

CORRELATES OF SEAT BELT USE AMONG TURKISH FRONT SEAT
OCCUPANTS

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

BY

ÖZLEM ŞİMŞEKOĞLU

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

JUNE 2005

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ABSTRACT

CORRELATES OF SEAT BELT USE AMONG TURKISH FRONT SEAT OCCUPANTS

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June, 2005, 79 pages

This thesis included three separate studies, which were observational, interview and survey studies, on seat belt use among Turkish front seat occupants. The observation study investigated occupant characteristics and environmental factors affecting seat belt use. Seat belts were used significantly more among females and older occupants than among males and younger occupants; and on intercity roads, at weekends and in the afternoons than on city roads, at weekdays and in the evenings. The interview study investigated the common reasons for using and not using a seat belt in different trip types, qualitatively. Safety, situational conditions, habit and avoiding punishment were the commonly reported reasons for using a seat belt, while situational conditions, not believing the effectiveness of seat belt use, discomfort and no habit of using a seat belt were the commonly reported reasons for not using a seat belt, for most of the trip types. In the third study, seat belt use both on urban and rural roads were explained with the basic and extended Theory of Planned Behavior (TPB) models and Health Belief Model (HBM), using Structural Equation Modeling. Basic TPB model showed a good fit to the data, while extended TPB model and HBM showed a low fit to the data. Within TPB constructs, attitudes and the subjective norm had a positive and significant relation to intentions to use a seat belt. Results were discussed for their

implications to traffic safety in Turkey, along with limitations of the study and suggestions for further studies.

Keywords: Seat belt use, front seat occupants, seat belt use observation, seat belt use interview, Theory of Planned Behavior.

ÖZ

TÜRK ÖN KOLTUK YOLCULARI ARASINDA EMNİYET KEMERİ KULLANIMINA İLİŞKİN FAKTÖRLER

Şimşekoğlu, Özlem

Yüksek Lisans, Psikoloji Bölümü

Tez Yöneticisi: Doç. Dr. Timo Lajunen

Haziran, 2005, 79 sayfa

Bu tez, Türk ön koltuk yolcuları arasındaki emniyet kemeri kullanımı hakkında yapılmış gözlem, röportaj ve anket çalışmaları olmak üzere üç farklı çalışma içermektedir. Gözlem çalışması, emniyet kemeri kullanımını etkileyen ön koltuk yolcu özellikleri ve çevresel faktörleri incelemiştir. Kadınlar ve daha yaşlı ön koltuk yolcuları, erkekler ve genç ön koltuk yolcularına göre anlamlı derecede daha fazla emniyet kemeri kullanmıştır. Ayrıca emniyet kemeri, şehirler arası yollarda, hafta sonlarında ve öğleden sonralarda, şehir içi yollara, hafta içlerine ve akşamlara göre anlamlı derecede daha fazla kullanılmıştır. Röportaj çalışması farklı yolculuk çeşitlerinde emniyet kemeri kullanmanın ve kullanmamanın yaygın nedenlerini niteliksel olarak incelemiştir. Birçok yolculuk çeşidi için, güvenlik, çevresel koşullar, alışkanlık ve cezadan kaçınma sıkça rapor edilen emniyet kemeri kullanma nedenleri olarak bulunmuş iken, çevresel koşullar, emniyet kemeri kullanmanın yararına inanmama, rahatsızlık ve emniyet kemeri kullanma alışkanlığına sahip olmama sıkça rapor edilen emniyet kemeri kullanmama nedenleri olarak bulunmuştur. Üçüncü çalışmada, şehir içi ve şehir dışı yollardaki emniyet kemeri kullanımı, Yapısal Eşitlik Modeli kullanılarak temel ve genişletilmiş Planlı Davranış Kuramları ve Sağlık İnancı Modeli ile incelenmiştir. Temel Planlı Davranış Modeli veriye iyi bir uygunluk gösterirken, genişletilmiş Planlı Davranış Modeli ve Sağlık İnancı Modeli veriye düşük bir uygunluk göstermiştir. Planlı Davranış Modeli kavramları içerisinde, tutum ve öznel norm emniyet kemeri kullanmaya

yönelik niyet ile pozitif ve anlamlı bir ilişkiye sahip olmuştur. Sonuçlar, çalışmanın sınırlılıkları ve ileriki çalışmalar için önerilerle birlikte, Türkiye'deki trafik güvenliğine katkıları açısından tartışılmıştır.

Anahtar kelimeler: Emniyet kemeri kullanımı, ön koltuk yolcuları, emniyet kemeri kullanımı gözlemi, emniyet kemeri kullanımı röportajı, Planlı Davranış Kuramı.

To the METU Traffic Research Unit project

ACKNOWLEDGEMENTS

First of all, I would like to thank to my thesis supervisor Timo Lajunen, who guided, supported and encouraged me during all phases of my thesis.

