarchical Regression Analyses of Job Demands and Riding Behaviors

3.3.2.1. Job Demands and Traffic Errors

Hierarchical regression was carried out in order to analyze the relationship between job demands and traffic errors. In the first step of hierarchical regression, age, overall rider experience in years, and courier experience in years were included in the model as control variables. In the second step of hierarchical regression, job demands subscales (i.e., workload, emotional demands, emotional dissonance, and organizational changes) were included as independent variables. The traffic errors factor of the MRBQ was added as the dependent variable in the analysis (see Table 3).

The results showed that the first model was not significant. After the job demands subscales were added, the second model yielded significant F (4,111) = 4.17, $p < .05$, R^2 =.15. In the second model, organizational changes subscale was found to be the only uniquely statistically significant job demands predictor of traffic errors (B =.24, t = 2.88, $p < .05$). When age, overall riding experience in years, and courier experience in years were added to the model, these control variables only explained 2% of the variance. Upon the inclusion of job demands subscales, the model explained 15% of the variance. This significant change in the explained variance of traffic errors suggest that when the statistical effects of control variables are controlled, the model featuring job demands subscales was able to predict traffic errors.

3.3.2.2. Job Demands and Control Errors

Hierarchical regression was carried out in order to analyze the relationship between job demands and control errors. In the first step of hierarchical regression, age, overall rider experience in years, and courier experience in years were included in the model as control variables. In the second step of hierarchical regression, job demands subscales (i.e., workload, emotional demands, emotional dissonance, and organizational changes) were included as independent variables. The control errors factor of the MRBQ was added as the dependent variable in the analysis (see Table 3).

The results showed that the first model was not significant. After the job demands subscales were added, the second model yielded significant F (4,111) = 6.24, p < .001, R^2 =.20. In the second model, emotional demands subscale was found to be the only uniquely statistically significant job demands predictor of control errors (B =.42, t = 2.93, p < .05). When age, overall riding experience in years, and courier experience in years were added to the model, these control variables only explained 2% of the variance. Upon the inclusion of job demands subscales, the model explained 20% of the variance. This significant change in the explained variance of the control errors suggest that when the statistical effects of control variables are controlled, the model featuring job demands subscales was able to predict control errors.

3.3.2.3. Job Demands and Speed Violations

Hierarchical regression was carried out in order to analyze the relationship between job demands and speed violations. In the first step of hierarchical regression, age, overall rider experience in years, and courier experience in years were included in the model as control variables. In the second step of hierarchical regression, job demands subscales (i.e., workload, emotional demands, emotional dissonance, and organizational changes) were included as independent variables. The speed

violations factor of the MRBQ was added as the dependent variable in the analysis (see Table 3).

The results showed that only the first model was significant F (3,115) = 2.61, p = .05, R^2 =.06. However, a significant relationship between job demands and speed violations has not been detected. The results suggest that the model featuring job demands subscales was not able to explain a significant proportion in the variance of speed violations.

3.3.2.4. Job Demands and Stunts

Hierarchical regression was carried out in order to analyze the relationship between job demands and stunts. In the first step of hierarchical regression, age, overall rider experience in years, and courier experience in years were included in the model as control variables. In the second step of hierarchical regression, job demands subscales (i.e., workload, emotional demands, emotional dissonance, and organizational changes) were included as independent variables. The stunts factor of the MRBQ was added as the dependent variable in the analysis (see Table 3).

The results showed that only the first model was significant F (3,115) = 3.49, p < .05, R^2 =.08. However, a significant relationship between job demands and stunts has not been detected. The results suggest that the model featuring job demands subscales was not able to explain a significant proportion in the variance of speed violations.

3.3.2.5. Job Demands and Safety Equipment

Hierarchical regression was carried out in order to analyze the relationship between job demands and safety equipment. In the first step of hierarchical regression, age, overall rider experience in years, and courier experience in years were included in the model as control variables. In the second step of hierarchical regression, job demands subscales (i.e., workload, emotional demands, emotional dissonance, and organizational changes) were included as independent variables. The safety

equipment factor of the MRBQ was added as the dependent variable in the analysis (see Table 3).

Table 3. Summary of Individual Hierarchical Regression Analyses Between Job Demands and MRBQ Factors (Representing Rider Behaviors)

DV: MRBQ Traffic Errors	R^2	R^2_{change}	*Beta*	*p*
1st Step: Control Variables	.019	.019		.522
Age			-.007	.305
RE (y)			.000	.928
CE (y)			.009	.300
2nd step: Job Demands	.147	.128		.004
1st dimension: WL			.045	.583
2nd dimension: ED1			-.030	.793
3rd dimension: ED2			.120	.177
4th dimension: OC			.239	.005
DV: MRBQ Control Errors	R^2	R^2_{change}	*Beta*	*p*
1st Step: Control Variables	.021	.021		.479
Age			.015	.942
RE (y)			-.026	.355
CE (y)			-.022	.936
2nd step: Job Demands	.201	.180		.000
1st dimension: WL			.105	.313
2nd dimension: ED1			.423	.004
3rd dimension: ED2			.050	.658
4th dimension: OC			.080	.455
DV: MRBQ Speed Violations	R^2	R^2_{change}	*Beta*	*p*
1st Step: Control Variables	.064	.064		.055
Age			-.035	.061
RE (y)			-.001	.968
CE (y)			.001	.966
2nd step: Job Demands	.106	.042		.274
1st dimension: WL			.168	.161
2nd dimension: ED1			.084	.613
3rd dimension: ED2			-.083	.527
4th dimension: OC			.072	.556
DV: MRBQ Stunts	R^2	R^2_{change}	*Beta*	*p*
1st Step: Control Variables	.083	.083		.018
Age			-.023	.076
RE (y)			.001	.977
CE (y)			-.014	.514
2nd step: Job Demands	.108	.024		.553
1st dimension: WL			.061	.461
2nd dimension: ED1			-.002	.985
3rd dimension: ED2			.059	.515
4th dimension: OC			.054	.526
DV: MRBQ Safety Equipment	R^2	R^2_{change}	*Beta*	*p*
1st Step: Control Variables	.009	.009		.777
Age			.008	.708
RE (y)			.011	.724
CE (y)			-.003	.936

Table 3. (continued)

2nd step: Job Demands	.090	.081		.049
1st dimension: WL			-.116	.382
2nd dimension: ED1			-.321	.084
3rd dimension: ED2			.390	.008
4th dimension: OC			-.033	.808

Note: RE (y): Overall riding experience in years, CE (y): Courier experience in years, WL: Workload, ED1: Emotional Demands, ED2: Emotional Dissonance, OC: Organizational Change

The results showed that the first model was not significant. After the job demands subscales were added, the second model yielded significant F (4,111) = 2.47, $p < .05$, R^2 =.09. In the second model, emotional dissonance subscale was found to be the only uniquely statistically significant job demands predictor of control errors (B =.39, t = 2.70, $p < .05$). When age, overall riding experience in years, and courier experience in years were added to the model, these control variables only explained 1% of the variance. Upon the inclusion of job demands subscales, the model explained 9% of the variance. This significant change in the explained variance of the safety equipment factor suggest that when the statistical effects of control variables are controlled, the model featuring job demands subscales was able to predict safety equipment use.

3.3.3. Hierarchical Regression Analyses of Job Resources and Riding Behaviors

3.3.3.1. Job Resources and Traffic Errors

Hierarchical regression was carried out in order to analyze the relationship between job resources and traffic errors. In the first step of hierarchical regression, age, overall rider experience in years, and courier experience in years were included in the model as control variables. In the second step of hierarchical regression, job resources subscales (i.e., autonomy, social support, supervisory coaching, and opportunities for professional development) were included as independent variables. The traffic errors factor of the MRBQ was added as the dependent variable in the analysis (see Table 4).

The results showed that the first model was not significant. After the job resources subscales were added, the second model yielded significant F (4,111) = 4.94, $p <$

.001, R^2 =.17. In the second model, autonomy and supervisory coaching subscales were found to be the only uniquely statistically significant job demands predictor of control errors (B =-.14, t = -2.12, p < .05 and B =.30, t = 3.52, p < .001, respectively). When age, overall riding experience in years, and courier experience in years were added to the model, these control variables only explained 2% of the variance. Upon the inclusion of job resources subscales, the model explained 17% of the variance. This significant change in the explained variance of traffic errors suggest that when the statistical effects of control variables are controlled, the model featuring job resources subscales was able to predict traffic errors.

3.3.3.2. Job Resources and Control Errors

Hierarchical regression was carried out in order to analyze the relationship between job resources and control errors. In the first step of hierarchical regression, age, overall rider experience in years, and courier experience in years were included in the model as control variables. In the second step of hierarchical regression, job resources subscales (i.e., autonomy, social support, supervisory coaching, and opportunities for professional development) were included as independent variables. The control errors factor of the MRBQ was added as the dependent variable in the analysis (see Table 4).

The results showed that the first model was not significant. After the job resources subscales were added, the second model yielded significant F (4,111) = 2.45, p = .05, R^2 =.10. In the second model, supervisory coaching subscale was found to be the only uniquely statistically significant job demands predictor of control errors (B =.28, t = 2.44, p < .05). When age, overall riding experience in years, and courier experience in years were added to the model, these control variables only explained 2% of the variance. Upon the inclusion of job resources subscales, the model explained 10% of the variance. This significant change in the explained variance of control errors suggest that when the statistical effects of control variables are controlled, the model featuring job resources subscales was able to predict control errors.

3.3.3.3. Job Resources and Speed Violations

Hierarchical regression was carried out in order to analyze the relationship between job resources and speed violations. In the first step of hierarchical regression, age, overall rider experience in years, and courier experience in years were included in the model as control variables. In the second step of hierarchical regression, job resources subscales (i.e., autonomy, social support, supervisory coaching, and opportunities for professional development) were included as independent variables. The speed violations factor of the MRBQ was added as the dependent variable in the analysis (see Table 4).

The results showed that both models were significant. When the control variables were included, the first model yielded marginally significant F (3,115) = 2.61, p = .05, R^2 =.06. After the job resources subscales were added, the second model yielded significant as well F (4,111) = 21.21, p < .001, R^2 =.47. In the second model, supervisory coaching subscale was found to be the only uniquely statistically significant job demands predictor of speed violations (B =.88, t = 9.03, p < .001). When age, overall riding experience in years, and courier experience in years were added to the model, these control variables only explained 6% of the variance. Upon the inclusion of job resources subscales, the model explained 47% of the variance. These results suggest that the sole inclusion of control variables was able to explain a significant percentage of the variance in speed violations. Furthermore, after controlling for the statistical effects of control variables, the model featuring job resources subscales was also able to predict speed violations.

3.3.3.4. Job Resources and Stunts

Hierarchical regression was carried out in order to analyze the relationship between job resources and stunts. In the first step of hierarchical regression, age, overall rider experience in years, and courier experience in years were included in the model as control variables. In the second step of hierarchical regression, job resources subscales (i.e., autonomy, social support, supervisory coaching, and opportunities for

professional development) were included as independent variables. The stunts factor of the MRBQ was added as the dependent variable in the analysis (see Table 4).

The results showed that both models were significant. When the control variables were included, the first model yielded significant F (3,115) = 3.49, $p < .05$, R^2 =.08. After the job resources subscales were added, the second model yielded significant as well F (4,111) = 232.92, $p < .001$, R^2 =.90. In the second model, supervisory coaching subscale was found to be the only uniquely statistically significant job demands predictor of stunts (B =.87, t = 30.15, $p < .001$). When age, overall riding experience in years, and courier experience in years were added to the model, these control variables only explained 8% of the variance. Upon the inclusion of job resources subscales, the model explained 90% of the variance. This significant change in the explained variance of stunts suggest that when the statistical effects of control variables are controlled, the model featuring job resources subscales was able to predict stunts.

3.3.3.5. Job Resources and Safety Equipment

Hierarchical regression was carried out in order to analyze the relationship between job resources and safety equipment. In the first step of hierarchical regression, age, overall rider experience in years, and courier experience in years were included in the model as control variables. In the second step of hierarchical regression, job resources subscales (i.e., autonomy, social support, supervisory coaching, and opportunities for professional development) were included as independent variables. The safety equipment factor of the MRBQ was added as the dependent variable in the analysis (see Table 4).

Neither the first model featuring the control variables of age, overall riding experience in years, and courier experience in years nor the second model that included the job resources dimensions were found to be significant. These results suggest that neither the first model nor the second model was able to predict safety equipment use.

Table 4. Summary of Individual Hierarchical Regression Analyses Between Job Resources and MRBQ Factors (Representing Rider Behaviors)

DV: MRBQ Traffic Errors	R^2	R^2_{change}	*Beta*	*p*
1st Step: Control Variables	.019	.019		.522
Age			-.014	.302
RE (y)			.002	.928
CE (y)			.022	.300
2nd step: Job Resources	.168	.148		.001
1st dimension: AUT			-.141	.036
2nd dimension: SS			-.014	.825
3rd dimension: SC			.298	.001
4th dimension: OPD			.105	.085
DV: MRBQ Control Errors	R^2	R^2_{change}	*Beta*	*p*
1st Step: Control Variables	.021	.021		.479
Age			.001	.942
RE (y)			-.024	.355
CE (y)			.002	.936
2nd step: Job Resources	.101	.079		.050
1st dimension: AUT			-.163	.077
2nd dimension: SS			.072	.421
3rd dimension: SC			.284	.016
4th dimension: OPD			.009	.916
DV: MRBQ Speed Violations	R^2	R^2_{change}	*Beta*	*p*
1st Step: Control Variables	.064	.064		.055
Age			-.035	.061
RE (y)			-.001	.968
CE (y)			.001	.966
2nd step: Job Resources	.469	.406		.000
1st dimension: AUT			-.001	.990
2nd dimension: SS			-.044	.558
3rd dimension: SC			.877	.000
4th dimension: OPD			.086	.219
DV: MRBQ Stunts	R^2	R^2_{change}	*Beta*	*p*
1st Step: Control Variables	.083	.083		.018
Age			-.023	.076
RE (y)			.001	.977
CE (y)			-.014	.514
2nd step: Job Resources	.902	.819		.000
1st dimension: AUT			.004	.850
2nd dimension: SS			-.008	.730
3rd dimension: SC			.873	.000
4th dimension: OPD			.004	.845
DV: MRBQ Safety Equipment	R^2	R^2_{change}	*Beta*	*p*
1st Step: Control Variables	.009	.009		.777
Age			.008	.708
RE (y)			.011	.724
CE (y)			-.003	.936
2nd step: Job Resources	.073	.063		.118
1st dimension: AUT			-.128	.251
2nd dimension: SS			.282	.011
3rd dimension: SC			-.071	.616
4th dimension: OPD			-.063	.536

Note: RE (y): Overall riding experience in years, CE (y): Courier experience in years, AUT: Autonomy, SS: Social Support, SC: Supervisory Coaching, OPD: Opportunities for Professional Development

3.4. The Moderation Role of Job Resources on the Relationship Between Job Demands and Riders Behaviors

As previous studies suggested that job resources could offer as a buffer between job demands and other variables (Demerouti et al., 2001; Baeriswyl et al., 2017; Xiu et al., 2019; Han et al., 2023), moderation analyses assessing whether job resources altered the relationship between job demands and motorcycle rider behaviors were conducted with the current sample. The analyses were conducted using Model 1 of the PROCESS macro for SPSS (Hayes, 2013). In order to get a detailed understanding of the moderator role of job resources on the relationships between job demands and rider behaviors, all the job resources dimensions (i.e., autonomy, social support, supervisory coaching, and opportunities for professional development) were individually assessed as moderators in relation to the relationships between individual job demands dimensions (i.e., workload, emotional demands, emotional dissonance, and organizational changes), and individual MRBQ factors (i.e., traffic errors, control errors, speed violations, stunts, and safety equipment). Several job resources dimensions were found to moderate the relationship between job demands and motorcycle rider behaviors. A total of 80 moderation analyses were conducted, of which 15 were found to be significant. The significant results are elaborated further.

3.4.1. Autonomy as the Moderator in the Relationship Between Job Demands and Riding Behaviors

In the twenty moderation analyses conducted, autonomy was assessed as a moderator between each individual job demands dimension as independent variable and each individual MRBQ factors as dependent variable. In five of the analyses, autonomy was found to significantly moderate the relationship between relevant job demands dimensions and riding behaviors.

In the first analysis, the interaction between autonomy and emotional demands, in relation to the emotional demands and traffic errors relationship was found to be significant (B = .17, 95% C.I. (.011, .336), p < .05). The results show that different

levels of autonomy have different effects on the relationship between emotional demands and traffic errors. It was found that the highest levels of traffic errors are observed when both emotional demands and autonomy are high. However, the lowest levels of traffic errors are observed when emotional demands are low, but autonomy is high. These results indicate an enhancing effect of autonomy on the emotional demands and traffic errors relationship (see Figure 1).

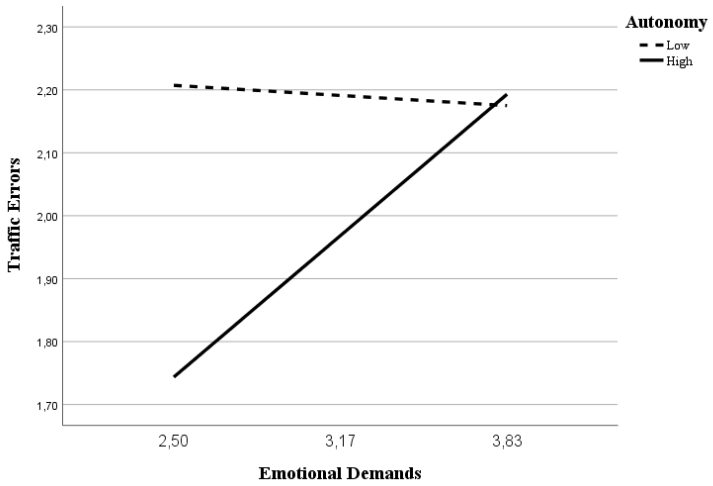

Figure 1. Moderation Effect of Autonomy on the Emotional Demands and Traffic Errors Relationship

In the second analysis, the interaction between autonomy and workload, in relation to the workload and speed violations relationship was found to be significant (B = .21, 95% C.I. (.044, .374), p < .05). The results show that different levels of autonomy have different effects on the relationship between workload and speed violations. It was found that the highest levels of speed violations are observed when both workload and autonomy is high. However, the lowest levels of speed violations are observed when workload is low, but autonomy is high. These results indicate an enhancing effect of autonomy on the workload and speed violations relationship (see Figure 2).