Especially I would like to thank to Dave Lamble for his great contributions in shaping my thesis and for many things that I have learnt from him on how to write a thesis.

Türker Özkan and Bahar Öz, who guided me with their experiences when I needed and supported me, are also gratefully acknowledged.

Of course, I thank to my dear friends and family especially for the moral support they gave to me during my thesis process.

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CHAPTER 1

GENERAL INTRODUCTION

1.1 Seat belt use and traffic safety

International research has consistently proved the effectiveness of seat belt use in preventing and reducing fatalities and severe injuries during road vehicle accidents (Evans, 1986; IRTAD, 1995; National Highway Traffic Safety Administration, 2003; Petridou et al., 1998). Evans (1986) indicated that, if all the front seat occupants in U.S. were to use lap/shoulder belts without changing any other behavior, then there would be a 41% reduction in fatalities in that population. More than a decade and a half later, National Highway Traffic Safety Administration (2003) also reported the effectiveness of seat belt use in reducing fatalities and injuries during the previous 20 years in the U.S. It is reported that, while using seat belt saved more than 100,000 lives, over 7,000 people were killed and over 100,000 people were injured due to not using seat belt (National Highway Traffic Safety Administration, 2003). Also, IRTAD (1995) has estimated that the use of seat belts has reduced the injury severity in about 50 % of road vehicle accidents, especially in accidents that would have resulted in fatal or severe injuries. Petridou et al. (1998) evaluated motor vehicle deaths in Greece that could have been avoided by the use of standard safety devices. They found that 27% of road fatalities would likely have been avoided if all car occupants had used a seat belt. Hence, use of seat belt as an effective safety device can be seen to play an important role in traffic safety by reducing the severity of injuries during road vehicle accidents.

Previous research has found collision type, car speed and size as the factors influencing the effectiveness of seat belt use in accidents (Conn et al., 1993; IRTAD, 1995). Using a seat belt was found to be more effective in head-on and rollover collisions and especially in accidents that happened at low speeds on urban roads (IRTAD, 1995). Seat belt use was also found to be more

effective in preventing serious injuries to front-seat occupants in larger cars than in small cars (Conn et al., 1993).

1.2 Effectiveness of seat belt laws

There has been international evidence for the effectiveness of seat belt laws in increasing seat belt use rates and so reducing injury and fatality rates in the accidents (Campbell, Stewart and Reinfurt, 1991; Dinh-Zarr et al., 2001; Evans, 1991; Heartland Institute, 1991; Jonah and Lawson, 1984; Lange and Voas, 1998; Loeb, 1995, Rivara, Thompson and Cummings, 1999). Evans (1991) cited the success in the U.K., where seat belt use increased from 40% to 90% after seat belt legislation was enacted in 1983, as one of the most striking examples demonstrating the effectiveness of legislation to improve seat belt use. In their review of the international evidence regarding interventions to increase seat belt use rates Dinh-Zarr et al., (2001) found strong evidence for the effectiveness of general seat belt legislation. However, primary seat belt legislation, which allows police officers to stop a driver for not a using seat belt, was found to be more effective than secondary seat belt legislation, which only allows a police officer to issue a seat belt citation after the driver has been stopped for some other legitimate reason (Dinh-Zarr et al., 2001). A review of the several seat belt law studies conducted in the U.S. between 1980 and 2000 indicated that, after the introduction of seat belt laws a 3%-20% decrease in the combined fatal and non-fatal injuries and a 20%-36% increase in the observed seat belt use occurred (Dinh-Zarr et al., 2001). Higher effectiveness of primary enforcement relative to secondary enforcement seat belt laws was reported (Dinh-Zarr et al., 2001). Rivara, Thompson and Cummings (1999), Campbell (1988) and Lange and Voas (1998) have also reported evidence for the effectiveness of seat belt legislation, with primary legislation being more effective than secondary legislation, in increasing seat belt use rates. Other examples for the effectiveness of seat belt legislation in increasing the seat belt use rates come from Canada and Hawaii. After seat belt legislation was enacted, seat belt use increased from 20 to 36% in Canada (Jonah and Lawson, 1984) and from 33 to 80% in Hawaii (Heartland Institute, 1991). After

analyzing the crash databases from nine states in U.S., Campbell, Stewart and Reinfurt (1991) found a general evidence for the effectiveness of seat belt laws in reducing injuries among people covered by the seatbelt laws. Similarly, seat belt laws were found to be effective in reducing injury and fatality rates in Texas (Loeb, 1995).