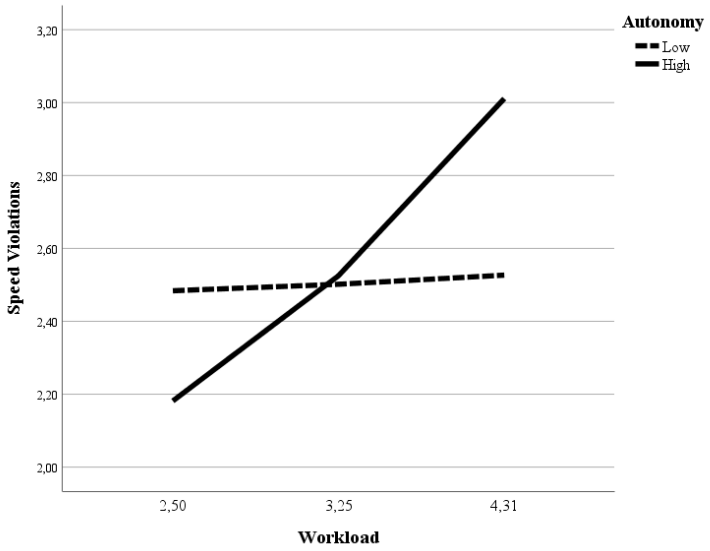

Figure 2. Moderation Effect of Autonomy on the Workload and Speed Violations Relationship

In the third analysis, the interaction between autonomy and workload, in relation to the workload and stunts relationship was found to be significant (B = .15, 95% C.I. (.028, .264), p < .05). The results show that different levels of autonomy have different effects on the relationship between workload and stunts. It was found that the highest levels of stunts are observed when both workload and autonomy is high. However, the lowest levels of stunts are observed when workload is low, but autonomy is high. These results indicate an enhancing effect of autonomy on the workload and stunts relationship (see Figure 3).

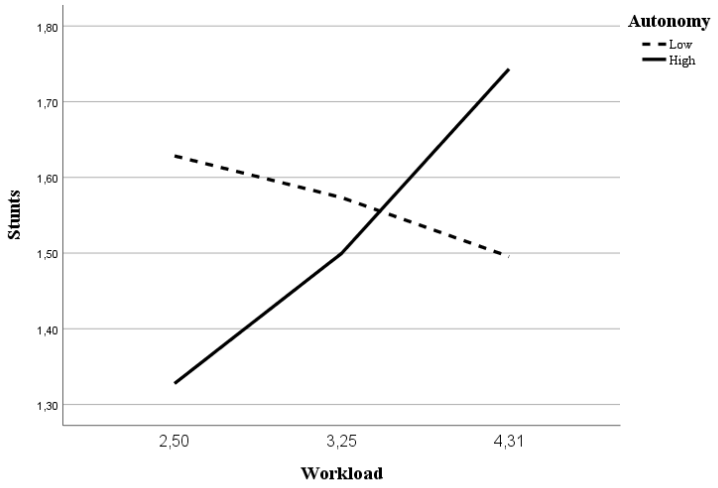

Figure 3. Moderation Effect of Autonomy on the Workload and Stunts Relationship

In the fourth analysis, the interaction between autonomy and workload, in relation to the workload and safety equipment use relationship was found to be significant (B = -.20, 95% C.I. (-.385, -.013), p < .05). The results show that different levels of autonomy have different effects on the relationship between workload and safety equipment use. It was found that the highest levels of safety equipment use are observed when workload is low and autonomy is high. And the lowest levels of safety equipment use are observed when both workload and autonomy are high. These results indicate an enhancing effect of autonomy on the workload and safety equipment use relationship (see Figure 4).

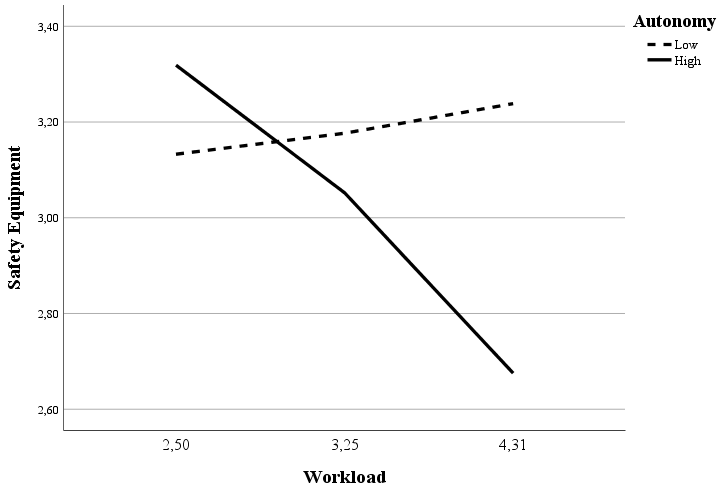

Figure 4. Moderation Effect of Autonomy on the Workload and Safety Equipment Relationship

In the fifth analysis, the interaction between autonomy and emotional demands, in relation to the emotional demands and safety equipment use relationship was found to be significant (B = -.34, 95% C.I. (-.603, -.085), p < .05). The results show that different levels of autonomy have different effects on the relationship between emotional demands and safety equipment use. It was found that the highest levels of safety equipment use are observed when emotional demands are low and autonomy is high. And the lowest levels of safety equipment use are observed when both emotional demands and autonomy are high. These results indicate an enhancing effect of autonomy on the emotional demands and safety equipment use relationship (see Figure 5).

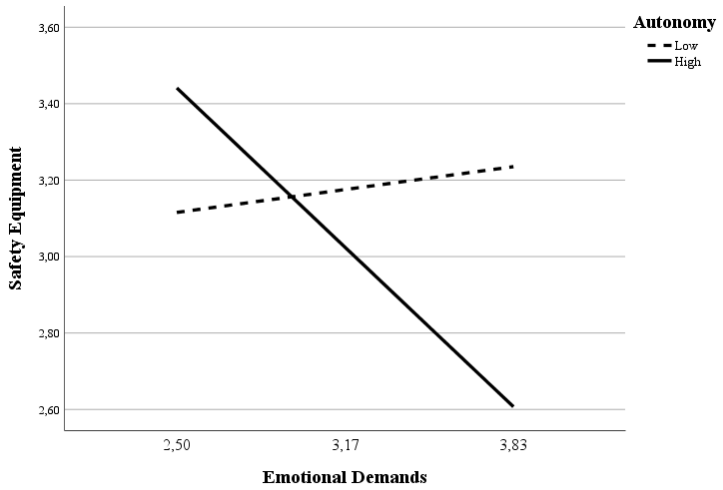

Figure 5. Moderation Effect of Autonomy on the Emotional Demands and Safety Equipment Relationship

3.4.2. Social Support as the Moderator in the Relationship Between Job Demands and Riding Behaviors

In the twenty moderation analyses conducted, social support was assessed as a moderator between each individual job demands dimension as independent variable and each individual MRBQ factors as dependent variable. In five of the analyses, social support was found to significantly moderate the relationship between relevant job demands dimensions and riding behaviors.

In the first analysis, the interaction between social support and organizational changes, in relation to the organizational changes and control errors relationship was found to be significant (B = -.21, 95% C.I. (-.393, -.033), $p < .05$). The results show that different levels of social support have different effects on the relationship between organizational changes and control errors. It was found that the highest levels of control errors are observed when organizational changes are high, but social support is low. And the lowest levels of control errors are observed when both organizational changes and social support are low. These results indicate a buffering effect of social support on the organizational changes and control errors relationship (see Figure 6).

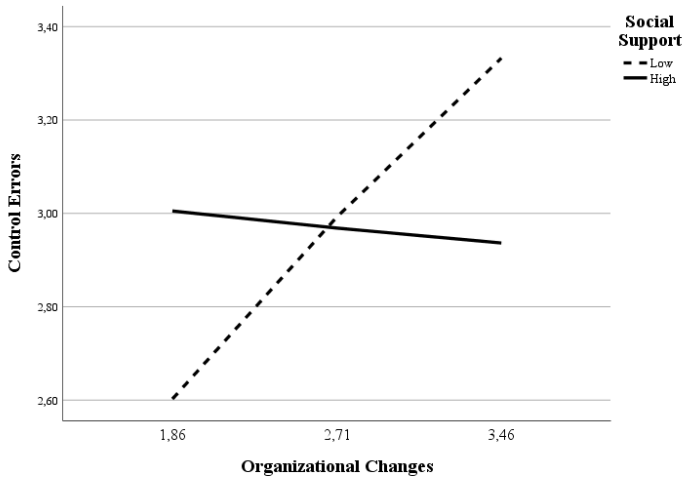

Figure 6. Moderation Effect of Social Support on the Organizational Changes and Control Errors Relationship

In the second analysis, the interaction between social support and emotional demands, in relation to the emotional demands and speed violations relationship was found to be significant (B = -.31, 95% C.I. (-.541, -.086), $p < .05$). The results show that different levels of social support have different effects on the relationship between emotional demands and speed violations. It was found that the highest levels of speed violations are observed when emotional demands are high, but social support is low. And the lowest levels of speed violations are observed when both emotional demands and social support are low. These results indicate a buffering effect of social support on the emotional demands and speed violations relationship (see Figure 7).

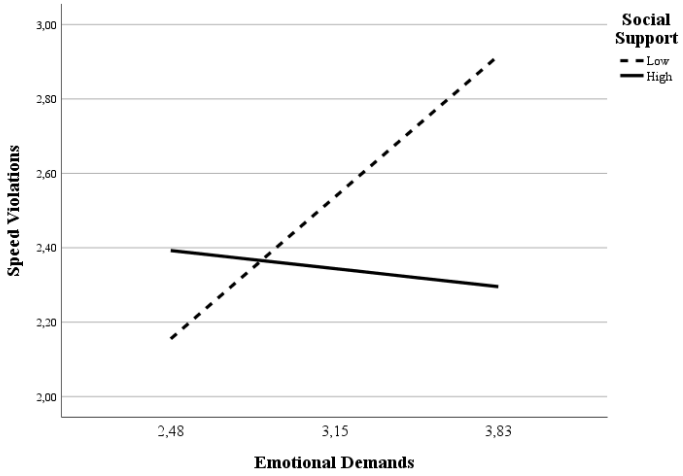

Figure 7. Moderation Effect of Social Support on the Emotional Demands and Speed Violations Relationship

In the third analysis, the interaction between social support and emotional demands, in relation to the emotional demands and stunts relationship was found to be significant (B = -.21, 95% C.I. (-.370, -.049), p < .05). The results show that different levels of social support have different effects on the relationship between emotional demands and stunts. It was found that the highest levels of stunts are observed when emotional demands are high, but social support is low. And the lowest levels of stunts are observed when both emotional demands and social support are low. These results indicate a buffering effect of social support on the emotional demands and stunts relationship (see Figure 8).

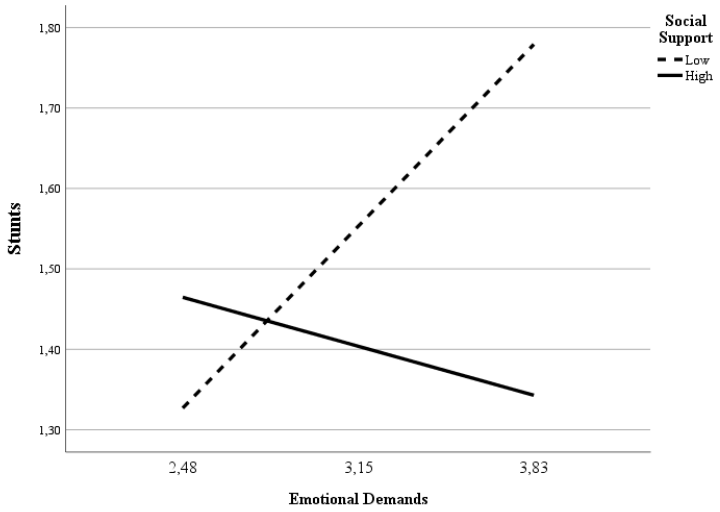

Figure 8. Moderation Effect of Social Support on the Emotional Demands and Stunts Relationship

In the fourth analysis, the interaction between social support and organizational changes, in relation to the organizational changes and stunts relationship was found to be significant (B = -.16, 95% C.I. (-.296, -.022), p < .05 The results show that different levels of social support have different effects on the relationship between organizational changes and stunts. It was found that the highest levels of stunts are observed when organizational changes are high, but social support is low. And the lowest levels of stunts are observed when both organizational changes and social support are high. These results indicate a buffering effect of social support on the organizational changes and stunts relationship (see Figure 9).

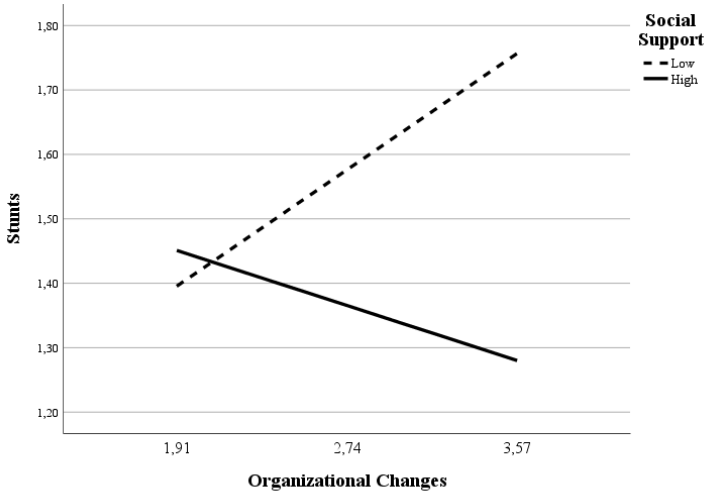

Figure 9. Moderation Effect of Social Support on the Organizational Changes and Stunts Relationship

In the fifth analysis, the interaction between social support and emotional dissonance, in relation to the emotional dissonance and safety equipment use relationship was found to be significant (*B* = .35, 95% C.I. (.141, .550), *p* = .001). The results show that different levels of social support have different effects on the relationship between emotional dissonance and safety equipment use. It was found that the highest levels of safety equipment use are observed when both emotional dissonance and social support are high. However, the lowest levels of safety equipment use are observed when emotional dissonance is high, but social support is low. These results indicate an enhancing effect of social support on the emotional dissonance and safety equipment use relationship (see Figure 10).

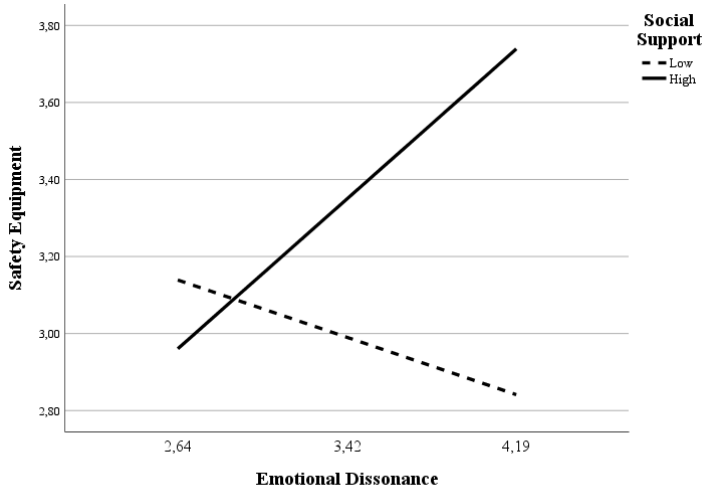

Figure 10. Moderation Effect of Social Support on the Emotional Dissonance and Safety Equipment Relationship

3.4.3. Supervisory Coaching as the Moderator in the Relationship Between Job Demands and Riding Behaviors

In the twenty moderation analyses conducted, supervisory coaching was assessed as a moderator between each individual job demands dimension as independent variable and each individual MRBQ factors as dependent variable. In three of the analyses, supervisory coaching was found to significantly moderate the relationship between relevant job demands dimensions and riding behaviors.

In the first analysis, the interaction between supervisory coaching and organizational changes, in relation to the organizational changes and traffic errors relationship was found to be significant (B = .22, 95% C.I. (.064, .383), p < .05). The results show that different levels of supervisory coaching have different effects on the relationship between organizational changes and traffic errors. It was found that the highest levels of traffic errors are observed when both organizational changes and supervisory coaching are high. However, the lowest levels of traffic errors are observed when both organizational changes and supervisory coaching are low. These results indicate an enhancing effect of supervisory coaching on the organizational changes and traffic errors relationship (see Figure 11).

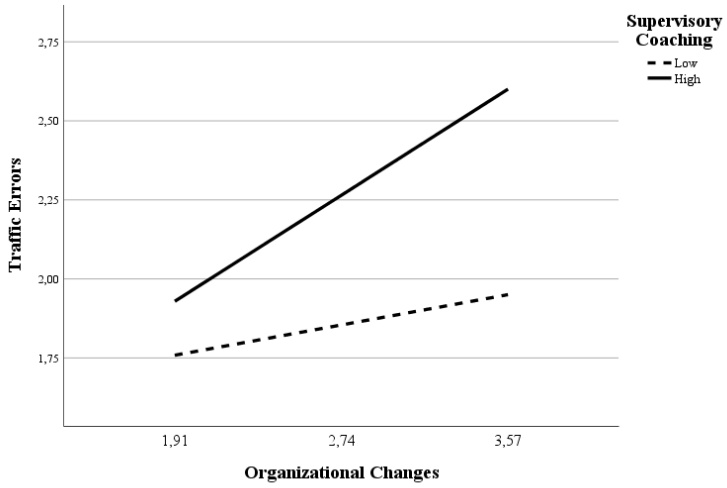

Figure 11. Moderation Effect of Supervisory Coaching on the Organizational Changes and Traffic Errors Relationship

In the second analysis, the interaction between supervisory coaching and workload, in relation to the workload and safety equipment use relationship was found to be significant (B = -.43, 95% C.I. (-.709, -.156), p < .05). The results show that different levels of supervisory coaching have different effects on the relationship between workload and safety equipment use. It was found that the highest levels of safety equipment use are observed when workload is low, but supervisory coaching is high. However, the lowest levels of safety equipment use are observed when both organizational changes and supervisory coaching are high. These results indicate an enhancing effect of supervisory coaching on the workload and safety equipment use relationship (see Figure 12).

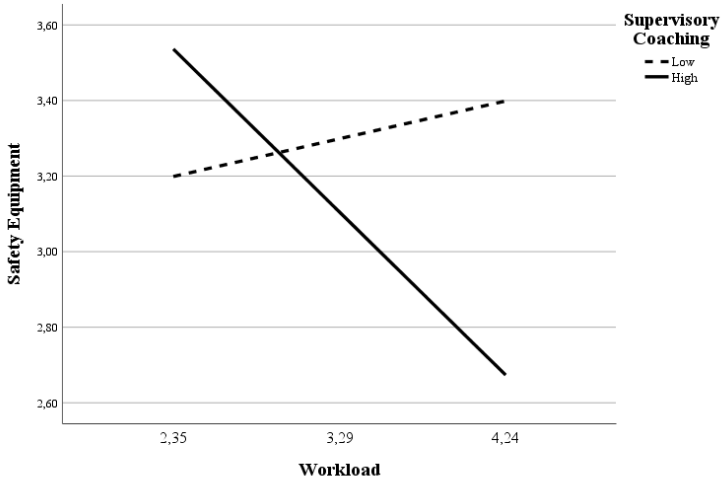

Figure 12. Moderation Effect of Supervisory Coaching on the Workload and Safety Equipment Relationship

In the third analysis, the interaction between supervisory coaching and emotional demands, in relation to the emotional demands and safety equipment use relationship was found to be significant (B = -.36, 95% C.I. (-.677, -.035), p < .05). The results show that different levels of supervisory coaching have different effects on the relationship between emotional demands and safety equipment use. It was found that the highest levels of safety equipment use are observed when emotional demands are low, but supervisory coaching is high. However, the lowest levels of safety equipment use are observed when both emotional demands and supervisory coaching are high. These results indicate an enhancing effect of supervisory coaching on the emotional demands and safety equipment use relationship (see Figure 13).