Despite the strong evidence for the general effectiveness of seat belt legislation in increasing seat belt use rates, the effects of some seat belt legislations on reducing traffic fatalities and injuries have been found smaller than expected by some researchers (Dee, 1998; Evans, 1991; Garbacz, 1992; Heartland Institute, 1991; Jonah and Lawson, 1984). The “*selective recruitment*” hypothesis was one of the explanations used for explaining the relatively small effects of seat belt legislation on reducing traffic fatalities and injuries (Evans, 1991; Dee, 1998; Jonah and Lawson, 1984). According to the selective recruitment hypothesis, the effects of seat belt legislation may not be homogenous across all drivers because unsafe drivers may be less likely to respond to a change in the law and those changing from non-use to use after the law was enacted may already be safer than the average driver (Dee, 1998; Evans, 1991). Further support for the selective recruitment hypothesis comes from findings that alcohol drinkers, young and male drivers, which mostly constitute the unsafe driver groups, were less responsive to seat belt legislation and enforcement programs than the other drivers (Dee, 1998; Dihn-zarr et al., 2001; Tipton, Camp and Hsu, 1990).

Another explanation for the relatively small effect of seat belt legislations on reducing traffic fatalities and injuries comes from “*risk compensation*” theory. Risk compensation theory mainly indicates that individuals compensate for reduced risk due to better protection from danger, by taking more risks (Adams, 1999). Thus, according to the risk compensation theory, a driver who begins to use a seat belt, compensates by driving more recklessly than in the past, so increases his/her risk of having an accident or a more serious type of accident, thereby reducing the beneficial and expected effects of seat belt use (Adams, 1999; Dee, 1998; Dihn-zarr et al, 2001). Although it did not get as much support as the selective recruitment hypothesis,

risk compensation theory in seat belt use was supported by some research (Adams, 1999; Garbacz 1992; Heartland Institute, 1991; Thompson, Thompson and Rivara, 2001). The increasing fatality rates after the seat belt law in Hawaii, despite the large increase in seat belt usage were mainly explained by the risk compensation concept (Heartland Institute, 1991). Garbacz (1992) argued that road users outside of the car were more at risk due to new seatbelt using drivers' driving more dangerously after the introduction of the seat belt legislation. Adams (1999) used this explanation in explaining the increased number of deaths among pedestrians, cyclists and rear seat passengers in U.K. after the introduction of seat belt legislation.

In evaluating the evidence of relatively small effectiveness of seat belt legislation in reducing injuries and fatalities, there are few points to keep in mind. Firstly, it should be noted that, this evidence does not mean that seat belt use is not as effective as expected in reducing injuries and fatalities. As a safety device when used, the seat belt has proved to reduce injury severity in many research findings (Evans, 1986; IRTAD, 1995; National Highway Traffic Safety Administration, 2003; Petridou et al., 1998; T.C. Emniyet Genel Müdürlüğü, 1999). Factors decreasing the effectiveness of seat belt legislations in reducing injuries and fatalities appear as mostly related to driver characteristics. Also, publicity of the laws, level of enforcement, political attitudes and the size of the occupants affected by the law were reported as some of the important factors influencing the effectiveness of seat belt laws (Dihn-zarr et al, 2001; Evans, 1991). Although effectiveness of some seat belt laws have not been found as to be as high as expected, there is still strong evidence for the effectiveness of seat belt laws in increasing seat belt use rates and so reducing the number of fatalities and severity of injuries.

1.3 Effectiveness of enforcement programs and interventions for seat belt use

Besides the introduction of seat belt legislation, both enforcement programs and interventions promoting seat belt use have been found to be effective in increasing seat belt use rates (Dihn-Zarr et al., 2001; Hagenzieker,

Bijleveld and Davidse, 1997; Jonah and Grant, 1985; Williams et al., 1987; Williams and Wells, 2004). In their review, Dihn-Zarr et al. (2001) indicated that, a 7%-15% decrease in the combined fatal and non-fatal injuries and an 8%-24% increase in the observed seat belt use occurred after the introduction of enhanced enforcement programs for seat belt use. Similarly, seat belt law enforcement together with publicity campaigns have been found effective in increasing seat belt use and compliance with seat belt use laws in the U.S. (Williams et al., 1987; Williams and Wells, 2004). Jonah and Grant (1985) also found evidence for the long-term effectiveness of selective enforcement programs for increasing seat belt use in jurisdictions with seat belt legislation in Canada.

In terms of the effectiveness of interventions promoting seat belt use, several factors such as the features of the target population, presence of rewards and initial baseline rate for the seat belt usage before the interventions were found to be influential (Hagenzieker, Bijleveld and Davidse, 1997; Pastò and Baker, 2001). In their meta-analysis on the effects of incentive programs to increase seat belt use Hagenzieker, Bijleveld and Davidse (1997) mainly found that, long-term effects of the incentive programs were smaller than the short-term effects and that the short-term effects were dependent on moderator variables, such as the type of the population involved, the immediacy of delivering the rewards and the initial baseline rate for the seat belt use. It was found that the short-term effectiveness of the incentive programs were higher among elementary school students, when incentives were delivered immediately, when the initial baseline rate for seat belt use was low, and there was no seat belt legislation (Hagenzieker, Bijleveld and Davidse, 1997). Similarly, Pastò and Baker (2001) found that interventions with performance feedback increased seat belt use especially among young adults. Thus, it seems that seat belt use interventions are especially more effective within certain non-user target groups, who would benefit from these interventions more, such as the young people and within certain conditions that provoke low seat belt use such as the absence of mandatory seat belt laws.