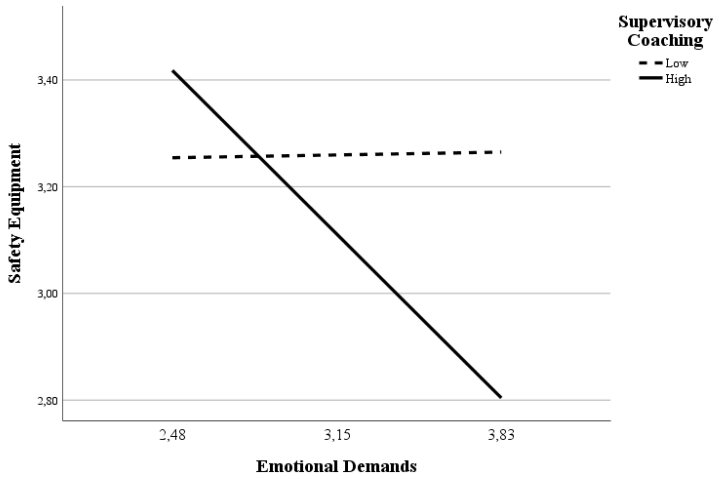

Figure 13. Moderation Effect of Supervisory Coaching on the Emotional Demands and Safety Equipment Relationship

3.4.4. Opportunities for Professional Development as the Moderator in the Relationship Between Job Demands and Riding Behaviors

In the twenty moderation analyses conducted, opportunities for professional development was assessed as a moderator between each individual job demands dimension as independent variable and each individual MRBQ factors as dependent variable. In two of the analyses, opportunities for professional development was found to significantly moderate the relationship between relevant job demands dimensions and riding behaviors.

In the first analysis, the interaction between opportunities for professional development and workload, in relation to the workload and speed violations relationship was found to be significant (B = .18, 95% C.I. (.036, .334), p < .05). The results show that different levels of opportunities for professional development have different effects on the relationship between workload and speed violations. It was found that the highest levels of speed violations are observed when both workload and opportunities for professional development are high. However, the lowest levels of speed violations are observed when workload is low and opportunities for professional development are high. These results indicate an enhancing effect of opportunities for professional development on the workload and speed violations relationship (see Figure 14).

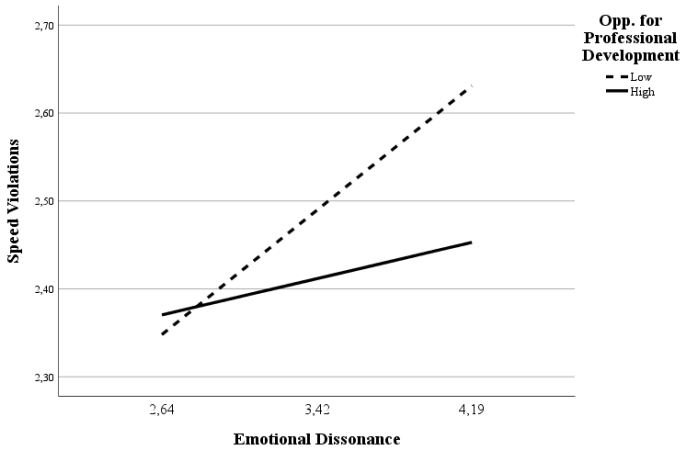

Figure 14. Moderation Effect of Opp. For Professional Development on the Workload and Speed Violations Relationship

In the second analysis, the interaction between opportunities for professional development and emotional dissonance, in relation to the emotional dissonance and safety equipment use relationship was found to be significant (*B* = .23, 95% C.I. (-.010, .476), *p* = .05). The results show that different levels of opportunities for professional development have different effects on the relationship between emotional dissonance and safety equipment use. It was found that the highest levels of safety equipment use are observed when both emotional dissonance is high and opportunities for professional development is low. However, the lowest levels of safety equipment use are observed when both emotional dissonance and opportunities for professional development are low. These results indicate an enhancing effect of opportunities for professional development on the emotional dissonance and safety equipment use relationship (see Figure 15).

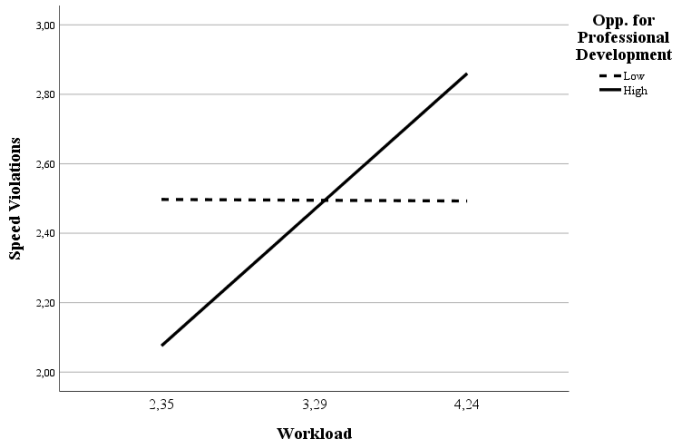

Figure 15. Moderation Effect of Opp. For Professional Development on the Emotional Dissonance and Speed Violations Relationship

CHAPTER 4

DISCUSSION

The present study aimed to be the first comprehensive study to establish a link between job demands, job resources, and riding behaviors in motorcycle couriers. This study, which was conducted by collecting job demands, job resources, and riding behaviors data from a Turkish delivery rider sample, aimed to investigate the relationships between the variables of interest in detail with the aim that future studies could benefit from the results while trying to understand the special group that is delivery riders.

In line with previous literature (e.g., Nguyen-Phuoc et al., 2022; Nguyen-Phuoc et al., 2023), the results of the present study showed that the basic variables of job demands, and job resources were found to be related to rider behaviors in professional riding settings. With the intention of examining the relationships between job demands, resources and riding behaviors; explanatory analyses such as basic descriptive analysis, regression analysis, and moderation analysis featuring job demands and job resources were conducted. The results revealed multiple significant relationships between job demands and riding behaviors, job resources and riding behaviors, and along the interaction of job demands and resources on riding behaviors. This study also presented the findings that job resources had different levels of effects on several job demands and riding behaviors relationships within a motorcycle courier sample. The discussions regarding the interpretation of the study's results are further elaborated in this chapter.

4.1. Interpretation of the Results

4.1.1. Results for the Bivariate Correlation Analysis

As the result of the bivariate correlation analysis, various significant results were obtained. The demographic variables that were found to be the most frequently

significantly correlated (i.e., age, overall riding experience in years and courier experience in years) with the variables of main interest (job demands, job resources and riding behaviors) were marked critical for deeper considerations in subsequent analyses. For instance, age was negatively correlated with emotional dissonance, supervisory coaching, speed violations, and stunts. Overall rider experience in years was negatively correlated with supervisory coaching and stunts. Courier experience in years was positively correlated with workload, opportunities for professional development; and negatively correlated with stunts.

In addition to the variables deemed to be critical, it was also found that education level was positively correlated with social support. Duration of license ownership was positively correlated with workload, supervisory coaching; and negatively correlated with stunts. Work frequency per week was negatively correlated with speed violations. Work hours per day was positively correlated with workload and speed violations. Overall rider experience in km was negatively correlated with social support. Active accidents were positively correlated with emotional demands, emotional dissonance, supervisory coaching, and speed violations; and negatively correlated with autonomy, and opportunities for professional development. Passive accidents were positively correlated with control errors; and negatively correlated with autonomy.

Concerning the job demands dimensions, it was found that the workload dimension was positively correlated with traffic errors, control errors, and speed violations. The emotional demands dimension was positively correlated with traffic errors, control errors, and speed violations. The emotional dissonance dimension was positively correlated with traffic errors and control errors. The organizational changes dimension was positively correlated with traffic errors and control errors. Furthermore, job resources dimensions were also found to be related to riding behaviors in this analysis. For instance, the autonomy dimension was negatively correlated with traffic errors and control errors. The social support dimension was positively correlated with safety equipment use. The supervisory coaching dimension was positively correlated with traffic errors, control errors, speed violations, and stunts. However, the opportunities for professional development dimension was not

found to be correlated with any of the investigated riding behaviors. Deriving from the results of the bivariate correlations analysis, it is concluded that demographic variables, job demands, and job resources are related to rider behaviors. The results, which are in line with the existing literature, indicate that the concerning significant relationships need and deserve more detailed investigation.

4.1.2. Results for the Hierarchical Regression Analysis

In addition to the basic correlations, regression analyses were conducted to understand the details of the relationships between study variables. In the analyses, age and exposure were controlled for their statistical effects. The reason why these variables were chosen as controls was due to their correlative relationships with the main study variables, and the reported demographics of the study group (Tuncer, 2020; "Türkiye'de", 2023). To offer more contextual information, the increased popularity of motorcycle courier work is often associated with the rising rates of unemployment and economic hardships experienced by some during the COVID-19 pandemic period. Individuals who lost their jobs during or after the pandemic entered the courier workforce as a quick and relatively easy way to earn money. University students with financial problems, young people who did not choose to go to university after high school, or who quit their studies because of economic problems became interested in working as motorcycle couriers. Some of these individuals even obtained their motorcycle licenses specifically to start working as couriers. This situation entailed a significant number of inexperienced individuals entering a fast-paced profession where they needed to ensure their safety in traffic while fulfilling high company demands. Therefore, it was essential to control the possible effects age, experience, and exposure factors could have had on the relationships between job demands, job resources and riding behaviors.

According to the hierarchical regression analyses, job demands significantly predicted traffic errors, control errors, and safety equipment use. The results of hierarchical analyses between job demands and riding behaviors suggest that as the job demands of motorcycle couriers increase, their engagement in traffic errors, and control errors also increase. Moreover, as job demands increase, the delivery riders'

engagement in safety equipment use decrease. The present study confirmed that the emotional, mental and physical costs that were previously associated with experiencing high workload, time pressure, and intense emotions during work (Galy et al., 2012; Ghavanati et al., 2019; Yu et al., 2013) were also influential over the riding behaviors of delivery riders (Nguyen-Phuoc et al., 2022; Nguyen-Phuoc et al., 2023). However, this study uniquely contributes to the existing literature by examining the detailed relationships between individual job demands dimensions and riding behaviors.

Furthermore, job resources significantly predicted traffic errors, control errors, speed violations, and stunts. The results of hierarchical analyses between job resources and riding behaviors suggest that as the autonomy, social support and opportunities for professional dimensions' increase, the delivery riders' engagement in traffic errors, control errors, speed violations, and stunts decrease. The presence of job resources was also found to facilitate the use of safety equipment. Studies reported by Parker et al. (2001), Xiu et al. (2019), and Crundall et al. (2014) are in accordance with the results found in the current study. However, the unexpected result of supervisory coaching positively predicting traffic errors analyses, control errors, speed violations, and stunts revealed by the regression analyses seems to be in contradiction with previous research. For instance, the study reported by Amoadu et al. (2023) identified lack of supervisor support as predictors of risky behaviors in professional drivers. Wilk and Moynihan (2005) and Whitman et al. (2022) reported that negative supervisor relationships or lack of supervisor support were associated with emotional costs and consequent negative behaviors at work. The current results contrast with the results of the previous studies by suggesting that increased supervisory coaching (hence, increased supervisory support) rather contributes to aberrant riding behaviors, not safe riding behaviors. Moreover, not only was supervisory coaching found to be a predictor of aberrant riding behaviors but it was also found to be the strongest predictor among the job resources dimensions.

Since the conclusion of a direct relationship between the supervisory coaching and aberrant riding behaviors does not seem quite so straightforward, it can be speculated that these relationships may be mediated by a variable not measured in this study.

Deriving from the results of the study conducted by Wu et al. (2013) which reported that workload demands from supervisors predicted workers' emotional exhaustion and the results of the current study, it may be speculated that the supervisors' positive relationships with their employees may make it easier for them to impose and expect compliance with high levels of workload from their subordinates. In support of this suggestion, Kim and Tak (2010) found that the relationship between job demands and job stress was moderated by team relationship oriented culture, and that consideration by supervisors was significantly correlated with team relationship oriented culture; and Van Yperen and Hagedoorn (2003) found that social support provided high levels of intrinsic motivation, regardless of job demands.

Considering that the distinct results between supervisory coaching and aberrant riding behaviors were obtained from a Turkish sample, it may be worthwhile to include cultural variables such as shared values and attitudes between the members of the profession and organizational safety culture in future studies when investigating these relationships in detail. Personality variables such as intrinsic motivation, social norms regarding the profession, and risk perceptions should be also investigated in relation to supervisory coaching and aberrant riding behaviors in delivery riders in order to explain the relationships in more definite terms.

4.1.3. Results for the Moderation Analyses

Demerouti et al. (2001), Baeriswyl et al. (2017), Xiu et al. (2019), and Han et al. (2023) found that job resources could play a role as buffers when investigating the negative effects of job demands on work outcomes. Accordingly, moderation analyses were conducted to confirm or deny possible buffering roles of job resources on the job demands and riding behaviors relationships within a delivery rider sample. In this respect, job resources dimensions (i.e., autonomy, social support, supervisory coaching, and opportunities for professional development) were assessed as moderators between job demands and riding behaviors relationships.

The moderation analyses indicated that different types and levels of job resources are affecting the relationship between different types of job demands riding behaviors of

motorcycle couriers. The autonomy dimension was found to significantly moderate the positive relationship between emotional demands and traffic errors. When the worker has control over their work processes and decisions, their level of engagement in traffic errors is determined by the level of emotional demands they experience. Therefore, when they have high work autonomy, and experience high levels of emotional demands, they engage in the highest level of traffic errors. When they have high work autonomy, and experience low levels of emotional demands, they engage in the lowest level of traffic errors. These findings indicate an enhancing effect of autonomy on the emotional demands and traffic errors relationship. Similar interaction patterns were also observed with the autonomy dimension's effect on workload and speed violations relationship, and workload and stunts relationship. When the worker has control over their work processes and decisions, their level of engagement in speed violations and stunts is determined by the amount and urgency of work they must complete. Therefore, when they have high work autonomy, and experience high levels of workload, they engage in the highest levels of speed violations and stunts. When they have high work autonomy, and experience low levels of workload, they engage in the lowest levels of speed violations and stunts. These findings indicate an enhancing effect of autonomy on the workload and speed violations relationship, and the workload and stunts relationship.

The autonomy dimension was also found to significantly moderate the negative relationship between workload and safety equipment use, and between emotional demands and safety equipment use. When the worker has control over their work processes and decisions, their level of engagement in safety equipment use is determined by the level of workload and emotional demands they experience. Therefore, when they have high work autonomy, and experience low levels of workload or emotional demands, they engage in the highest levels of safety equipment use. When they have high work autonomy, and experience high levels of workload or emotional demands, they engage in the lowest levels of safety equipment use. These findings indicate an enhancing effect of autonomy on the workload and safety equipment use relationship, and the emotional demands and safety equipment use relationships. Therefore, it can be concluded that high levels of

autonomy in delivery riders can serve as a facilitator of both safe riding behaviors and aberrant riding behaviors, depending on the level of job demands.

The social support dimension was found to significantly moderate the positive relationships between organizational changes and control errors, emotional demands and speed violations, and workload and stunts. When the worker lacks social support from their coworkers, their level of engagement in control errors, speed violations, and stunts is determined by the level of organizational changes, emotional demands, and workload they experience. Therefore, when they have low social support, and experience high levels of organizational changes, emotional demands or workload, they engage in the highest levels of control errors, speed violations, and stunts (respectively). When they have high levels of social support, and experience low levels of organizational changes, emotional demands or workload, they engage in the lowest levels of control errors, speed violations, and stunts (respectively). These findings indicate a buffering effect of social support on the organizational changes and control errors, emotional demands and speed violations, and workload and stunts relationships.

The social support dimension was found to significantly moderate the positive relationship between organizational changes and stunts. The worker's level of engagement in stunts is determined by both the level of emotional demands they experience and the level of social support. When they have low social support, and experience high levels of organizational changes, they engage in the highest level of stunts. When they have high levels of social support, and experience high levels of organizational changes, they engage in the lowest level of stunts. These findings indicate a buffering effect of social support on the organizational changes and stunts relationship. Lastly, the social support dimension was found to significantly moderate the positive relationship between emotional dissonance and safety equipment use. When they have high social support, and experience high levels of emotional dissonance, they engage in the highest level of safety equipment use. When they have low levels of social support, and experience high levels of emotional dissonance, they engage in the lowest level of stunts. These findings indicate an enhancing effect of social support on the emotional dissonance and safety equipment

use relationship. Therefore, it can be concluded that high levels of social support in delivery riders offers sufficient emotional and psychological support that the relationship between job demands and aberrant riding behaviors is weakened by it. These results are in line with the findings of Baeriswyl et al. (2017), Xiu et al. (2019), and Han et al. (2023).

The supervisory coaching dimension was found to significantly moderate the positive relationship between organizational changes and traffic errors. When the worker has supervisory support and concern, their level of engagement in traffic errors is determined by the level of organizational changes they experience. Therefore, when they have high levels of supervisory coaching, and experience high levels of organizational changes, they engage in the highest levels of traffic errors. When they have low levels of supervisory coaching, and experience low levels of organizational changes, they engage in the lowest levels of traffic errors. These findings indicate an enhancing effect of supervisory coaching on the organizational changes and traffic errors relationship.

Supervisory coaching was also found to significantly moderate the negative relationship between workload and safety equipment use, and emotional demands and safety equipment use. When the worker has supervisory support and concern, their level of engagement in safety equipment use is determined by the level of workload and emotional demands they experience. Therefore, when they have high levels of supervisory coaching, and experience low levels of workload or emotional demands, they engage in the highest levels of safety equipment use. When they have high levels of supervisory coaching, and experience high levels of workload or emotional demands, they engage in the lowest levels of safety equipment use. These findings indicate an enhancing effect of supervisory coaching on the workload and safety equipment use relationship, and the emotional demands and safety equipment use relationships. Therefore, it can be concluded that high levels of supervisory coaching in delivery riders can serve as a facilitator of both safe riding behaviors and aberrant riding behaviors, depending on the level of job demands. In this sense, the supervisory coaching and autonomy dimensions show similar patterns on the job demands and riding behaviors relationships.

The opportunities for professional development dimension was found to significantly moderate the positive relationship between workload and speed violations. When the worker has more opportunities for professional development, their level of engagement in speed violations is determined by the level of workload they experience. Therefore, when they have high levels of opportunities for professional development, and experience high levels of workload, they engage in the highest level of speed violations. When they have high levels of opportunities for professional development, and experience low levels of workload, they engage in the lowest level of speed violations. These findings indicate an enhancing effect of opportunities for professional development on the workload and speed violations relationship.

Finally, the opportunities for professional development dimension was found to significantly moderate the positive relationship between emotional dissonance and safety equipment use. When the worker has less opportunities for professional development, their level of engagement in safety equipment use is determined by the level of emotional dissonance they experience. Therefore, when they have low levels of opportunities for professional development, and experience high levels of emotional dissonance, they engage in the highest level of safety equipment use. When they have low levels of opportunities for professional development, and experience low levels of emotional dissonance, they engage in the lowest level of safety equipment use. These findings indicate an enhancing effect of opportunities for professional development on the emotional dissonance and safety equipment use relationship. Therefore, it can be concluded that high levels of opportunities for professional development can both reinforce the relationship between job demands and aberrant riding behaviors, but also the relationship between job demands and safe riding behaviors (i.e., safety equipment use).