1.4 Seat belt use in Turkey

1.4.1 Seat belt laws and usage rates in Turkey

In Turkey, in 1986 seat belt use was made mandatory for the drivers and front seat passengers of automobile and minibuses traveling on inter-city roads (T.C. Emniyet Genel Müdürlüğü, 1999). In 1992, seat belt use was also made mandatory for the drivers and front seat passengers of automobile and minibuses traveling on city roads and later in 1998 seat belt use was also made mandatory for the drivers and front seat passengers of trucks, pickups and intercity buses (T.C. Emniyet Genel Müdürlüğü, 1999). It is forbidden to carry children below the age of ten in the front seats of automobiles, minibuses, trucks, pickups and intercity buses (T.C. Emniyet Genel Müdürlüğü, 1999).

A high amount of car occupants do not use seat belt in Turkey, which was accepted as one of the main reasons for the low traffic safety in Turkey (SWE ROAD, 2001; T.C. Emniyet Genel Müdürlüğü, 1999). The results of an observational study of seat belt use in Turkey conducted in 1999 found that, 71% of the drivers used a seat belt on intercity roads, while 21% of them used a seat belt on city roads (T.C. Emniyet Genel Müdürlüğü, 1999).

1.4.2 Role of seat belt use in the traffic safety of Turkey

The high number of traffic accidents leading to a large number of injures and fatalities constitute one of the biggest of problems in Turkey (Sümer, 2002; SWE ROAD, 2001). The National Traffic Safety Program for Turkey, which was prepared by SWE ROAD (2001), reported that the recorded number of accidents per 100,000 people showed a sharp increase from 1990 to 1999 with 205 accidents in 1990 and 724 accidents in 1999. Similarly, recorded number of injuries per 100,000 people showed a slight increase from 1990 to 1999 with 156 injuries in 1990 and 195 injuries in 1999 (SWE ROAD, 2001). However, recorded number of fatalities per 100,000 people showed a slight decrease from 1990 to 1999 with 11 fatalities in 1990 and 9.5 fatalities in 1999 (SWE ROAD, 2001). Similarly, national accident statistics showed that, while the number of accidents and injuries increased, number of fatalities

decreased through the accidents from 1992 to 2002 in Turkey (T.C. İçişleri Bakanlığı, Emniyet Genel Müdürlüğü, Trafik Hizmetleri Başkanlığı, 2002). These effects are largely due to the increasing rate of motorization in Turkey. As more vehicles are added to the Turkish road network, more vehicle occupants and pedestrians are exposed to the risk of an accident and injury. It should be noted that, despite the lower amounts of fatalities in Turkey compared to past, both injuries and fatalities occurring from vehicle accidents are still very high, which needs consideration and action.

Figure 1.1 and 1.2 shows the seat belt use data of drivers in accidents during 2002 that occurred on city and intercity roads by injury severity (T.C. İçişleri Bakanlığı, Emniyet Genel Müdürlüğü, Trafik Hizmetleri Başkanlığı, 2002). Despite the high amount of unknown seat belt use data, a general picture about seat belt use appears from the figures. Figure 1.1 shows that, in the accidents that happened on city roads, about 7% of drivers killed were not using a seat belt, while only 2% of the drivers injured were not using a seat belt. Figure 1.2 shows that, in accidents that happened on intercity roads, about 10% of the drivers killed were not using a seat belt, while only 3% of the drivers injured were not using a seat belt.

From the figures it appears that, for both on city and intercity roads proportion of drivers killed using and not using a seat belt are almost equal. However, in both figures the proportion of injured drivers not using a seat belt is lower than the proportion of injured drivers using a seat belt. Although the difference is not so big, the higher proportion of drivers not using a seat belt in the fatality data than the injury data on both city and intercity roads can be interpreted as showing the effectiveness of seat belt use in reducing severe injuries. On intercity roads, the proportions of both killed and injured drivers using a seat belt were more than the proportions of killed and injured drivers using a seat belt on city roads. This may be reflecting differences in attitudes and motivations of drivers in using seat belt between intercity and city roads.

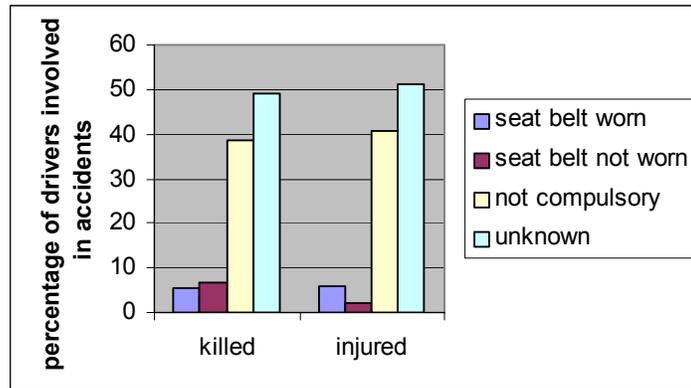


Figure 1.1 Seat belt use of drivers in accidents during 2002 on city roads by injury severity

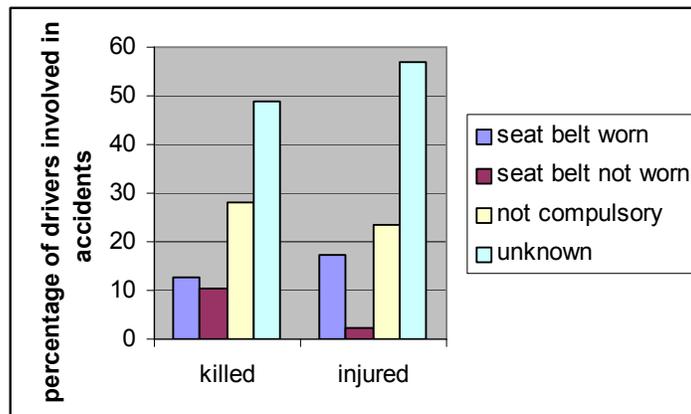


Figure 1.2 Seat belt use of drivers in accidents during 2002 on intercity roads by injury severity

1.5 Aims of the thesis

The present thesis consisted of three studies, which were an observation, interview and a survey study on seat belt use in Turkey. The main aims of the whole thesis were:

- 1) To obtain and evaluate the recent seat belt use rates in Turkey, and identify the user characteristics and situational factors affecting seat belt use

- 2) To identify and evaluate the reasons for using and not using a seat belt in different trip types and conditions in Turkey
- 3) To explain seat belt use with the Theory of Planned Behavior and Health Belief Model, and to compare their explanatory power
- 4) To provide a better understanding of the correlates of seat belt use in Turkey and to contribute to the traffic safety in Turkey by providing information on how to target interventions can increase low seat belt use rates

CHAPTER 2

AN OBSERVATION STUDY ABOUT SEAT BELT USE

2.1 Introduction

2.1.1 Psychosocial and situational factors affecting seat belt use

Previous research has found several psychosocial and situational factors related to seat belt use. Sex, age, socioeconomic factors, ethnic origin, educational background and driving experience have all been reported to be related to seat belt use (Begg and Langley, 2000; Calisir and Lehto, 2002; Colòn, 1992; Li, Kim and Nitz, 1999; Matsuura, Ishida and Ishimatsu, 2002; Reinfurt et al., 1996; Shin, Hong and Waldron, 1999; Shinar, 1993; Steptoe and Wardle, 2001). Being female, older age and having a higher education level have been found to be positively related to seat belt use, whereas being male, younger age and having a lower education level have been found to be negatively related to seat belt use (Begg and Langley, 2000; Calisir and Lehto, 2002; Li, Kim and Nitz, 1999; Matsuura, Ishida and Ishimatsu, 2002; Reinfurt et al., 1996; Steptoe and Wardle, 2001). Shin, Hong and Waldron (1999), found that, seat belt use was lower among high school students from a lower socioeconomic level due to less encouragement and modeling for seat belt use from parents and the students' more fatalistic life styles. Similarly, Shinar (1993) found low education and socioeconomic level and a greater proportion of African Americans as the characteristics of U.S. cities with low seat belt use rates. In their study looking at the relationship between ethnicity, belief in destiny and seat belt usage, Colòn (1992) found that racial differences in seat belt use might be explained by belief in destiny, which was an important motivational base for lower seat belt use. In another study comparing the health behavior and life styles of students from Eastern and Western Europe Steptoe and Wardle (2001) found that Eastern European students had less healthy life

styles than Western European student in terms of some health behaviors including seat belt use, which was lower among Eastern European students. In a study on the effect of driving experience on seat belt use, Matsuura, Ishida and Ishimatsu (2002), found that seat belt use tended to decrease after licensing and increased again after a few years of driving especially for male novice drivers. This effect can be explained by the overconfidence of novice drivers in their driving skills leading them to disregard the need to seat belts (Matsuura, Ishida and Ishimatsu, 2002).