4.2. Critical Remarks

The first critical issue to discuss is the sample size and characteristics of the present study. Although a G*Power analysis (Faul et al., 2007) conducted to reveal the ideal sample size confirmed that the final sample size of the study was sufficient for the

analyses conducted in the study, a bigger sample size could have yielded more confident results.

The critical issues regarding the methodology of the study should also be discussed. First, the data of the study was collected through self-reports. The social desirability bias is often associated with the self-report method (Paulhus, 1991). Although the online nature of the study somewhat secured the anonymity of the participants, some participants may have altered their responses in order to make sure that they would obtain the gift card, supposing that desirable answers would be more favored by the researchers.

Second, all the participants who participated in the study were men. Although men are more represented in the motorcycle courier population, there is a need to collect more data from female motorcycle couriers in order to investigate whether possible gender-related effects on the investigated variables. Supporting this line of suggestion, De La Vega et al. (2022) found that there were gender differences regarding the fatigue levels in professional drivers.

Third, the study was a cross-sectional study. Collecting data at only one time-point decreases the generalizability of the results (Wang & Cheng, 2020). Moreover, the protests carried out by motorcycle couriers during the data collection process of this study (‘Siteye motorla’, 2022; Fıstık, 2023; Kaplan, 2023) may be an indicator towards slightly skewed data regarding job demands and job resources.

Finally, the study applied a generic measure of job demands and resources. However, previous literature suggested that profession specific measures could yield more confident results. According to Brough and Briggs (2013), job-specific job demands and resources measures could serve to explain higher variances for effects compared to generic job demands measures. And according to De Croon et al. (2002), job-specific job demand measures can be more effective in explaining job demands for specific professions. The use of a generic measure could have limited the explanation of the effect of job demands and resources on aberrant riding behaviors.

4.3. General Evaluation of the Findings and Recommendations for Future Studies

After mentioning about the general discussions regarding specific findings and critical remarks of the study, general evaluations and suggestions for the future work should be mentioned. When interpreting the results, certain elements that may affect the validity of the study should be kept in mind. For instance, the MRBQ does not measure some of the risky riding behaviors associated with motorcycle couriers, such as riding in the opposed direction of the road, riding on pavements, and using mobile phones while riding (Nguyen-Phuoc et al., 2023). Furthermore, Chouhan et al. (2023) speculates that the MRBQ might have a lower crash prediction ability. The combination of the MRBQ with the risky behaviors associated with motorcycle couriers that were listed previously may yield a more robust measure for the evaluation of risky riding behaviors in delivery riders.

Reservations towards the interpretation of stunts results may also be needed. The results indicated a significant relationship between job resources and stunts. 93.3% of the participants indicated that they rode motorcycles outside of work purposes as well as riding during work hours. Since the MRBQ measures the frequency of behaviors within the past year, the participants might have answered some of the questions in consideration of their off-work riding behaviors as well. Therefore, concluding that stunts, intentionally dangerous behaviors that could be considered somewhat extreme (e.g., racing other vehicles in traffic), would predict work behavior may be somewhat reductive. It must be acknowledged that some of the riding behaviors measured in the study may not correspond directly to on the clock riding behaviors.

It should also be noted that the lowest internal consistency among all measures was for control errors ($\alpha = .55$). The consistencies for other dimensions of the MBRQ were .82 (traffic errors), .88 (speed violations), .78 (stunts), and .72 (safety equipment). In the original study for the MRBQ, the internal consistencies for the factors were .84 for traffic errors, .73 for control errors, .87 for speed violations, .81 for stunts, and .70 for safety equipment (Elliott et al., 2007). In the study the MRBQ

was translated to Turkish for, the internal consistencies of the MRBQ dimensions were .85 for traffic errors, .62 for control errors, .88 for speed violations, .77 for stunts, and .80 for safety equipment (Özkan et al., 2012). The lower value for the internal consistency of the control errors factor could be attributed to the lower number of items it has. The relatively low internal consistency score for control errors could also argued to be the result of the type of motorcycles riders that is more represented in the study sample, who were not the main type of motorcycle riders the MRBQ was developed to assess. In this study, 69.6% of the participants indicated that they rode an automatic transmission motorcycle. However, most of the items in the MRBQ that measure control errors are related to the control of a manual transmission motorcycle. The original control error items might have failed to successfully assess the control errors of automatic transmission users.

Although this study offered scientific support for the link between work-related stressors, resources, and riding behaviors of motorcycle couriers; organizational demands and work structures are hardly the only components of the fast-delivery service industry which play a role on the safety of delivery riders. Customer demands for fast service endorse the fast-paced and busy system that undermines the safety of delivery riders. The lack of governmental regulation regarding the safety and legal rights of delivery riders also undermine the efforts to establish a safe and regulated work structure for them. The Turkish Couriers' Rights Association claims that the categorization of motorcycle delivery services as a 'highly dangerous occupation', and the enforcement of work competency certification for delivery riders will aid in the endeavor of establishing courier safety ('Kurye Hakları Derneği'nden', 2023). Hence, it can be concluded that the true comprehension of delivery rider safety can only be achieved through the adoption of a systematic approach that will incorporate the rider factor, the organization factor and the customer factor is needed in the future.

Based on the previous literature and the results of the present study, it could be suggested that future studies focusing on the job demands and resources of motorcycle couriers could focus on using a more job-specific job demands and resources measures. Such a measure could inquire about the time pressure directly

related to the delivery of orders, specific emotional demands involved in being a courier, and organizational structure variables that are more fit for delivery rider profession. The buffer and facilitation effects of job resources on the job demands of motorcycle couriers should also be explored further.

Distinguishing on-work riding behaviors and off-work riding behaviors in motorcycle couriers could prevent the spillover effects of off-work behaviors when examining the influence of work factors on riding behaviors. In addition, implementing a more job-specific risky riding behavior measure alongside the MRBQ could aid in drawing a more comprehensive picture of risky riding behaviors of delivery riders in future studies. Future studies that investigate the relationship between motorcycle couriers' risky riding behaviors, and crash involvement must evaluate the violations regularly committed by couriers, which are not measured by the MRBQ. For instance, Christie and Ward (2023) reported that 57% of freelance delivery riders mentioned about being distracted by their mobile phones. In the fast-delivery profession, mobile phones are incremental in tracking delivery processes and customer addresses. The exclusion of a mobile phone use while riding measure could prevent researchers from collecting valuable information, as well as preventing organizations and regulatory bodies from implementing safe mobile phone use practices when reinforcing rider safety.

As some of the results (e.g., results associated with supervisory coaching) require more in depth exploration; personality variables, culture variables, and organizational safety culture measures could be integrated into research models in future studies. The recommendation for the involvement of personality variables are supported by the literature. For example, Györkös et al.'s (2012) review of job demands and job stress related literature concluded that personality characteristics and culture variables cannot be overlooked when examining this relationship. Furthermore, individual characteristics such as personality social norms and risk perceptions were found to be significantly associated with riding behaviors (Falco et al., 2013). Ali et al. (2010) also reported that helmet use rate in employed motorcycle riders was associated with helmet use intentions, subjective norms, and attitude. Additionally, the fatigue factor and associated mental and physical impairments in motorcycle

couriers should be examined as well. This recommendation is supported by the professional driver literature (Desmond & Matthews, 2009; Meng et al., 2015; Davidovic et al, 2018).

In addition, attaining a bigger sample size than this study's sample size could yield more valid results for these purposes. Also, the sample characteristics could be more diverse by including more female couriers, independently working couriers and payroll employees. Exploration of different modes of employment on the relationship between job demands, resources and aberrant riding behaviors could reveal different levels of association. For instance, Hessels et al. (2017) found that there was negative relationship between self-employment and job stress.

Finally, the interaction of delivery riders with other road users (e.g., automobile drivers or truck drivers) in traffic should be examined further. Such an examination could provide information on how these interactions could be made safer for both sides.

4.4. Implications for Fast-Delivery Services

The previous literature and the results of this study suggest that the job demands associated with psychological, emotional and physical costs have a significant effect on delivery riders' aberrant behaviors in traffic. As the companies put pressure on couriers to make deliveries on time, and as the hourly rate or pay per package system puts pressure on employees to work for long hours without taking adequate breaks, the couriers become more vulnerable by experiencing errors and engaging in violations that could compromise their safety in traffic. Deriving from the results of this study, the healthy regulation of job tasks, emotional demands and organizational changes, and the implementation of a safety-oriented organizational culture could help in facilitating motorcycle couriers' traffic safety.

Fast-delivery companies should be the first to administer regulation for their workers. Specific organizational practices should be adopted to integrate the findings of scientific studies. For example, special programs that would regulate the

facilitating effects of supervisory coaching on aberrant riding behaviors could be implemented. The results of this study suggest that supervisors need to be educated and enlightened as to the implications of their relationships with their subordinates and their safety outcomes. The relationship between supervisors and delivery riders could also be closely monitored. Another specific practice for fast-delivery companies to adopt could be fostering the social support networks between delivery riders. Riders could be encouraged to develop social relationships with their coworkers. Fast-delivery companies and motorcycle couriers could also benefit from safety education regarding their behaviors in traffic. Yu and Tsai's (2021) study supports this recommendation, as they reported that safety education for motorcycle riders decreased likelihoods of traffic violation, offences and accidents.

In the case that fast-delivery companies fail to take initiative to boost rider safety, the riders' safety should be protected by proper legislation and policing. The first step at implementing the regulation of motorcycle courier could be declaring the status of motorcycle delivery profession as a highly dangerous profession. Furthermore, individuals who want to work as motorcycle couriers should be obligated to acquire formal certification, and employers in the industry should be forced to check for certification. In doing so, exploitation of underage and illegal migrant motorcycle couriers could also be regulated.

4.5. Conclusion

As indicated previously, the aim of the present study was to examine the relationship between job demands, job resources and aberrant riding behaviors of motorcycle couriers (also known as 'delivery riders') from a comprehensive perspective for the first time in the literature. The aim of studying this relationship was encouraged by the fact that increased demand for fast-delivery services increased in the past couple of years, and more individuals joined the motorcycle courier workforce. Proportional to the increase in the workforce, traffic accidents involving motorcycle couriers also increased. Therefore, a need for inquiry into the aberrant behaviors of motorcycle couriers in traffic (as they are highly associated with crash involvement) gave rise. Results showed that both job demands and job resources are related to motorcycle

couriers' riding behaviors. Correlation, regression and moderation analyses showed that different types of demands and resources in work settings are in relation to different factors of rider behaviors. Additionally, it was found that different types and levels of job resources are affecting the relationship between different types of job demands riding behaviors of motorcycle couriers. The results of the present study are thought to be providing a base for future studies aiming to focus on this specific vulnerable road user group whose critical role in traffic safety is increasing day by day.

REFERENCES

2021 yılında en az 30 moto kurye, iş cinayetlerinde yaşamını yitirdi. (2022, January 2). *Cumhuriyet*. https://www.cumhuriyet.com.tr/turkiye/2021-yilinda-en-az-30-moto-kurye-is-cinayetlerinde-yasamini-yitirdi-1897196

Amoadu, M., Ansah, E. W., & Sarfo, J. O. (2023). Psychosocial work factors, road traffic accidents and risky driving behaviours in low-and middle-income countries: A scoping review. *Journal of the International Association of Traffic and Safety Sciences, 47(2), 240-250.* https://doi.org/10.1016/j.iatssr.2023.03.005

Ali, M., Saeed, M. M., Ali, M. M., & Haidar, N. (2011). Determinants of helmet use behaviour among employed motorcycle riders in Yazd, Iran based on theory of planned behaviour. *Injury*, *42*(9), 864–869. https://doi.org/10.1016/j.injury.2010.08.030

Baeriswyl, S., Krause, A., Elfering, A., & Berset, M. (2017). How workload and coworker support relate to emotional exhaustion: The mediating role of sickness presenteeism. *International Journal of Stress Management, 24*(Suppl 1), 52–73. https://doi.org/10.1037/str0000018

Bakker, A. B., & Demerouti, E. (2018). Multiple levels in job demands-resources theory: implications for employee well-being and performance. In E. Diener, S. Oishi & L. Tay (Eds.). *Handbook of well-being*. Salt Lake City, UT: DEF Publishers.

Bazazan, A., Noman, Y., Norouzi, H., Maleki-Ghahfarokhi, A., Sarbakhsh, P., & Dianat, I. (2023). Physical and psychological job demands and fatigue experience among offshore workers. *Heliyon*, *9*(6), e16441. https://doi.org/10.1016/j.heliyon.2023.e16441

Bronkhorst B. (2015). Behaving safely under pressure: The effects of job demands, resources, and safety climate on employee physical and psychosocial safety behavior. *Journal of Safety Research*, *55*, 63–72. https://doi.org/10.1016/j.jsr.2015.09.002

Brough, P., & Biggs, A. (2013). Job Demands × Job Control Interaction Effects: Do Occupation-specific Job Demands Increase their Occurrence? *Stress and Health, 31*(2), 138-149. https://doi.org/10.1002/smi.2537

Buunk, B.P., de Jong, J., Ybema, J.F., & Wolff, C.J. (1998). Psychosocial aspects of occupational stress. In P.J.D. Drenth, H. Thierry, C.J. de Wolff (Eds.), *Handbook of work and organizational psychology* (pp. 145-182). Hove, UK: Psychology Press.

Calatayud, E., Lozano-Berges, G., Peralta-Marrupe, P., Latorre, E., & Gomez-Soria, I. (2022). Job Demands May Determine Cognitive and Physical Aging After Retirement. *Journal of Applied Gerontology: The Official Journal of the Southern Gerontological Society, 41*(12), 2435–2446. https://doi.org/10.1177/07334648221120080

Chang, H.L., & Yeh, T.H. (2007). Motorcyclist accident involvement by age, gender, and risky behaviors in Taipei, Taiwan. *Transportation Research Part F: Traffic Psychology and Behaviour, 10*(2), 109-122. https://doi.org/10.1016/j.trf.2006.08.001

Chen C. F. (2023). Investigating the Effects of Job Stress on the Distraction and Risky Driving Behaviors of Food Delivery Motorcycle Riders. *Safety and Health at Work, 14*(2), 207–214. https://doi.org/10.1016/j.shaw.2023.03.004

Chen, Y., Li, S., Xia, Q., & He, C. (2017). The Relationship between Job Demands and Employees' Counterproductive Work Behaviors: The Mediating Effect of Psychological Detachment and Job Anxiety. *Frontiers in Psychology, 8.* https://doi.org/10.3389/fpsyg.2017.01890

Chouhan, S.S., Kathuria, A., & Sekhar, C.R. (2021). Examining risky riding behavior in India using Motorcycle rider behavior questionnaire. *Accident Analysis and Prevention, 160.* https://doi.org/10.1016/j.aap.2021.106312

Chouhan, S.S., Kathuria A., & Sekhar, C.R. (2023). The motorcycle rider behaviour questionnaire as a predictor of crashes: A systematic review and meta-analysis. International Association of Traffic and Safety Sciences, 47(1), 61-72. https://doi.org/10.1016/j.iatssr.2023.01.004

Christie, N., & Ward, H. (2023). Delivering hot food on motorcycles: A mixed method study of the impact of business model on rider behaviour and safety. *Safety Science, 158*. https://doi.org/10.1016/j.ssci.2022.105991

Crundall, D., van Loon, E., Stedmon, A. W., & Crundall, E. (2013). Motorcycling experience and hazard perception. *Accident Analysis and Prevention*, *50*, 456–464. https://doi.org/10.1016/j.aap.2012.05.021

Crundall, D., Stedmon, A. W., Crundall, E., & Saikayasit, R. (2014). The role of experience and advanced training on performance in a motorcycle simulator. *Accident Analysis and Prevention*, *73*, 81–90. https://doi.org/10.1016/j.aap.2014.08.009

Davidovic, J., Pešic, D., & Antic, B. (2018). Professional drivers' fatigue as a problem of the modern era. *Transportation Research Part F: Traffic Psychology and Behaviour, 55*, 199-209. https://doi.org/10.1016/j.trf.2018.03.010

De Croon, E. M., Blonk, R. W., de Zwart, B. C., Frings-Dresen, M. H., & Broersen, J. P. (2002). Job stress, fatigue, and job dissatisfaction in Dutch lorry drivers: towards an occupation specific model of job demands and control. *Occupational and Environmental Medicine, 59*(6), 356–361. https://doi.org/10.1136/oem.59.6.356

Defossez, D. (2020). The employment status of food delivery riders in Europe and the UK: Self-employed or worker? Maastricht Journal of European and Comparative Law, 29(1). https://doi.org/10.1177/1023263X211051833

De Lange, A. H., Kompier, M. A., Taris, T. W., Geurts, S. A., Beckers, D. G., Houtman, I. L., & Bongers, P. M. (2009). A hard day's night: a longitudinal study on the relationships among job demands and job control, sleep quality and fatigue. *Journal of Sleep Research, 18*(3), 374–383. https://doi.org/10.1111/j.1365-2869.2009.00735.x

Demerouti, E., Bakker, A. B., Nachreiner, F., & Schaufeli, W. B. (2001). The job demands-resources model of burnout. *The Journal of Applied Psychology, 86*(3), 499–512. https://doi.org/10.1037/0021-9010.86.3.499

De La Vega, R., Anabalon, H., Tannion, K., Purto, K., & Cristian Jara, D. (2022). Gender differences in professional drivers' fatigue level measured with BAlert mobile app: A psychophysiological, time efficient, accessible, and innovative approach to fatigue management. *Frontiers in Psychology, 13*. https://doi.org/10.3389/fpsyg.2022.953959

De Neve, J.E., Diener, E., Tay, L., & Xuereb, C. (2013). The Objective Benefits of Subjective Well-Being. In J. Helliwell, R. Layard & J. Sachs (Eds.). *World*

Happiness Report 2013. New York, USA: UN Sustainable Development Solutions Network.

Desmond, P.A., & Matthews, G. (2009). Individual differences in stress and fatigue in two field studies of driving. Transportation Research Part F: Traffic Psychology and Behaviour, 12(4), 265-276. https://doi.org/10.1016/j.trf.2008.12.006

Dorn, L. & Brown, B. (2003). Making sense of invulnerability at work—a qualitative study of police drivers. *Safety Science, 41*, 837-859. http://dx.doi.org/10.1016/S0925-7535(02)00036-X

Elliott, M. A., Baughan, C. J., & Sexton, B. F. (2007). Errors and violations in relation to motorcyclists' crash risk. *Accident Analysis and Prevention, 39*(3), 491–499. https://doi.org/10.1016/j.aap.2006.08.012

Falco, A., Piccirelli, A., Girardi, D., Dal Corso, L., & De Carlo, N. A. (2013). Risky riding behavior on two wheels: the role of cognitive, social, and personality variables among young adolescents. *Journal of Safety Research, 46*, 47–57. https://doi.org/10.1016/j.jsr.2013.03.002

Faul, F., Erdfelder, E., Lang, A.-G., & Buchner, A. (2007). G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods, 39*(2), 175–191. https://doi.org/10.3758/BF03193146

Fıstık, F. (2023, January 16). TrendyolGO çalışanı kuryeler İstanbul'da iş bıraktı. *Sözcü*. https://www.sozcu.com.tr/2023/ekonomi/trendyolgo-calisani-kuryeler-istanbulda-is-birakti-7558453/

Future Market Insights. (2023, August). *Online Food Delivery Services Market*. https://www.futuremarketinsights.com/reports/online-food-delivery-services-market

Galy, E., Cariou, M., & Melan, C. (2012). What is the relationship between mental workload factors and cognitive load types? International Journal of Psychophysiology, 83(3), 269-275. https://doi.org/10.1016/j.ijpsycho.2011.09.023

Györkös, C., Becker, J., Massoudi, K., de Bruin, G. P., & Rossier, J. (2012). The impact of personality and culture on the job demands-control model of job

stress. *Swiss Journal of Psychology, 71*(1), 21–28. https://doi.org/10.1024/1421-0185/a000065

Haas, E., Ryan, M., & Hoebbel, C. (2018). Job Autonomy & Safety Climate: Examining Associations in the Mining Industry. *Professional Safety, 63*(12), 30–34.

Halpern, M., Skovron, M.L., & Nording, M. (1997). Employee-rated job demands: Implications for prevention of occupational back injuries. *International Journal of Industrial Ergonomics, 20*(2), 145-153. https://doi.org/10.1016/S0169-8141(96)00047-9

Han, Y., Lee, S.H., Hur, W.M., & Le, H.S. (2023). The mixed blessing of coworker support: understanding family-work conflict, emotional exhaustion, and job satisfaction. *Baltic Journal of Management, 18*(2), 141-156. https://doi.org/10.1108/BJM-04-2022-0137

Hansez, I., & Chmiel, N. (2010). Safety behavior: Job demands, job resources, and perceived management commitment to safety. *Journal of Occupational Health Psychology, 15*(3), 267–278. https://doi.org/10.1037/a0019528

Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach.* Guilford Press.

Hessels, J., Rietveid, C.A., & van der Zwan, P. (2017). Self-employment and work-related stress: The mediating role of job control and job demand. *Journal of Business Venturing, 32*(2), 178-196. https://doi.org/10.1016/j.jbusvent.2016.10.007

Hosking, S. G., Liu, C. C., & Bayly, M. (2010). The visual search patterns and hazard responses of experienced and inexperienced motorcycle riders. *Accident Analysis and Prevention, 42*(1), 196–202. https://doi.org/10.1016/j.aap.2009.07.023

Houston, D. J. (2011). Motorcyclists. In B. E. Porter (Ed.), *Handbook of traffic psychology* (pp. 375–387). London, UK: Elsevier Academic Press.

Huang, H. (2021). Riders on the Storm: Amplified Platform Precarity and the Impact of COVID-19 on Online Food-delivery Drivers in China. Journal of Contemporary Chine, 31(135), 351-165. https://doi.org/10.1080/10670564.2021.1966895

IBM (2019). IBM SPSS Statistics for Windows, Version 26.0. Armonk, NY: IBM Corp.

İstanbul Valiliği'nden 'motokurye' kararı. (2021, November 29). *Gerçek Gündem*. https://www.gercekgundem.com/guncel/315380/istanbul-valiliginden-motokurye-karari

İstanbul Valiliği'nden 'motokurye' kararı: Saat 18.00'den sonra yasak! (2023, February 5). *Cumhuriyet.* https://www.cumhuriyet.com.tr/turkiye/son-dakika-istanbul-valiliginden-motokurye-karari-saat-1800den-sonra-yasak-2048463

İşçi Sağlığı ve İş Güvenliği Meclisi (2022, January 10). 2021 yılında en az 2170 işçi iş cinayetlerinde hayatını kaybetti...http://www.isigmeclisi.org/20722-2021-yilinda-en-az-2170-isci-is-cinayetlerinde-hayatini-kaybetti

İzmir Valiliği duyurdu! Motosiklet ve scooter yasağı iptal oldu. (2022, April 2). *Yeni Asır.* https://www.yeniasir.com.tr/izmir/2022/04/02/izmir-valiligi-duyurdu-motosiklet-ve-scooter-yasagi-iptal-oldu

Jalilian, H., Shouroki, F. K., Azmoon, H., Rostamabadi, A., & Choobineh, A. (2019). Relationship between Job Stress and Fatigue Based on Job Demand-control-support Model in Hospital Nurses. International *Journal of Preventive Medicine, 10*. https://doi.org/10.4103/ijpvm.IJPVM_178_1

Kamari Ghanavati, F., Choobineh, A., Keshavarzi, S., Nasihatkon, A. A., & Jafari Roodbandi, A. S. (2019). Assessment of mental workload and its association with work ability in control room operators. *La Medicina del lavoro, 110*(5), 389–397. https://doi.org/10.23749/mdl.v110i5.8115

Kaplan, N. (2023, January 20). 'Eylem dalgası' kapıda: Kurye kuryeyle, kurye zamanla, zaman Azrail ile yarışıyor. *Gazete Duvar*. https://www.gazeteduvar.com.tr/eylem-dalgasi-kapida-kurye-kuryeyle-kurye-zamanla-zaman-azrail-ile-yarisiyor-haber-1599199

Karasek, R.A. (1979) Job demands, job decision latitude, and mental strain: Implications for job redesign. *Administrative Science Quarterly, 24*, 285-307. http://dx.doi.org/10.2307/2392498

Kavurmacı, A. (2023). Moto Kuryelerin Çalışma Koşullarını İyileştirecek Faktörlerin Belirlenmesi: Nitel Bir Araştırma. *Sosyal Güvenlik Dergisi, 13*(1), 33-54. https://doi.org/10.32331/sgd.1318002

Kaya, G., Akgündüz, Y., Ahi, B. (2022). İzmir'deki Franchising Restoranlarda Motokuryeler: İş İlişkileri, Sorunlari ve Beklentileri. International Journal of Human Studies, 5(10), 342-366. https://doi.org/10.35235/uicd.1173038

Kim, H.H., & Tak, J. (2010). The Moderating Effect of Team Relationship Oriented Climate on the Relationship between Job Demand and Job Stress. Korean Journal of Applied Statistics, 23(3), 559-571. https://doi.org/10.5351/KJAS.2010.23.3.559

Ko, Y. K., Jeong, S. H., & Yu, S. (2018). Job autonomy, perceptions of organizational policy, and the safety performance of nurses. *International Journal of Nursing Practice*, *24*(6), e12696. https://doi.org/10.1111/ijn.12696

Kurye Hakları Derneği. (2023). *2022 Moto Kurye Ölümleri Raporu.* https://kuryehaklari.org/moto-kurye-olumleri-raporu-2022/

Kurye Hakları Derneği (@kuryehaklari). (2023, February 5). *Kuryelerin yasalarca tanımlanmış haklarını kullanması birlikte hareket edebilmeleri ile mümkün.* [Tweet]. https://twitter.com/kuryehaklari/status/1622316705572704263?s=20

Kurye Hakları Derneği'nden Mesut Çeki: Sistem kuryeyi Azrail'le yarışa sokuyor (2023, January 23). *Politika Haber*. https://politikahaber.com/kurye-haklari-derneginden-mesut-ceki-sistem-kuryeyi-azraille-yarisa-sokuyor/

LeGal, P., Rhéaume, A., & Mullen, J. (2019). The long-term effects of psychological demands on chronic fatigue. J*ournal of Nursing Management, 27*(8), 1673–1681. https://doi.org/10.1111/jonm.12857

Lu, C.- q., Du, D.- y., Xu, X.- m., & Zhang, R.- f. (2017). Revisiting the relationship between job demands and job performance: The effects of job security and traditionality. *Journal of Occupational and Organizational Psychology*, *90*(1), 28–50. https://doi.org/10.1111/joop.12158

Ma, Z.H., Kim, H.J., & Shin, K.H. (2019). From Customer-Related Social Stressors to Emotional Exhaustion: An Application of the Demands-Control Model. *Journal of Hospitality and Tourism Research, 43*(7), 1068-1091. https://doi.org/10.1177/1096348019849667

MacDonald, W. (2006). The impact of job demands and workload on stress and fatigue. *Australian Psychologist, 38*(2), 102-117. https://doi.org/10.1080/00050060310001707107

Matthews, G., Tsuda, A., Xin, G., & Ozeki, Y. (1999). Individual differences in driver stress vulnerability in a Japanese sample. *Ergonomics, 42*(3), 401-415. https://doi.org/10.1080/001401399185559

Maze, T.H., Agarwall, M., & Burchett, G. (2006). Whether Weather Matters to Traffic Demand, Traffic Safety, and Traffic Operations and Flow. *Journal of the Transportation Research Board, 1948*, 170-176. https://doi.org/10.1177/0361198106194800119

Metin, Ü. B. (2010). The antecedents and consequences of burnout, work engagement and workaholism [Master's thesis, Middle East Technical University].

Meng, F., Li, S., Cao, L., Li, M., Peng, Q., Wang, C., & Zhang, W. (2015). Driving fatigue in professional drivers: a survey of truck and taxi drivers. *Traffic Injury Prevention, 16*(5), 474–483. https://doi.org/10.1080/15389588.2014.973945

McKinlay, A., Mitchell, G., & Bertenshaw, C. (2022). Review article: DINED (Delivery-related INjuries in the Emergency Department) part 1: A scoping review of risk factors and injuries affecting food delivery riders. *Emergency Medicine Australasia, 34*(2), 150–156. https://doi.org/10.1111/1742-6723.13927

Michielsen, H.J, Willemsen, T.M., Croon, M.A., de Vries, J., & Van Heck, G.L. (2004). Determinants of general fatigue and emotional exhaustion: a prospective study. *Psychology and Health, 19*(2), 223-235. https://doi.org/10.1080/08870440310001627135

Montoro, L., Useche, S., Alonso, F., & Cendales, B. (2018). Work Environment, Stress, and Driving Anger: A Structural Equation Model for Predicting Traffic Sanctions of Public Transport Drivers. *International Journal of Environmental Research and Public Health, 15*(3), 497. https://doi.org/10.3390/ijerph15030497

Moto Kurye Haber-Yorum [@kurye_haber]. (2023a, August 2). *Kart Yoksa Asansöre Binemezsiniz!* [Tweet]. https://twitter.com/kurye_haber/status/1686795094496604166?s=20

Moto Kurye Haber-Yorum [@kurye_haber]. (2023, August 18). *Sakarya'dan bir müşteri notunu sizinle paylaşıyoruz.* [Tweet]. https://twitter.com/kurye_haber/status/1692474894066294995?s=20

Moto Kurye Haber-Yorum [@kurye_haber]. (2023b, June 30). *Kuryelerin motosiklet ile sitelere giriş yasağından sonra bazı binalar asansörlere şifre koyma uygulamasına geçti.* [Tweet]. https://twitter.com/kurye_haber/status/1674812448396771329?s=20

Moto Kurye Haber-Yorum [@kurye_haber]. (2023, July 29). *MÜŞTERİDEN TEHDİT DOLU SİPARİŞ NOTU.* [Tweet]. https://twitter.com/kurye_haber/status/1692474894066294995?s=20

Møller, M., & Haustein, S. (2016). Factors contributing to young moped rider accidents in Denmark. *Accident Analysis and Prevention, 87,* 1–7. https://doi.org/10.1016/j.aap.2015.11.008

Nahrgang, J. D., Morgeson, F. P., & Hofmann, D. A. (2011). Safety at work: A meta-analytic investigation of the link between job demands, job resources, burnout, engagement, and safety outcomes. *Journal of Applied Psychology, 96*(1), 71–94. https://doi.org/10.1037/a0021484

National Highway Traffic Safety Administration (NHTSA). (2023, August 25). *Speeding.* https://www.nhtsa.gov/risky-driving/speeding

Navarro-Moreno, J., de Ona, J., & Calvo-Poyo, F. (2023). How do road infrastructure investments affect Powered Two-Wheelers crash risk? *Transport Policy, 138*, 60-73. https://doi.org/10.1016/j.tranpol.2023.04.016

Nguyen-Phuoc, D.Q., Ngoc Nguyen, N.A., Nguyen, M.H., Nguyen, L.N.T., & Oviedo-Trespalacios, O. (2022). Factors influencing road safety compliance among food delivery riders: An extension of the job demands-resources (JD-R) model. Transportation Research Part A: Policy and Practice, 166, 541-556. https://doi.org/10.1016/j.tra.2022.11.002

Nguyen-Phuoc, D.Q., Nguyen, L.N.T., Su, D.N., Nguyen, M.H., Oviedo-Trespalacio, O. (2023). Deadly meals: The influence of personal and job factors on burnout and risky riding behaviours of food delivery motorcyclists. *Safety Science, 159*. https://doi.org/10.1016/j.ssci.2022.106007

Öz, B., Özkan, T., & Lajunen, T. (2010). Professional and non-professional drivers' stress reactions and risky driving. *Transportation Research Part F: Traffic Psychology and Behaviour, 13*(1), 32-40. https://doi.org/10.1016/j.trf.2009.10.001

Öz, B. (2011). Professional Driving: An Emphasis on Organizational Safety Climate (Publication No. ISBN 978-952-10-7275-8). [Doctoral dissertation, University of Helsinki]. University of Helsinki Open Repository. http://hdl.handle.net/10138/28176

Öz, B., Özkan, T., & Lajunen, T. (2014). Trip-focused organizational safety climate: Investigating the relationships with errors, violations and positive driver behaviours in professional driving. *Transportation Research Part F: Traffic Psychology and Behaviour*, *26*(SI), 361-369. https://doi.org/10.1016/j.trf.2014.03.004

Özkan, T., Lajunen, T., Dogruyol, B., Yildirim, Z., & Çoymak, A. (2012). Motorcycle accidents, rider behaviour, and psychological models. *Accident Analysis and Prevention*, *49*, 124–132. https://doi.org/10.1016/j.aap.2011.03.009

Pandemide motokurye ölümleri 10 kat arttı. (2021, March 5). *NTV*. https://www.ntv.com.tr/turkiye/pandemide-motokurye-olumleri-10-kat-artti,Fl2GXqwyQk-5_3NPv9cktQ

Papakostopoulos, V., & Nathanael, D. (2021). The Complex Interrelationship of Work-Related Factors Underlying Risky Driving Behavior of Food Delivery Riders in Athens, Greece. *Safety and Health at Work*, *12*(2), 147–153. https://doi.org/10.1016/j.shaw.2020.10.006

Parker, S. K., Axtell, C. M., & Turner, N. (2001). Designing a safer workplace: Importance of job autonomy, communication quality, and supportive supervisors. *Journal of Occupational Health Psychology*, *6*(3), 211–228. https://doi.org/10.1037/1076-8998.6.3.211

Paulhus, D. L. (1991). Measurement and control of response bias. In J. P. Robinson, P. R. Shaver, & L. S. Wrightsman (Eds.), *Measures of personality and social psychological attitudes* (pp. 17–59). Academic Press. https://doi.org/10.1016/B978-0-12-590241-0.50006-X

Petridou, E., & Moustaki, M. (2000). Human factors in the causation of road traffic crashes. *European Journal of Epidemiology*, *16*(9), 819–826. https://doi.org/10.1023/a:1007649804201

Quiñones, M. A., Ford, J. K., & Teachout, M. S. (1995). The relationship between work experience and job performance: A conceptual and meta-analytic review. *Personnel Psychology*, *48*(4), 887–910. https://doi.org/10.1111/j.1744-6570.1995.tb01785.x

Rafique, M. (2023). Supervisor role overload and emotional exhaustion as antecedents of supervisor incivility: The role of time consciousness. *Journal of Management and Organization, 29*(3), 481-503. https://doi.org/10.1017/jmo.2022.39

Reason, J. T., Manstead, A., Stradling, S., Baxter, J. S., & Campbell, K. (1990). Errors and violations on the roads: A real distinction? *Ergonomics, 33*(10-11), 1315–1332. https://doi.org/10.1080/00140139008925335

Rhee, S.Y., Hur, W.M., & Kim, M. (2017). The Relationship of Coworker Incivility to Job Performance and the Moderating Role of Self-Efficacy and Compassion at Work: The Job Demands-Resources (JD-R) Approach. *Journal of Business and Psychology, 32*(6), 711-726. https://doi.org/10.1007/s10869-016-9469-2

Romero, A. M. (2019, December 30). ST poll shows number of accidents involving food delivery riders seemingly on the rise. *The Independent*. https://theindependent.sg/st-poll-shows-number-of-accidents-involving-food-delivery-riders-seemingly-on-the-rise/

Rosenbloom, T. (2011). Professional drivers. In B. E. Porter (Ed.), *Handbook of traffic psychology* (pp. 389–399). London, UK: Elsevier Academic Press.

Rowden, P., Matthews, G., Watson, B., & Biggs, H. (2011). The relative impact of work-related stress, life stress and driving environment stress on driving outcomes. *Accident Analysis and Prevention, 4*3(4), 1332–1340. https://doi.org/10.1016/j.aap.2011.02.004

Rusli, R., Mohammad, M. Z., Azreena Kamaluddin, N., Bakar, H., & Hafzi Md Isa, M. (2022). A comparison of characteristics between food delivery riders with and without traffic crash experience during delivery in Malaysia. *Case Studies on Transport Policy, 10*(4), 2244–2250. https://doi.org/10.1016/j.cstp.2022.10.006

Rutter, D.R., Quine, L., & Chesham, D.J. (1995). Predicting safe riding behaviour and accidents: Demography, beliefs, and behaviour in motorcycling safety. Psychology and Health, 10(5), 369-386. https://doi.org/10.1080/08870449508401957

Salmon, P.M., KC, B., Irwin, B.G., Brennan, C.J., & Read, G.J.M. (2023). What influences gig economy delivery rider behaviour and safety? A systems analysis. Safety Science, 166. https://doi.org/10.1016/j.ssci.2023.106263

Seidler, A., Thinschmidt, M., Deckert, S., Then, F., Hegewald, J., Nieuwenhuijsen, K., & Riedel-Heller, S.G. (2014). The role of psychosocial working conditions on burnout and its core component emotional exhaustion – a systematic review. Journal of Occupational Medicine and Toxicology, 9(10). https://doi.org/10.1186/1745-6673-9-10

Shen, X., Zhang, F. Lv, H., Wei, S., & Sun, Z. (2020). The application and extension of the theory of planned behavior to an analysis of delivery riders' red-light running behavior in China. Accident Analysis & Prevention, 144. https://doi.org/10.1016/j.aap.2020.105640

Singh, H. & Kathuria, A. (2023). Opportunity, motivation and bus drivers' intention to commit traffic violations. *Safety Science, 166*. https://doi.org/10.1016/j.ssci.2023.106216

Siteye motorla alınmayan motokuryelerden protesto eylemi: 'Kapıları açın işimizi yapalım!' (2022, November 8). *Cumhuriyet.* https://www.cumhuriyet.com.tr/turkiye/siteye-motorla-alinmayan-motokuryelerden-protesto-eylemi-kapilari-acin-isimizi-yapalim-2000916

Steg, L., & van Brussel, A. (2009). Accidents, aberrant behaviours, and speeding of young moped riders. *Transportation Research Part F: Traffic Psychology and Behaviour, 12*(6), 503-511. https://doi.org/10.1016/j.trf.2009.09.001

Stephens, A. N., Brown, J., de Rome, L., Baldock, M. R. J., Fernandes, R., & Fitzharris, M. (2017). The relationship between Motorcycle Rider Behaviour Questionnaire scores and crashes for riders in Australia. *Accident Analysis and Prevention, 102*, 202–212. https://doi.org/10.1016/j.aap.2017.03.007