The presence of parents or older adults, number of passengers, seating location, time and place of the drive, trip type, weather and road conditions, and vehicle type and vehicle age were have all been found to be situational factors affecting seat belt use (Begg and Langley, 2000; Chliaoutakis et al., 2000; Fockler and Cooper, 1990; Li, Kim and Nitz, 1999; Reinfurt et al., 1996; Willams and Shabanova, 2002). Willams and Shabanova (2002) found that seat belt use among teenage drivers increased when they were accompanied by parents or older adults, but decreased when accompanied by younger occupants. An increasing number of passengers increased seat belt use among older drivers, but decreased use among teenage drivers (Williams and Shabanova, 2002). Driving during the night, in urban areas, on the weekends and driving short distances were found to be negatively related to seat belt use, while bad weather and road conditions, heavy traffic, traveling as a passenger in someone else's car and driving at high speeds and in unknown area were positively related to seat belt use (Chliaoutakis et al. 2000; Fockler and Cooper, 1990; Li, Kim and Nitz, 1999; Williams and Shabanova, 2002). Seating location was found to be another situational factor affecting seat belt use with 85-96% of young front seat occupants using a seat belt compared to only 29-47% of rear seat passengers (Begg and Langley, 2000). Older vehicles and vehicles other than cars, especially pick-up trucks have also been found to be associated with a lower rate of seat belt use (Reinfurt et al., 1996).

2.1.2 A past observation study about seat belt use in Turkey

An observational study conducted by the T.C. Emniyet Genel Müdürlüğü (EGM) in 1999 found that, a large proportion of car occupants do not use a seat belt in Turkey. Only 16% of the 4877 car drivers observed on city roads in Ankara were using a seat belt, and only 18% of the 2045 front seat passengers were using a seat belt. Usage rates for drivers and front seat passengers in other vehicles were even lower; 11% of drivers and 5% of front seat passengers in minibuses; 4% of drivers and 2% of front seat passengers in pickups; 0% of both drivers and front seat passengers in taxis; and, 1% of both drivers and front seat passengers in official vehicles were using a seat belt (EGM, 1999). On intercity roads, however, the usage rate was much higher, at about 71% for car drivers (EGM, 1999).

The study also found that among 757 car drivers using a seat belt on city roads of Ankara, 78% of them were male and 22% of them were female, and among 365 front seat passengers using a seat belt, 72% of them were male and 28% of them were female (EGM, 1999). From 759 car drivers using a seat belt, it was estimated that 13% of them were between the ages of 18-25, 56% of them were between the ages of 26-45, 24% of them were between the ages of 46-60 and 7% of them were above the age of 61 (EGM, 1999). While this data is useful it is only a general data, which shows the magnitude of the problem but not the groups at risk within the data. This is because the data is not controlled for exposure. For example, these data show that more males use seat belt than females simply because there are more males than females driving on the road. To get an accurate picture of the situation on the Turkish roads, exposure within specific groups must be controlled. That is, the proportion of seat belt using males and females should be calculated by comparing the number of seat belt users of each sex to the number of drivers of each sex respectively.

2.1.3 Aims of the study

In the present study, seat belt use of drivers and front seat passengers in private cars were observed on certain city and intercity roads in Ankara.

During the observations, factors that might affect seat belt use which were, sex, age, occupant type (driver or front seat passenger), observation day, place, and time were recorded. The main aims were:

- 1) To obtain and evaluate the recent seat belt use rates in Ankara.
- 2) To obtain and evaluate the front seat occupant characteristics and environmental factors affecting seat belt use
- 3) To compare these results with the earlier seat belt use findings

2.1.4 Hypotheses of the study

Based on the findings of previous studies, the main hypotheses of the study were:

- 1) Seat belts would be used more on intercity roads than on city roads.
- 2) Women would use a seat belt more than men on all road types.
- 3) Young front seat occupants would use a seat belt less than other age groups, and that seat belt use would increase with age on all road types.
- 4) Seat belts would be used less at the weekends than at the weekdays on all road types.

2.2 Method

2.2.1 Participants

The participants were 4227 front seat occupants, drivers and front seat passengers, of private cars observed on certain roads in Ankara. A total of 264 cases where there was disagreement between the two observers on seat belt use, sex, and age group of the front seat occupant were excluded from the analysis, and so the total number of observed front seat occupants was 3963. The two observers agreed on 94% of the observations made on three observed subjective variables. Sample characteristics of the front seat occupants are displayed in Table 2.1.

Table 2.1 Sample characteristics

	N	%
Sex		
male	2357	59.5
female	1606	40.5
Age		
<30	1301	32.8
30-50	2202	55.6
>50	460	11.6
Occupant type		
driver	1670	42.1
front seat passenger	2293	57.9

2.2.2 Instrument and data collection

An observation form, which can be seen in Appendix A, was used by each observer to collect data on each vehicle observed. Seat belt use (yes, no), age group (<30, 30-50, >50), sex (male, female), occupant type (driver, front passenger), and road direction were recorded by each observer. The observation place, time and weather condition with the total number of cars counted during the observation period were also noted on the form by the observers.