Sumit, K., Ross, V., Brijs, K., Wets, G., & Ruiter, R. A. C. (2021). Risky motorcycle riding behaviour among young riders in Manipal, India. *BMC Public Health, 21*(1), 1954. https://doi.org/10.1186/s12889-021-11899-y

Tran, N.A.T., Nguyen, H.L.A., Nguyen, T.B.H., Nguyen, Q.H., Huynh, T.N.L., Pojani, D., Nguyen, T.B., Nguyen, M.H. (2022). Health and safety risks faced by delivery riders during the Covid-19 pandemic. Journal of Transport & Health, 25. https://doi.org/10.1016/j.jth.2022.101343

Tsai, J. H., Yang, Y. H., Ho, P. S., Wu, T. N., Guo, Y. L., Chen, P. C., & Chuang, H. Y. (2022). Incidence and Risk of Fatal Vehicle Crashes Among Professional Drivers: A Population-Based Study in Taiwan. *Frontiers in Public Health, 10*. https://doi.org/10.3389/fpubh.2022.849547

Topcic, M., Baum, M., & Kabst, R. (2016). Are high-performance work practices related to individually perceived stress? A job demands-resources perspective. *The International Journal of Human Resource Management, 27*(1), 45–66. https://doi.org/10.1080/09585192.2015.1043136

Tuncer, D. (2020, February 15). Yollardaki tehlikeli meslek: Motokurye. *TRT Haber*. https://www.trthaber.com/haber/yasam/yollardaki-tehlikeli-meslek-motokurye-461013.html

Turkish Statistical Institute (2022). Karayolu Trafik Kaza İstatistikleri, 2021. https://data.tuik.gov.tr/Bulten/Index?p=Karayolu-Trafik-Kaza-Istatistikleri-2021-45658

Turkish Statistical Institute (2023). Karayolu Trafik Kaza İstatistikleri, 2022. hhttps://data.tuik.gov.tr/Bulten/Index?p=Karayolu-Trafik-Kaza-Istatistikleri-2022-49513

Turkish Statistical Institue (2020). Motorlu Kara Taşıtları Haber Bülteni Aralık 2020. https://data.tuik.gov.tr/Bulten/Index?p=Road-Motor-Vehicles-December-2020-37410

Turkish Statistical Institute (2022). Motorlu Kara Taşıtları Haber Bülteni Aralık 2022. https://data.tuik.gov.tr/Bulten/Index?p=Motorlu-Kara-Tasitlari-Aralik-2022-49436

Turner, N., Chmiel, N., & Walls, M. (2005). Railing for Safety: Job Demands, Job Control, and Safety Citizenship Role Definition. *Journal of Occupational Health Psychology, 10*(4), 504–512. https://doi.org/10.1037/1076-8998.10.4.504

Turner, N., Stride, C. B., Carter, A. J., McCaughey, D., & Carroll, A. E. (2012). Job Demands-Control-Support model and employee safety performance. *Accident Analysis and Prevention, 45*, 811–817. https://doi.org/10.1016/j.aap.2011.07.005

Türkiye'de Kaç Kurye Var? (2023, March 7). Motokurye. https://motokurye.org/turkiyede-kac-kurye-var.html

Useche, S. A., Ortiz, V. G., & Cendales, B. E. (2017). Stress-related psychosocial factors at work, fatigue, and risky driving behavior in bus rapid transport (BRT) drivers. *Accident Analysis and Prevention, 104*, 106–114. https://doi.org/10.1016/j.aap.2017.04.023

van Jaarsveld, D. D., Walker, D. D., & Skarlicki, D. P. (2010). The role of job demands and emotional exhaustion in the relationship between customer and employee incivility. *Journal of Management, 36*(6), 1486–1504. https://doi.org/10.1177/0149206310368998

Van Yperen, N. W., & Hagedoorn, M. (2003). Do high job demands increase intrinsic motivation or fatigue or both? The role of job control and job social support. *Academy of Management Journal, 46*(3), 339–348. https://doi.org/10.2307/30040627

Wagstaff, A., & Sigstad, L. (2011). Shift and night work and long working hours—a systematic review of safety implications. *Scandinavian Journal of Work Environment and Health 37*(3), 173-178. https://doi.org/10.5271/sjweh.3146

Wang, X., & Cheng, Z. (2020). Cross-Sectional Studies: Strengths, Weaknesses, and Recommendations. *CHEST, 158*(1), S65-S51. https://doi.org/10.1016/j.chest.2020.03.012

Warr, P. B. (1990). Decision latitude, job demands, and employee well-being. *Work and Stress*, 4(4), 285–294. https://doi.org/10.1080/02678379008256991

Whitman, M. V., Matthews, R. A., & Williams, E. S. (2022). Examining supervisor undermining through the job-demands resources framework. *Health Services Management Research*, *35*(4), 206–214. https://doi.org/10.1177/09514848211048608

Wilk, S. L., & Moynihan, L. M. (2005). Display Rule "Regulators": The Relationship Between Supervisors and Worker Emotional Exhaustion. *Journal of Applied Psychology, 90*(5), 917–927. https://doi.org/10.1037/0021-9010.90.5.917

Wills, A. R., Watson, B., & Biggs, H. C. (2006). Comparing safety climate factors as predictors of work-related driving behavior. *Journal of Safety Research*, *37*(4), 375–383. https://doi.org/10.1016/j.jsr.2006.05.008

Wong, J.T., Chung, Y.S., & Huang, S.H. Determinants behind young motorcyclists' risky riding behavior. *Accident Analysis and Prevention, 42*(1), 275-281. https://doi.org/10.1016/j.aap.2009.08.004

World Health Organization (2023, May 5). *WHO Director-General's opening remarks at the media briefing – 5 May 2023.* https://www.who.int/news-

room/speeches/item/who-director-general-s-opening-remarks-at-the-media-briefing---5-may-2023

Wright, T. A., & Cropanzano, R. (1998). Emotional exhaustion as a predictor of job performance and voluntary turnover. *Journal of Applied Psychology, 83*(3), 486–493. https://doi.org/10.1037/0021-9010.83.3.486

Wu, T.Y., Hu, C.Y., & Yang, C.C. (2013). Abusive Supervision and Workload Demands from Supervisors: Exploring Two Types of Supervisor-related Stressors and their Association with Strain. *Stress and Health, 29*(3), 190-198. https://doi.org/10.1002/smi.2440

Xanthopoulou, D., Bakker, A. B., Demerouti, E., & Schaufeli, W. B. (2007). The role of personal resources in the job demands-resources model. *International Journal of Stress Management, 14*(2), 121–141. https://doi.org/10.1037/1072-5245.14.2.121

Xiu, J., Zhang, Z., Li, Z., & Zheng, J. (2019). How Do Coworkers Aid in Coping with Emotional Exhaustion? An Experience Sampling Method Approach. *International Journal of Environmental Research and Public Health, 16*(16), 2919. https://doi.org/10.3390/ijerph16162919

Yu, S.F., Nakata, A., Gu, G.Z., Swanson, N.G., He, L.H., Zhou, W.H., & Wang, S. (2013). Job Strain, Effort-reward Imbalance and Neck, Shoulder and Wrist Symptoms among Chinese Workers. *Industrial Health, 51*(2), 180-192. https://doi.org/10.2486/indhealth.ms1233

Yu, S., & Tsai, W.D. (2021). The effects of road safety education on the occurrence of motorcycle violations and accidents for novice riders: An analysis of population-based data. *Accident Analysis and Prevention, 163*. https://doi.org/10.1016/j.aap.2021.106457

Zhang, C., Cheung, S. P., & Huang, C. (2022a). Job Demands and Resources, Mindfulness, and Burnout Among Delivery Drivers in China. *Frontiers in Psychology, 13*. https://doi.org/10.3389/fpsyg.2022.792254

Zhang, C., Sitar, S., & Huang, C. C. (2022b). Effects of Job Demands and Resources on Positive and Negative Affect of Delivery Drivers in China. *International Journal of Environmental Research and Public Health, 19*(13), 8140. https://doi.org/10.3390/ijerph19138140

Zheng, Y., Ma, Y., Guo, L., Cheng, J., & Zhang, Y. (2019). Crash Involvement and Risky Riding Behaviors among Delivery Riders in China: The Role of Working Conditions. *Transportation Research Record, 2673*(4), 1011–1022. https://doi.org/10.1177/0361198119841028

APPENDICES

A. APPROVAL OF THE METU HUMAN SUBJECTS ETHICS COMMITTEE

UYGULAMALI ETİK ARAŞTIRMA MERKEZİ
APPLIED ETHICS RESEARCH CENTER

ORTA DOĞU TEKNİK ÜNİVERSİTESİ
MIDDLE EAST TECHNICAL UNIVERSITY

DUMLUPINAR BULVARI 06800
ÇANKAYA ANKARA/TURKEY
T: +90 312 210 22 91
F: +90 312 210 79 59
uearm@metu.edu.tr
www.uearm.metu.edu.tr

28 ŞUBAT 2023

Konu: Değerlendirme Sonucu

Gönderen: ODTÜ İnsan Araştırmaları Etik Kurulu (İAEK)

İlgi: İnsan Araştırmaları Etik Kurulu Başvurusu

Sayın Doç.Dr. Bahar ÖZ

Danışmanlığını yürüttüğünüz Gözde ATALAN'ın **"Kurum Güvenlik İkliminin Motokurye Sürücü Davranışları ile İlişkisi"** başlıklı araştırmanız İnsan Araştırmaları Etik Kurulu tarafından uygun görülerek **0123-ODTUİAEK-2023** protokol numarası ile onaylanmıştır.

Bilgilerinize saygılarımla sunarım.

B. INFORMED CONSENT FORM

Araştırmaya Gönüllü Katılım Formu

Bu araştırma Orta Doğu Teknik Üniversitesi (ODTÜ) Trafik ve Ulaşım Psikolojisi yüksek lisans programı öğrencisi Arş. Gör. Gözde Atalan tarafından Doç. Dr. Bahar Öz danışmanlığında yürütülmektedir. Bu form sizi araştırma koşulları hakkında bilgilendirmek için hazırlanmıştır.

Çalışmanın amacı nedir?

Çalışmanın amacı, motosikletli kuryelerin trafik ortamındaki davranışları hakkında bilgi toplamak ve kurum iklimi, iş niteliği ve kuryelerin sürücü davranışları arasındaki ilişkiyi bu örneklemde incelemektir.

Bize nasıl yardımcı olmanızı isteyeceğiz?

Araştırmaya katılmayı kabul ettiğiniz takdirde sizden beklentimiz ankette yer alan soruları yanıtlamanız üzerinedir. Her bir bölümün başında yer alan açıklamayı dikkatlice okuyup size en uygun seçeneği işaretlemeniz beklenmektedir. Anket uygulamasının tamamlanması yaklaşık 20 dakika sürmektedir.

Sizden topladığımız bilgileri nasıl kullanacağız?

Araştırmaya katılımınız tamamen gönüllülük temelinde olmalıdır. Ankette sizden kimlik belirleyici hiçbir bilgi istenmemektedir. Cevaplarınız gizli tutulacak, sadece araştırmacılar tarafından değerlendirilecektir. Elde edilen bilgiler toplu halde değerlendirilecek ve bilimsel yayımlarda kullanılacaktır.

Katılımınızla ilgili bilmeniz gerekenler:

Anket çalışması genel olarak kişisel rahatsızlık verecek sorular içermemektedir. Ancak katılım sırasında herhangi bir nedenden ötürü kendinizi rahatsız hissederseniz çalışmayı istediğiniz zaman bırakabilirsiniz. Böyle bir durumda doldurduğunuz anket çalışmaya dahil edilmeyecektir.

Araştırmayla ilgili daha fazla bilgi almak isterseniz:

Bu araştırmaya katıldığınız ve verdiğiniz destek için çok teşekkür ederiz. Çalışma hakkında daha fazla bilgi edinmek için aşağıda iletişim bilgileri verilen araştırmacılar ile iletişime geçebilirsiniz.

Arş. Gör. Gözde Atalan (E-posta:)

Doç. Dr. Bahar Öz (E-posta:)

Yukarıdaki bilgileri okudum ve bu çalışmaya tamamen gönüllü olarak katılıyorum. Çalışmayı istediğim zaman yarıda bırakabileceğimi biliyorum. Verdiğim bilgilerin bilimsel amaçlı yayımlarda kullanılmasını kabul ediyorum.

İsim Soyisim: Tarih: .../.../..... İmza:

C. DEMOGRAPHIC INFORMATION FORM

1- Yaşınız: ____

2- Cinsiyet: ___ Erkek ___ Kadın ___ Belirtmek istemiyorum.

3- Mesleğiniz: _____

4- Eğitim Düzeyi: _____ Okur –Yazar _____ İlkokul _____ Ortaokul _____ Lise _____Yüksekokul _____ Üniversite _____ Yüksek Lisans/Doktora

5- Motosiklet ehliyetiniz var mı? ____ Evet ___ Hayır

6- Daha önce hiç iş başındayken ehliyetinize el konuldu mu? ____ Evet ___ Hayır

7- Kaç yıldır motosiklet ehliyeti sahibisiniz?_____

8- Kaç yıldır motosiklet kullanıyorsunuz?_____

9- Kaç yıldır moto kurye olarak çalışıyorsunuz? _____

10- Aşağıdakilerden hangisi çalışma şeklinizi en iyi tanımlar?

Bir kurumun/şirketin personeli olarak çalışıyorum _____

Esnaf kurye olarak çalışıyorum _____

Bağımsız/saatlik çalışıyorum (örn. Ek iş ya da ekstra) _____

11- Ne sıklıkla iş amaçlı olarak motosiklet kullanıyorsunuz?

Her gün _____

Hemen hemen her gün _____

Haftada 3-4 gün _____

Haftada 1-2 gün _____

Ayda birkaç kez _____

Ayda bir kez ya da daha az _____

Diğer _____

12- Günde iş amaçlı olarak ortalama kaç saat motosiklet kullanıyorsunuz? _____

13- Günde ortalama kaç sipariş teslim ediyorsunuz? _____

14- Eğer bir kurum için çalışıyorsanız; çalıştığınız kurum size hangi güvenlik ekipmanlarını sağlamaktadır?

a) Kask ____

b) Eldiven ____c) Gözlük ____

d) Bot ____

e) Pantolon ____

f) Ceket ____

15- Ne sıklıkla motosiklet kaskı kullanıyorsunuz?

a. Her zaman

b. Çoğunlukla

c. Ara sıra

d. Nadiren

e. Hiçbir zaman

16- Kullandığım motosiklet:

Bana ait _____

Başka bir şahsa ait _____

Kuruma ait _____

17- Kullandığınız motosikletin türü nedir?: ____ Vitesli ___ Vitessiz

18- Mesleğiniz gereği kullandığınız motosikletin periyodik bakımını yaptırıyor musunuz? ____ Evet ___ Hayır

19- İşiniz dışında motosiklet kullanıyor musunuz? ____ Evet ___ Hayır

20- Bütün hayatınız boyunca yaklaşık olarak toplam kaç kilometre motosiklet kullandınız? _____ km

21- Mesleğiniz gereği kullandığınız motosikletle, son 1 yılda yaklaşık olarak toplam kaç kilometre araç kullandınız? _____km

22- Mesleğiniz gereği kullandığınız motosikletle son üç yılda kaç kez aktif olarak (sizin bir araca, bir yayaya veya herhangi bir nesneye çarptığınız durumlar) kaza yaptınız? (hafif kazalar dahil; hiç kaza yapmadıysanız '0' yazınız.) _____ kez

23- Mesleğiniz gereği kullandığınız motosikletle son üç yılda kaç kez pasif olarak (bir aracın ya da bir yayanın size çarptığı durumlar) kaza geçirdiniz? (hafif kazalar dahil; hiç kaza yapmadıysanız '0' yazınız.)_____ kez

D. JOB DEMANDS AND JOB RESOURCES SCALE

Aşağıda işinizin özellikleri ile ilgili çeşitli sorular bulunmaktadır. Her bir maddede ifade edilen durumu ne sıklıkta yaşadığınızı, sunulan 5 noktalı ölçekte size uygun olan seçeneği işaretleyerek belirtmeniz istenmektedir. Örneğin, işinizin yapılış şekli üzerinde hiç kontrolünüz yoksa, "İşin nasıl yapıldığı üzerinde kontrolünüz olabiliyor mu?" sorusuna 1 (Hiçbir Zaman) seçeneğini işaretleyiniz.

1 = Hiçbir Zaman 2 = Çok Nadir 3 = Bazen 4 = Çoğu Zaman 5 = Her Zaman

		1	2	3	4	5
1.	Hızlı çalışmak mı zorundasınız?	1	2	3	4	5
2.	Yapmanız gereken çok fazla işiniz mi var?	1	2	3	4	5
3.	Bir işi zamanında yetiştirmek için ne sıklıkla fazla mesai yapmanız gerekir?	1	2	3	4	5
4.	Çalışırken üzerinizde zaman baskısı hissediyor musunuz?	1	2	3	4	5
5.	İşinizi yaparken esnek olabiliyor musunuz?	1	2	3	4	5
6.	İşin nasıl yapıldığı üzerinde kontrolünüz olabiliyor mu?	1	2	3	4	5
7.	İşin yapılışında karar alma aşamasında yer alabiliyor musunuz?	1	2	3	4	5
8.	İşiniz duygusal açıdan talepkar mı?	1	2	3	4	5
9.	İşinizde size duygusal olarak dokunaklı olaylarla karşı karşıya kalır mısınız?	1	2	3	4	5
10.	İşinizde duygusal anlamda dolgun durumlarla karşılaştığınız olur mu?	1	2	3	4	5
11.	Çalışırken onları memnun etmek adına her şeyi yapmanıza rağmen yine de sürekli şikâyet eden müşterilerle karşılaşır mısınız?	1	2	3	4	5

12.	İşinizde talepkar müşterilerle uğraşmak zorunda kalır mısınız?	1	2	3	4	5
13.	Çalışırken hak ettiğiniz saygı ve nezakette davranmayan müşterilerle karşılaşır mısınız?	1	2	3	4	5
14.	Lazım olduğunda iş arkadaşlarınızdan yardım isteyebilir misiniz?	1	2	3	4	5
15.	İşte zorluklarla karşılaştığınızda iş arkadaşlarınızın size destek olacağına güvenebilir misiniz?	1	2	3	4	5
16.	İş arkadaşlarınızın sizi değerli bulduğunu hissediyor musunuz?	1	2	3	4	5
17.	Çalışırken hislerinizi doğal görünmek adına ne sıklıkta bastırırsınız (örn. Kızgınlık)?	1	2	3	4	5
18.	Çalışırken spontane duygularınızı ne sıklıkta göstermeye engel olursunuz (örn. Antipati)?	1	2	3	4	5
19.	Çalışırken, müşterilerinize (iç veya dış) ne sıklıkla asıl hissettiğiniz duygulardan farklı olan belirli duyguları göstermek zorunda kalırsınız?	1	2	3	4	5
20.	Çalışırken, müşterilerinize karşı başka türlü hissetmenize rağmen ne sıklıkta olumlu duygular göstermek durumunda kalırsınız?	1	2	3	4	5
21.	Çalışırken canınızı sıkan müşterilere ne sıklıkla anlayışlı davranmak zorunda kalırsınız?	1	2	3	4	5
22.	Amirim beni benden memnun olup olmadığı konusunda bilgilendirir	1	2	3	4	5
23.	Amirim işteki sorunlarım ya da isteklerime ilgi gösterir.	1	2	3	4	5
24.	Amirim tarafından değer gördüğümü hissederim.	1	2	3	4	5
25.	Amirim işte karşılaştığım sorunların çözümünde etkili olur.	1	2	3	4	5
26.	Amirim bana karşı yakın ve sıcaktır.	1	2	3	4	5
27.	İş yeriniz değişikliklerin (örn: personel, ürün ya da süreç) olduğu bir yer midir?	1	2	3	4	5

28.	Şimdiki iş pozisyonunuzda herhangi bir yeniden düzenlemeyle karşılaştınız mı?	1	2	3	4	5
29.	Kendinizi iş yerinizdeki değişikliklere uydurmak zorunda mısınızdır?	1	2	3	4	5
30.	Son zamanlarda iş yerinizdeki organizasyon yapısında bir değişiklik meydana geldi mi?	1	2	3	4	5
31.	Son zamanlarda takımınızın yapısı değişti mi?	1	2	3	4	5
32.	Son zamanlarda işinizin içeriği değişti mi?	1	2	3	4	5
33.	İşinizde değişen görevlerle karşı karşıya kaldınız mı?	1	2	3	4	5
34.	İşimde güçlü olduğum yönlerimi geliştirebileceğim imkânlar var.	1	2	3	4	5
35.	İşimde kendimi sürekli olarak geliştiririm.	1	2	3	4	5
36.	İşim bana yeni şeyler öğrenme olanağı sunar.	1	2	3	4	5

E. MOTORCYCLE RIDER BEHAVIOR QUESTIONNAIRE

Aşağıda verilen her bir madde için sizden istenen bu tür şeylerin sizin başınıza NE SIKLIKLA geldiğini belirtmenizdir. Değerlendirmelerinizi geçtiğimiz yıl boyunca kendinizin motosiklet kullanma davranışlarından ne hatırlıyorsanız onları temel alarak yapınız. Lütfen değerlendirmelerinizi size göre doğru olan seçeneği işaretleyiniz. Her bir soru için cevap seçenekleri:

1= Hiç bir zaman 2= Nadiren 3= Bazen 4= Oldukça sık 5= Sık sık 6= Neredeyse her zaman

		1	2	3	4	5	6
1.	Anayoldan bir sokağa dönerken karşıdan karşıya geçen yayaları fark edememek	1	2	3	4	5	6
2.	Park etmiş bir aracın arkasından çıkan birini neredeyse çok geç olana kadar farkedememek	1	2	3	4	5	6
3.	Trafik ışığı (sizin yönünüze) henüz kırmızıya dönmüşken, yaya veya ışıklı yaya geçidinde karşıdan karşıya geçmek için bekleyen bir yayayı fark edememek	1	2	3	4	5	6
4.	Anayolda, fark etmediğiniz ya da hızını yanlış tahmin ettiğiniz bir aracın önüne çıkmak	1	2	3	4	5	6
5.	"Yol ver" işaretini kaçırıp geçiş hakkı olan araçlarla çarpışacak duruma gelmek	1	2	3	4	5	6
6.	Başka bir aracın önünüze çıkabileceğini ve durmakta zorlanabileceğini fark etmemek ya da tahmin etmemek	1	2	3	4	5	6
7.	Anayoldan sola dönmek için kuyrukta beklerken anayol trafiğine dikkat etmekten neredeyse öndeki araca çarpacak duruma gelmek	1	2	3	4	5	6
8.	Dikkatiniz dağılmış veya endişeliyken, önünüzdeki aracın yavaşladığını ve çarpmamak için güçlükle fren yapmak zorunda olduğunuzu geç fark etmek	1	2	3	4	5	6
9.	Sola dönüş sinyali veren bir aracın sinyalini fark etmeyip onu sollamaya çalışmak	1	2	3	4	5	6
10.	Diğer araçlarla aynı hızda ilerlerken, trafik ışığı sizin yönünüze kırmızıya döndüğü zaman durmakta zorlanmak	1	2	3	4	5	6
11.	Öndeki aracı, acil bir durumda duramayacak kadar yakın takip etmek	1	2	3	4	5	6

12.	Bir köşeyi dönerken virajı geniş almak	1	2	3	4	5	6
13.	Virajı kontrolünüzü kaybedeceğinizi hissedecek kadar hızlı dönmek	1	2	3	4	5	6
14.	Şehir dışı yollarda hız sınırını aşmak	1	2	3	4	5	6
15.	Gecenin geç ya da sabahın erken saatlerinde hız sınırını dikkate almamak	1	2	3	4	5	6
16.	Otobanda hız sınırını aşmak	1	2	3	4	5	6
17.	Şehir içi yollarda hız sınırını aşmak	1	2	3	4	5	6
18.	Yanınızdaki sürücüyü mağlup etmek için trafik ışıklarından yarışırcasına çıkmak	1	2	3	4	5	6
19.	Şehir dışı yollarda gaza sonuna kadar basıp kendinizi yollara vurmak	1	2	3	4	5	6
20.	Hızlı akan trafikte iki şerit ortasından ilerlemek	1	2	3	4	5	6
21.	Diğer sürücülerle resmi olmayan ‘yarış’lara girmek	1	2	3	4	5	6
22.	Kendinizi korkutacak sekilde köşelerde hızlı kullanmak	1	2	3	4	5	6
23.	Ön tekerleği havaya kaldırmak veya kaldırmaya teşebbüs etmek	1	2	3	4	5	6
24.	Çok hızlı hareket etmek ve ön tekerleğin yoldan ayrılması	1	2	3	4	5	6
25.	Kasıtlı olarak tekerlek döndürmek (spin)	1	2	3	4	5	6
26.	Kasıtlı olmayarak tekerlek döndürmek (spin)	1	2	3	4	5	6
27.	Sürüş botları giymek	1	2	3	4	5	6
28.	Koruyucu sürüş pantolonu giymek (deri veya deri olmayan)	1	2	3	4	5	6
29.	Koruyucu sürüş ceketi giymek (deri veya deri olmayan)	1	2	3	4	5	6
30.	Vücut zırhı giymek (dirsek pedleri, omuz pedleri, diz pedleri vs.)	1	2	3	4	5	6
31.	Hiçbir koruyucu kıyafet giymemek	1	2	3	4	5	6
32.	Eldiven giymek	1	2	3	4	5	6
33.	Kıyafetin üzerine parlak/floresan şeritler/yamalar	1	2	3	4	5	6
34.	Farları kısarak motor kullanmak	1	2	3	4	5	6

35.	Bir köşeyi veya virajı dönerken fren yapmak veya gaz kesmek	1	2	3	4	5	6
36.	Bir köşeyi veya virajı dönerken vites değiştirmek	1	2	3	4	5	6
37.	Belli bir hızda sürerken motoru kontrol etmekte zorlandığınızı fark etmek (örn: titreyen direksiyon)	1	2	3	4	5	6
38.	Islak yolda veya rögar kapaklarında savrulmak / kaymak /patinaj yapmak	1	2	3	4	5	6
39.	Siperlik veya gözlüklerinizin buğulanmasıyla problem yaşamak	1	2	3	4	5	6
40.	Sizi kasıtlı olarak kızdıran ya da riske atan sürücülere kızgınlığınızı bir şekilde göstermek	1	2	3	4	5	6
41.	Yasal alkol limitini geçtiğinizden şüphelenerek motor kullanmak	1	2	3	4	5	6
42.	Tek parça deri kıyafet giymek	1	2	3	4	5	6
43.	Parlak/floresan kıyafet giymek	1	2	3	4	5	6

F. TURKISH SUMMARY / TÜRKÇE ÖZET

2020 yılının Mart ayında başlayan KOVID-19 pandemisi ile birlikte insanların yaşam stilleri ve tüketim alışkanlıkları değişim göstermeye başladı. Tam kapanma ve güvenlik tedbirleri sebebi ile bireyler, süpermarketlere ve restoranlara gitmek yerine eve hızlı market alışverişi ve yemek teslimi gibi hizmetlere ilgi göstermeye başladı. 2023 yılının Mayıs ayında Dünya Sağlık Örgütü'nün pandeminin bitişini açıklamasına rağmen bu sektöre olan ilgi devam etti (WHO, 2023). Sektöre olan ilgilinin artması ile sektörün önemli bir parçası olan teslimat çalışanlarının sayısı da artış gösterdi ve çalışma şekilleri çeşitlendi. Bu tez kapsamında, kısa zaman diliminde market alışverişi, yemek ve önemli evrak teslimatı yapan moto kuryelere odaklanılmaktadır. Hızlı teslimat firmalarının reklamlarında servislerinin hızlılık tarafını vurgulaması ve müşterilerine kuryelerin hız performanslarını değerlendirtmesi, kuryelerin trafiğe çıkıp teslimatlarını zamanında yapabilmeleri için trafikteki en tehlikeli davranışlardan biri olan aşırı hız yapmasına sebep olabilmektedir (Steg & van Brussel, 2009; National Highway Traffic Safety Administration, 2023). Hız beklentisi ve baskısı hem savunmasız yol kullanıcı olan sayılabilecek kuryeler için hem de diğer yol kullanıcıları için risk doğurabilmektedir. Kuryelerin hızlı teslimat sektöründeki ve trafik sistemlerindeki değişen rolleri göz önünde bulundurulduğunda moto kuryelerin çalışma koşullarının ve trafik güvenliğine etki eden faktörlerinin araştırılmasının önem kazandığı görülmektedir.

İşleri kapsamında trafikte uzun saatler harcamaları ve çeşitli riskli ya da risksiz trafik durumlarına maruz kalmaları bakımında moto kuryeler, "profesyonel sürücüler" olarak düşünülebilir. Profesyonel sürücüler, "işleri kapsamında araç kullanmaları" bakımından profesyonel olmayan sürücülerden ayrılmaktadır (Rosenbloom, 2011, s. 389). Kamyon sürücüleri, otobüs sürücüleri ve taksi sürücüleri sıkça bu gruba dâhil edilirken, moto kuryeler henüz kanuni bakımdan bu gruba dâhil edilmemişlerdir (Defossez, 2021). Buna rağmen, çalışma koşulları göz önünde bulundurulduğunda moto kuryeler, "profesyonel sürücü" bakış açısı ile değerlendirilebilir.

Türkiye İstatistik Kurumu verilerine göre 2020 yılında 3.5 milyon olan kayıtlı motosiklet sayısı 2022 yılında 4.1 milyona çıkmıştır (TURKSTAT, 2020; TURKSTAT, 2022). 2020 yılında motosikletlilerin karıştığı ölümlü ya da yaralanmalı kazaların tüm trafik kazaları içerisinde oranı %18.8 iken, bu oran 2022 yılında %22.2'ye çıkmıştır (TURKSTAT, 2021; TURKSTAT, 2023). Moto kuryelerin karıştığı kazaların oranı otoriteler tarafından henüz özel olarak raporlanmadığı için bu konudaki istatistikler moto kuryeleri içeren kazaların sayısı ve özellikleri meslek derneklerinden ve sendikalardan elde edilmektedir. Haber kuruluşlarına göre 2020 yılının Mart ayından 2021 yılının Mart ayına kadar 190 kurye iş başındayken hayatını kaybetmiştir ("Pandemide motokurye ölümleri", 2021). İşçi Sağlığı ve İş Güvenliği Meclisinin (2022) raporuna göre, 2021 yılında en az 30 moto kurye hayatını kaybetmiştir. Kurye Hakları Derneği'nin (2023), 2022 Moto Kurye Ölümleri Raporuna göre, 2022 yılında 58 moto kurye iş başındayken hayatını kaybetmiştir. Bu rapor ölen kuryelerin yaşlarını ve trafik kazalarının özelliklerini detaylandırırken, şirketlerin ve müşterilerin hızlı teslimat isteklerinin kuryeleri trafikte hata ve ihlal yapmaya ittiğini öne sürmüştür. Ancak bu tez kapsamında ele alınan çalışma da dâhil olmak üzere çok az sayıda bilimsel araştırma kuryelerin çalışma faktörleri ve trafikte sergiledikleri davranışları araştırmıştır. Literatürün bu konudaki eksiği, kuryelerle yapılacak bilimsel araştırmaların önemini vurgulamaktadır.

Hızlı teslimat sektörü KOVID-19 pandemisi döneminde Türkiye'de önem kazandığı gibi dünyanın geri kalanında da popülerlik kazanmıştır. ABD gibi ülkelerde hızlı teslimat hizmeti çoğunlukla arabalarla yürütülse de, bu hizmet Avrupa'da çoğunlukla bisikletle, e-bisikletle ya da motosikletle sağlanmaktadır. Türkiye, Yunanistan, Latin Amerika ülkeleri, Doğu ve Güney Asya ülkeleri gibi yerlerde ise bu hizmet çoğunlukla motosikletler yürütülmektedir. Sektörde motosiklet kullanımının tercih nedenleri arasında motosikletin küçük olması, yakıt bakımından daha tasarruflu olması, daha az bakım gerektirmesi, trafikte sıkışma ihtimalinin daha az olması ve daha ucuz olması gibi nedenler sayılabilir. Bu tezde sunulan araştırmanın Türkiye'de yürütülmüş olması dolayısıyla, çalışmaya katılan kuryeler motosikletli kuryelerdir. Türkiye'deki moto kurye grubu çalışma şekilleri bakımından şirket kuryeleri, esnaf kuryeler ve bağımsız kuryeler olmak üzere üçe ayrılmaktadır. Şirket kuryelerine

çalıştıkları şirketler tarafından sabit maaş ödenir ve sigorta kapsamına alınırken, esnaf kuryeler şirketlerle anlaşma içerisinde çalışıp saatlik ya da paket başına ödeme almaktadır. Esnaf kurye sistemi özellikle esnek ve yüksek eğitim veya sertifikasyon gerektirmek çalışma imkânı sunması ile iş arayan genç ve yaşlı iş gücüne hitap etmektedir. İş gücü ihtiyacını esnaf kurye sistemi ile gideren şirketler, çalışanlara kendi işlerinin patronu olma sözü vermektedir. Ancak yaşam koşullarını sağlayabilecek kadar yeterli gelir elde etmek isteyen kuryeler sıkça, uzun saatler boyunca ve aralıksız çalışmak zorunda kalabilmektedir. Christie ve Ward (2023) esnaf kurye sistemi ile çalışanların şirket çalışanlarına oranla kazaya karışma ihtimallerinin üç kat ve yaralanma ihtimallerinin de iki kat arttığını bildirmiştir. Bağımsız çalışan kuryeler ise restoranlarla günlük ya da haftalık gibi kısa anlaşmalar yaparak çalışmaktadır.

Çalışma şekli fark etmeksizin, bütün kuryelerden beklenen en önemli görev teslimatın hızlı yapılmasıdır. Ne kadar kuryeler sadece belirli bölgelerin sınırları dâhilinde çalışsalar da, teslimatları yaklaşık 15-20 dakika içerisinde yapmaları beklenmektedir. Trafik yoğunluğu, trafik ve hava koşulları gibi çevresel faktörler hesaba katıldığında hızlı teslimat beklentisi kuryelerin trafik güvenliği için risk oluşturabilmektedir. Kuryelerin çevresel faktörleri, kurum beklentilerini ve kendi güvenliklerini göz önünde bulundurarak trafiğe çıkmaları gerekmektedir. Dolayısıyla kuryelerin trafikteki güvenliklerini ele alırken çalışma faktörlerini göz önünde bulundurmak önem kazanmaktadır. Bunun yanında, trafikteki en temel insan faktörü olan davranışların kurye grubu bazında ele alınması gelecekte kuryelerle yapılacak olan araştırmalara temel oluşturacaktır.

Motosiklet sürücülerinin davranışları, Reason'ın (1990) hata ve ihlal sınıflandırması temel alınarak Elliott ve arkadaşları (2007) tarafından sınıflandırılmıştır. Elliott ve arkadaşlarının sınıflandırmasına göre motosiklet sürücülerinin trafikteki normal olmayan davranışları beş faktör altında incelenebilir: trafik hataları, kontrol hataları, hız ihlalleri, akrobatik sürüş davranışları ve güvenlik ekipmanı kullanımı. Trafik hataları dalgınlıklar ve yanlış hesaplama hataları gibi davranışları incelerken, kontrol hataları farkında olunmadan motosiklet hâkimiyetinin yitirilmesine sebep olabilecek davranışları incelemektedir. Hız ihlalleri motosiklet sürücüsünün ne sıklıkla aşırı hız

davranışı gösterdiğini incelerken, akrobatik sürüş davranışları faktörü trafikte bilerek yapılan normal dışı tehlikeli hareketleri incelemektedir.

Rutter ve ark. (1995) trafik ihlallerinin ve trafikte sergilenen güvenlik davranışlarının kazaların yordayıcısı olduğunu tespit etmiştir. Petridou ve Moustaki (2000), Couhan ve ark. (2021), Change ve Yeng (2007) motosikletlilerin trafikte sergilediği davranışları kazaya karışma oranları ile ilişkilendirmiştir. Trafik kazaları ile motosikletlilerin sürüş davranışları arasında kurulan bağlantı, bu davranışları etkileyebilecek etmenlerin araştırılmasını önemli kılmıştır. Daha önceki araştırmalar yaş, yıllık sürüş mesafesi ve kişilik faktörlerinin motosikletlilerin trafik davranışlarına etki ettiğini bulmuştur (Chouhan et al., 2021; Wong et al., 2010; Özkan et al., 2012). Profesyonel sürücüler özelinde, stres, iş yükü, otonomi eksikliği, sosyal destek eksikliği, uzun çalışma saatleri ve yorgunluk gibi faktörlerin sürücülerin tehlikeli sürüş davranışları ile bağlantılı olduğu da bulunmuştur (Öz et al., 2010; Rowden et al., 2011; Useche et al., 2017; Montoro et al., 2018; Amoadu et al., 2023; Wagstaff & Sigstad, 2011; Matthews et al., 1999; Davidovic, 2018). Moto kurye davranışları özelinde ise, yaş, deneyimsizlik, saatlik ücret, iş yükü, zaman baskısı ve yorgunluk gibi faktörlerin kuryelerin güvenlik davranışlarına etki ettiği saptanmıştır (Papakostopoulos & Nathanael, 2021; Tran et al., 2022; McKinlay et al., 2022; Zheng et al., 2019; Rusli et al., 2022; Salmon et al., 2023). Bu bulgular doğrultusunda, kuryelerin trafik güvenlikleri araştırılırken iş faktörlerinin incelenmesinin önemli bir adım olacağını belirlenmiştir.