Students in a traffic psychology class at the Middle East Technical University collected the observation data. There were total of 12 observers grouped into 4 observer groups who observed 4 different roads in Ankara. Before making the observations, the observers were trained in how to make the observations by the author. The author then supervised all data collection to ensure proper collection technique. During the observation sessions, two groups of observers made observation on two different city roads (Meşrutiyet and Atatürk boulevards), the other two groups made observation on two different intercity roads (Eskişehir and Konya motorways). Observations were conducted four days a week, Monday, Tuesday, Thursday and Sunday, over a total of 32 observation sessions. Each group conducted two observation

sessions each day, one in the afternoon (15:30-16:30) and one in the evening (19:00-20:00). In each observation session there were total of three observers. Two observers made separate observations of vehicle occupants and the third observer counted the number of cars passing during the observation periods. The observed cars were chosen randomly throughout mass of cars. The choice of car to observe was decided by agreement between the two observers before making the observation. The observed front seat occupant was preferred to be a front seat passenger but was the driver in the absence of front seat passenger. Each observation session lasted about one hour and if the road had two directions, one side was observed during the first half-hour and the other side was observed during the second half-hour. All observation sessions were conducted during fine, dry weather, except for one session, which had a small amount of rain.

2.3 Results

2.3.1 Seat belt use of the front seat occupants for the observed variables

Percentages of seat belt users for the observed variables and chi-square statistics were obtained from SPSS Crosstabs analysis. Seat belt use among all observed front seat occupants was 25%. Percentages of front seat occupants using seat belt on city and intercity roads for occupant type, sex, age, observation day and time, uncontrolled for exposure, are summarized in Table 2.2. By uncontrolled for exposure, each category of seat belt use was compared to the total number front seat occupants using a seat belt in that category. This gives a general picture of the magnitude of the problem, but does not provide accurate information on the level of use within each category. Chi-squared analysis revealed that, in all roads among the front seat occupants using a seat belt, a significantly higher proportion of them were front seat passengers (54.2%) than drivers (45.8%); a significantly higher proportion of them were females (56.5%) than males (43.5%); a significantly higher proportion of them were aged between 30-50 (55.4%) than occupants aged under 30 (30.9%) and aged over 50 (13.7); a significantly higher proportion of them were observed at

the weekdays (62.7%) than at weekends (37.3%); and a significantly higher proportion of them were observed in the afternoons (59.2%) than in the evenings (40.8%).

Table 2.2 Percentages of seat belt users on different road types for the observed variables

	City Roads	Intercity Roads	All roads
Occupant type			
driver	48.7%	44.5%	45.8%
front seat passenger	51.3%	55.5%	54.2%
Pearson $\chi^2_{(1)}$	7.5*	1.6	7.3*
Sex			
male	46.5%	42.2%	43.5%
female	53.5%	57.8%	56.5%
Pearson $\chi^2_{(1)}$	43.9*	81.9*	141.6*
Age			
under 30	39.4%	27.0%	30.9%
30-50	49.0%	58.3%	55.4%
over 50	11.5%	14.7%	13.7%
Pearson $\chi^2_{(2)}$	1.2	2.3	6.6*
Observation day			
weekday	66.7%	60.9%	62.7%
weekend	33.3%	39.1%	37.3%
Pearson $\chi^2_{(1)}$	4.1*	0.2	7.9*
Observation time			
afternoon	51.0%	62.9%	59.2%
evening	49.0%	37.1%	40.8%
Pearson $\chi^2_{(1)}$	1.4	2.2	12*

*p<0.05

Percentages of seat belt users on city and intercity roads for occupant type, sex, age, observation day and time, controlled for exposure, are summarized in Table 2.3. By controlled for exposure, each category of seat belt use is compared to the total number of observed front seat occupants in that category. For instance, female seat belt users are compared to the total number of female front seat occupants and male seat belt users are compared to the total number of male front seat occupants for the different road types. To test whether there was a significant difference in seat belt use proportion of the front seat occupants between city and intercity roads and within each road type for the observed variables, separate Pearson χ^2 values were calculated. Chi-squared analysis revealed that, for each category of the all observed variables, which were occupant type, sex, age, observation day and time, there was a significant difference between city and intercity roads in seat belt use proportions of the observed front seat occupants. For each category of the all observed variables, a significantly higher proportion of front seat occupants used a seat belt on intercity roads than city roads. Chi-squared analysis within the road types revealed that in all roads a significantly higher proportion of drivers (27.4%) used a seat belt than front seat passengers (23.6%); a significantly higher proportion of females (35.2%) used a seat belt than males (18.5%); and, a significantly higher proportion of front seat occupants aged over 50 (29.8%) used a seat belt than occupants aged 30 to 50 (25.2%) and aged under 30 (23.8%); significantly higher proportion of front seat occupants used a seat belt on the weekend (28%) than on the weekdays (23.8%); and a significantly higher proportion of front seat occupants used a belt in the afternoons (27.4%) than in the evenings (22.6%).