Moto kuryelerin iş faktörlerini incelemek için, literatür ile desteklenen ve sistematik bir çerçeve altında toplayan İş Talepleri ve İş Kaynakları Modeli (Demerouti et al., 2001) seçilmiştir. Bu modele göre iş talepleri ve iş kaynakları çalışanların bilişsel ve psikolojik dengesini etkileyen dış etmenler olarak alınmaktadır. İş talepleri bu dengeyi negatif yönde etkilerken, iş kaynakları bu dengeyi pozitif yönde etkiliyor olarak düşünülmektedir. Önceki çalışmalarda psikolojik ve fizyolojik maliyetlerle ilişkilendirilen iş taleplerinin stres, kaygı ve duygusal yorgunluk ile alakalı olduğu bulunmuştur (Warr, 1990; MacDonald, 2006; Topcic et al., 2016; Kim & Tak, 2010; Bunk et al., 1998; Michielsen et al., 2004; Seidler et al., 2014). Bu bulgulardan yola çıkarak, iş koşullarının çalışanın iyi olma hali, motivasyonu ve işbaşı davranışlarını

etkilediği öne sürülebilir. İş Talepleri ve İş Kaynakları Modeline göre iş talepleri dört boyut üstünde değerlendirilmektedir: iş yükü, duygusal talepler, duygusal uyuşmazlık ve kurumsal değişiklikler. Modele göre iş kaynakları ek dört boyut üstünde değerlendirilmektedir: otonomi, sosyal destek, amir koçluğu ve profesyonel gelişim için olanaklar. Özellikle moto kuryeler göz önünde bulundurularak yapılan iş talepleri ve iş kaynakları çalışmalarında, bu faktörlerin kuryelerin pozitif ve negatif duygularını, risk alma tutumlarını, güvenlik davranışlarını ve riskli sürüş davranışlarını etkilediği bulunmuştur (Zhang et al., 2022; Nguyen-Phuoc et al., 2022; Nguyen-Phuoc et al., 2023).

Buna rağmen, moto kuryelerle yapılan bu araştırmalarda motosikletlerinin trafikte sergilediği kapsamlı davranışlar incelenmemiştir ve literatürde yapılan değerlendirmeler kapsamında bu davranışların incelenmesine gerek olduğu saptanmıştır. Bu tez kapsamında yürütülen çalışmanın moto kuryelerin iş taleplerinin, iş kaynaklarının ve motosiklet sürüş davranışlarının detaylı olarak incelenmesi amaçlanmıştır. Buna ek olarak, iş talepleri ve iş kaynaklarının birbiriyle olan etkileşiminin moto kuryelerin sürüş davranışları üzerinde olan etkisini incelemek de amaçlanmıştır. Kısaca, bu çalışma ile moto kuryelerin iş taleplerinin, kaynaklarının ve trafikteki sürüş davranışlarının birbiriyle olan ilişkisinin saptanması hedeflenmiştir.

Çalışmanın Metotları

Çalışmaya 135 katılımcı katılmıştır. Katılımcıların hepsi aktif olarak moto kurye olarak çalışan bireylerdir. Katılımcılar yaşları 17 ile 52 arasında değişmektedir (O = 27.1). Katılımcıların hepsi erkektir. Çalışmaya 36 şirket kuryesi, 86 esnaf kurye ve 27 bağımsız kurye katılmıştır. Ayrıca, katılımcılara eğitim seviyeleri, ne kadar sıklıkla çalıştıkları, kaç yıldır motosiklet sürdükleri, kaç yıldır moto kurye olarak çalıştıkları, hayatları boyunca kaç kilometre motosiklet sürdükleri, işleri kapsamında kaç kilometre motosiklet sürdükleri, bir günde ortalama kaç saat çalıştıkları ve bir günde ortalama kaç adet paket teslim ettikleri sorulmuştur. Ek olarak güvenlik ekipman kullanımları ve son üç yılda karıştıkları aktif ve pasif kazaların sayıları hakkında sorular sunulmuştur.

Çalışma için ODTÜ İnsan Araştırmaları Etik Kurulu'ndan etik izin alınmıştır. Çalışma için veri online anket yöntemi ile toplanmıştır. Çalışmada ilk olarak katılımcılardan katılım onayı istenmiştir. İkinci olarak demografik bilgi formu doldurmaları istenmiştir. Üçüncü olarak İş Talepleri ve İş Kaynakları Ölçeği'ni (Xanthopoulou et al., 2007; Metin, 2010) doldurmaları istenmiştir. Son olarak ise Motosiklet Sürüş Davranışları Anketi'ni (Elliott et al., 2007; Özkan et al., 2012) doldurmaları istenmiştir. İş Talepleri ve İş Kaynakları Ölçeği, katılımcılardan verilen maddeleri ne kadar sıklıkla deneyimlediklerini belirtmelerini isteyen otuz altı soruluk bir ankettir. Anketin sekiz adet alt boyutu bulunmaktadır. Bu alt boyutlardan dört tanesi iş taleplerini ölçmektedir (yani iş yükü, duygusal talepler, duygusal uyuşmazlık ve kurumsal değişiklikleri) ve dört tanesi de iş kaynaklarını ölçmektedir (yani otonomi, sosyal destek, amir koçluğu ve profesyonel gelişim için olanaklar). İş talepleri alt boyutlarının iç tutarlılık değerleri sırasıyla .81, .71, .70 ve .80'dir. İş kaynakları alt boyutlarının iç tutarlılık değerleri sırasıyla .69, .85, .93 ve .80'dir. Motosiklet Sürüş Davranışları Anketi, katılımcılardan verilen maddeleri ne kadar sıklıkla deneyimlediklerini belirtmelerini isteyen kırk üç soruluk bir ankettir. Anketin beş alt faktörü bulunmaktadır: trafik hataları, kontrol hataları, hız ihlalleri, akrobatik sürüş davranışları ve güvenlik ekipmanı kullanımı. Alt faktörlerin iç tutarlılık değerleri sırasıyla .82, .55, .88, .78 ve .72'dir.

Çalışmanın Bulguları

Moto kuryelerin iş talepleri, iş kaynakları ve sürüş davranışlarını incelemek amacı ile üç ana analiz yürütülmüştür. İlk olarak, bütün değişkenler arasındaki genel ilişkiyi inceleme amacı ile korelasyon analizi yürütülmüştür. İkinci olarak, iş talepleri ile sürüş davranışları ve iş kaynakları ile sürüş davranışları arasındaki yordam ilişkisini incelemek amacı ile hiyerarşik regresyon yürütülmüştür. Bu analizde yaş, yıl bazında toplam sürüş deneyimi ve yıl bazında kuryelik deneyimi değişkenleri kontrol değişkeni olarak analize dâhil edilmiştir. Son olarak, iş talepleri alt boyutlarının, iş kaynakları alt boyutlarının ve sürüş davranışları faktörlerinin ayrı ayrı incelendiği moderasyon analizleri yürütülmüştür. Bütün analizler SPSS programının 26. versiyonu kullanılarak yapılmıştır (IBM, 2019).

Çalışmada kullanılan bütün alt boyutlar ve faktörler ilgili anket maddelerinin ortalaması alınarak hesaplanmıştır. Yüksek ortalamalar ilgili alt boyutların/faktörlerin yüksek değerlerine işaret etmektedir. Korelasyon analizine göre yaşın ehliyet süresi, yıl bazında toplam sürüş deneyimi ve yıl bazında kuryelik deneyimi ile pozitif olarak ilişkili; duygusal uyuşmazlık, amir koçluğu, hız ihlalleri ve akrobatik sürüş davranışları ile negatif ilişkili olduğu bulunmuştur. Eğitim seviyesinin ise yıl bazında toplam sürüş deneyimi ile negatif ve sosyal destek ile pozitif ilişkili olduğu bulunmuştur. Ehliyet süresinin yaş, yıl bazında toplam sürüş deneyimi, yıl bazında kuryelik deneyimi, mesafe bazında kuryelik deneyimi ve iş yükü ile pozitif ilişkili ve amir koçluğu ve akrobatik sürüş davranışları ile negatif ilişkili olduğu bulunmuştur. Çalışma sıklığının günlük ortalama çalışma süresi, mesafe bazında kuryelik deneyimi ve hız ihlalleri ile pozitif ilişkili olduğu bulunmuştur. Aktif kazaların pasif kazalar, duygusal talepler, duygusal uyuşmazlık, amir koçluğu ve hız ihlalleri ile pozitif ilişkili; otonomi ve profesyonel gelişim olanakları ile negatif ilişkili olduğu bulunmuştur. Pasif kazaların ise günlük ortalama çalışma süresi, aktif kazalar, kontrol hataları ile pozitif ilişkili; otonomi ile ise negatif ilişkili olduğu bulunmuştur. İş talepleri alt faktörlerinin trafik hataları, kontrol hataları ve hız ihlalleri ile pozitif ilişkili ve güvenlik ekipmanı kullanımı ile negatif ilişkili olduğu bulunmuştur. İş kaynakları alt faktörlerinin ise trafik hataları, kontrol hataları ve hız ihlalleri ile negatif ilişkili ve güvenlik ekipmanı kullanımı ile pozitif ilişkili olduğu bulunmuştur.

Hiyerarşik regresyon analizlerinin sonucuna göre iş taleplerinin trafik hatalarını yordadığı saptanmıştır. İkinci olarak, iş taleplerinin kontrol hatalarını yordadığı saptanmıştır. Üçüncü olarak, iş taleplerinin güvenlik ekipmanı kullanımını yordadığı saptanmıştır. Dördüncü olarak, iş kaynaklarının trafik hatalarını yordadığı saptanmıştır. Beşinci olarak, iş kaynaklarının kontrol hatalarını yordadığı saptanmıştır. Altıncı olarak, iş kaynaklarının hız ihlallerini yordadığı saptanmıştır. Yedinci olarak, iş kaynaklarının akrobatik sürüş davranışlarını yordadığı saptanmıştır.

Moderasyon analizlerinin sonucuna göre, iş talepleri ile iş kaynaklarının etkileşiminin sürüş davranışları üzerinde etkisi olduğu bulunmuştur. Farklı iş

kaynakları boyutlarının farklı seviyelerde farklı iş talepleri ve sürüş davranışları ilişkileri üzerinde etkiye sahip olduğu bulunmuştur.

(1) İş kaynaklarının otonomi boyutunun duygusal talepler ve trafik hataları ilişkisi üzerinde güçlendirici etkiye sahip olduğu bulunmuştur. İş kaynaklarının otonomi boyutunun iş yükü ve hız ihlalleri ilişkisi üzerinde güçlendirici etkiye sahip olduğu bulunmuştur. İş kaynaklarının otonomi boyutunun iş yükü ve akrobatik sürüş davranışları ilişkisi üzerinde güçlendirici etkiye sahip olduğu bulunmuştur. İş kaynaklarının otonomi boyutunun iş yükü ve güvenlik ekipmanı kullanımı ilişkisi üzerinde güçlendirici etkiye sahip olduğu bulunmuştur. Son olarak, iş kaynaklarının otonomi boyutunun duygusal talepler ve güvenlik ekipmanı kullanımı ilişkisi üzerinde güçlendirici etkiye sahip olduğu bulunmuştur.
(2) İş kaynaklarının sosyal destek boyutunun kurumsal değişiklikler ve kontrol hataları ilişkisi üzerinde yumuşatma etkisi olduğu bulunmuştur. İş kaynaklarının sosyal destek boyutunun duygusal talepler ve hız ihlalleri ilişkisi üzerinde yumuşatma etkisi olduğu bulunmuştur. İş kaynaklarının sosyal destek boyutunun duygusal talepler ve kontrol akrobatik sürüş davranışları ilişkisi üzerinde yumuşatma etkisi olduğu bulunmuştur. İş kaynaklarının sosyal destek boyutunun kurumsal değişiklikler ve akrobatik sürüş davranışları ilişkisi üzerinde yumuşatma etkisi olduğu bulunmuştur. Son olarak, iş kaynaklarının sosyal destek boyutunun duygusal uyuşmazlık ve güvenlik ekipmanı kullanımı ilişkisi üzerinde güçlendirici etkisi olduğu bulunmuştur.
(3) İş kaynaklarının amir koçluğu boyutunun kurumsal değişiklikler ve trafik hataları ilişkisi üzerinde güçlendirici etkiye sahip olduğu bulunmuştur. İş kaynaklarının amir koçluğu boyutunun iş yükü ve güvenlik ekipmanı kullanımı ilişkisi üzerinde güçlendirici etkiye sahip olduğu bulunmuştur. Son olarak, iş kaynaklarının amir koçluğu boyutunun duygusal talepler ve güvenlik ekipmanı kullanımı ilişkisi üzerinde güçlendirici etkiye sahip olduğu bulunmuştur.
(4) İş kaynaklarının profesyonel gelişim olanakları boyutunun iş yükü ve hız ihlalleri ilişkisi üzerinde güçlendirici etkiye sahip olduğu bulunmuştur.

Buna ek olarak, iş kaynaklarının profesyonel gelişim olanakları boyutunun duygusal uyuşmazlık ve güvenlik ekipmanı kullanımı ilişkisi üzerinde güçlendirici etkiye sahip olduğu bulunmuştur.

Çalışmanın Değerlendirilmesi

Bu çalışma moto kuryelerin iş talepleri, iş kaynakları ve sürüş davranışları arasındaki ilişkinin detaylı incelemesini sağlayan ilk çalışmadır. Çalışmanın bazı sonuçları önceki araştırmalar ile paralellik göstermektedir (Nguyen-Phuoc et al., 2022; Nguyen-Phuoc et al., 2023). Sonuçlara göre, iş talepleri güvenli sürüş davranışlarını negatif yönde yordamaktadır. İş kaynakları ise güvenlik sürüş davranışlarını pozitif yönde yordamaktadır. Bu sonuçların yanında bazı beklenmedik sonuçlarla da karşılaşılmıştır. Örnek olarak, iş kaynaklarının bazı iş talepleri ve riskli sürüş davranışları ilişkileri üzerinde tamponlama etkisi göstermesi ile birlikte, bazı ilişkiler üzerinde de artırıcı ilişkiye sahip olduğu belirlenmiştir. Bunun yanında, iş kaynağı olarak sayılan amir koçluğu alt boyutunun riskli sürüş davranışlarını pozitif yönde yordaması beklenmeyen sonuçlar arasındadır. Ancak bu çalışmanın sonuçları ve önceki araştırmaların bulgularına göre (Wu et al., 2013; Kim & Tak, 2010; Van Yperen & Hagedoorn, 2003) amirlerin çalışanları ile pozitif ilişkiye sahip olmasının onlardan daha fazla iş yükü beklemeleri ile ilişkili olabileceği ve bu durumun da kuryelerin trafikte riskli davranış sergilemesinde etkili olabileceği öne sürülebilir. Buna rağmen, bu ilişkiyi daha güvenilir şekilde yorumlamak adına amir koçluğunun moto kurye davranışları üzerindeki etkisinin kültür ya da diğer sosyal değişkenler göz önünde bulundurularak gelecekte daha detaylı olarak incelenmesi gerekmektedir. Çalışmanın kısıtlamaları arasında örneklem büyüklüğü ve katılımcılarının hepsinin erkek olması sayılabilir. Ayrıca çalışma verilerinin anket yöntemi kullanılarak toplanması sebebi ile katılımcıların sosyal istenirlik önyargısı göstermiş olma ihtimali olabilir. Çalışmanın enine kesit çalışması olması dolayısı ile neden sonuç çıkarımı yapılamamaktadır. Bunun yanında çalışmada kullanılan ölçümler ile birtakım kısıtlamalar meydana çıkmış olabilir. Örnek olarak, iş talepleri ve iş kaynaklarını ölçmek amacı ile kullanılan ölçeğin moto kurye mesleği göz önünde bulundurularak mesleğe özel tasarlanmış bir ölçek olmasından ziyade, yüzeysel bir iş talepleri ve kaynakları ölçümü olması sayılabilir. Bunun yanında, motosiklet sürüş

davranışlarını ölçmek amacı ile kullanılan ölçeğin yüzeysel sürüş davranışlarını ölçerken moto kuryelere özel riskli davranışları ölçmemesi çalışmanın bir kısıtlaması olarak ele alınabilir.

Gelecek çalışmalarda moto kuryelerin meslek özellikleri göz önünde bulundurularak hazırlanan ölçekler kullanılabilir. Ayrıca, gelecekteki çalışmalarda sürüş davranışı ölçeğine verilen cevaplar değerlendirilirken bu cevapların iş başındaki sürüş davranışlarının ya da iş dışındaki sürüş davranışlarının hangilerinin ölçüldüğünün ayrımı yapılmalıdır. Bununla birlikte, gelecek çalışmalarda müşterilerin beklentilerinin hızlı teslimat sektöründe oynadığı rol, kurumsal güvenlik iklimi, kişilik değişkenleri, kültür değişkenleri ve sosyal faktörler gibi bu çalışmada ele alınmayan konuların ele alınması elzemdir. Moto kuryelik mesleğinin yol ve iş güvenliklerinin artırılması amacıyla, mesleğin çok tehlikeli meslekler arasına alınması ve gerekli denetimlerin resmi makamlar tarafından yapılması önem taşımaktadır. Hızlı teslimat hizmeti sunan şirketlerin ise bu çalışmanın sonuçlarından yola çıkarak kuryelerinin iş taleplerini ve iş kaynaklarını düzenlemeleri kuryelerin trafik güvenliği açısından yarar sağlayabilir.

Genel Sonuç

Bu çalışma moto kuryelerin iş talepleri, iş kaynakları ve motosiklet sürüş davranışlarının birbirleriyle olan ilişkilerini detaylı olarak incelemek amacı ile yürütülmüştür. Çalışma neticesinde iş talepleri ile motosiklet sürüş davranışları arasında ve iş kaynakları ile motosiklet sürüş davranışları arasında ilişkiler tespit edilmiştir. İş talepleri ile iş kaynaklarının birbirileri ile etkileşim halinde olduğu da tespit edilen sonuçlar arasındadır. Çalışmanın sonuçlarının trafikteki yoğunlukları ve maruz kaldıkları riskler artan moto kuryelerin trafik güvenlikleri hakkındaki değerlendirmeler üzerinde açıklayıcı etkiye sahip olması ve gelecek çalışmalara bir temel oluşturması beklenmektedir.

G. THESIS PERMISSION FORM / TEZ İZİN FORMU

(Please fill out this form on computer. Double click on the boxes to fill them)

ENSTİTÜ / INSTITUTE

Fen Bilimleri Enstitüsü / Graduate School of Natural and Applied Sciences ☐

Sosyal Bilimler Enstitüsü / Graduate School of Social Sciences ☒

Uygulamalı Matematik Enstitüsü / Graduate School of Applied Mathematics ☐

Enformatik Enstitüsü / Graduate School of Informatics ☐

Deniz Bilimleri Enstitüsü / Graduate School of Marine Sciences ☐

YAZARIN / AUTHOR

Soyadı / Surname : Atalan
Adı / Name : Gözde
Bölümü / Department : Psikoloji / Psychology

TEZİN ADI / TITLE OF THE THESIS (**İngilizce** / English): Motorcycle Couriers' Job Demands, Job Resources, and Riding Behaviors

TEZİN TÜRÜ / DEGREE: **Yüksek Lisans** / Master ☒ **Doktora** / PhD ☐

1. **Tezin tamamı dünya çapında erişime açılacaktır.** / Release the entire work immediately for access worldwide. ☒
2. **Tez iki yıl süreyle erişime kapalı olacaktır.** / Secure the entire work for patent and/or proprietary purposes for a period of **two years. *** ☐
3. **Tez altı ay süreyle erişime kapalı olacaktır.** / Secure the entire work for period of **six months**. ***** ☐

***** *Enstitü Yönetim Kurulu kararının basılı kopyası tezle birlikte kütüphaneye teslim edilecektir. / A copy of the decision of the Institute Administrative Committee will be delivered to the library together with the printed thesis.*

Yazarın imzası / Signature ..... **Tarih** / Date .....
(Kütüphaneye teslim ettiğiniz tarih. Elle doldurulacaktır.)
(Library submission date. Please fill out by hand.)

Tezin son sayfasıdır. / This is the last page of the thesis/dissertation.