Table 2.3 Percentages of seat belt users on different road types within the observed variables

	City Roads	Intercity Roads	All roads	Pearson $\chi^2_{(1)}$
Occupant type				
driver	18.9%	35.3%	27.4%	56.5*
front seat passenger	14.2%	32.6%	23.6%	107.5*
Pearson $\chi^2_{(1)}$	7.5*	1.6	7.3*	
Sex				
male	11.9%	25.4%	18.5%	70.9*
female	23.5%	44.5%	35.2%	77.1*
Pearson $\chi^2_{(1)}$	43.9*	81.9*	141.6*	
Age				
under 30	16.4%	33.6%	23.8%	51.9*
30-50	15.5%	33.0%	25.2%	88.2*
over 50	18.7%	37.8%	29.8%	19.7*
Pearson $\chi^2_{(2)}$	1.2	2.3	6.6*	
Observation day				
weekday	15.1%	33.4%	23.8%	121.2*
weekend	18.9%	34.4%	28.0%	38.5*
Pearson $\chi^2_{(1)}$	4.1*	0.2	7.9*	
Observation time				
afternoon	17.2%	35.0%	27.4%	84.2*
evening	15.2%	31.9%	22.6%	70.4*
Pearson $\chi^2_{(1)}$	1.4	2.2	12*	

* p<0.05

2.3.2 Environmental factors and traffic volume

Traffic volume of the observed roads was obtained by calculating the number of cars passed per hour for each observation session. The effects of environmental factors, which were road type, observation day and time, on the traffic volume of the roads were tested separately using independent-samples t-tests. Result showed that, a significantly higher number of cars passed per hour on intercity roads (mean 3370) than city roads (mean 1329) with $t_{(1, 3961)} = -$

73.9, $p < 0.001$; a significantly higher number of cars passed at the weekdays (mean 2459) than at the weekends (mean 2216) with $t_{(1, 3961)} = 5.4$, $p < 0.001$; and a significantly higher number of cars passed in the afternoons (mean 2159) than in the evenings (mean 1804) with $t_{(1, 3961)} = 26.9$, $p < 0.001$.

2.4 Discussion

This study examined, in detail, seat belt usage of front seat occupants of private cars on city and intercity roads of Ankara. The reason this is an important topic is because current Turkish traffic law requires that all front seat occupants of cars use a seat belt, which is proved to be reducing injury severity in accidents by international research. This study found that, the overall seat belt use rate from all the observed front seat occupants was extremely low, at only 25%, which highlights the need for urgent remedial action to improve seat belt usage rates in Turkey. Similar to the previous research findings, sex and age of the front seat occupant, road type, day, and time were all found to affect seat belt use rates.

2.4.1 Comparison of the present findings with the findings of the past observation study

Before discussing the similarities and differences in the findings of the present study and past observation study conducted by EGM (1999), it should be noted that the EGM (1999) study mainly focused was on drivers. In the present study the focus was on all front seat occupants, both drivers and front seat passengers, because under current Turkish Traffic law all front seat occupants are required to wear a seat belt.

Compared to the past study conducted by EGM (1999), in the present study a slightly higher proportion of drivers and a slightly lower proportion of front seat passengers using a seat belt were observed on city roads of Ankara. Despite the small differences in the proportions of drivers and front seat passengers using seat belt on city roads of Ankara, there is a big difference in the proportion of drivers using a seat belt on intercity roads of Ankara between the two studies. Compared to the past study (EGM, 1999), in the present study

a significantly lower proportion of drivers using a seat belt were observed on intercity roads of Ankara. This difference between the two studies might be explained by the differences in the observed intercity roads. In the past study conducted by EGM, (1999), certain places in the Ankara-İstanbul highway were observed, while in the present study, parts of the Ankara-İzmir and Ankara-İstanbul highways, which take place in the city, were observed. Because parts of the intercity roads passing through the city were observed, it is very probable that, some cars were using these roads to travel from one place to another inside Ankara. Thus, observing parts of intercity roads passing through the city, where seat belt use rates are low, may explain the significantly lower proportion of drivers using a seat belt on the intercity roads in the present study compared to the past study (EGM, 1999).

While in the past study conducted by EGM (1999), a higher proportion of drivers and front seat passengers using a seat belt were male than female, in the present study a higher proportion of front seat occupants using a seat belt were female than male on city roads of Ankara. The two studies shows similarities in terms of the age differences of the seat belt users on city roads of Ankara. Although the age categorizations are different in the two studies, in both studies a higher proportion of the seat belt users were middle-aged than the young and old aged users. It should be noted that, because in both studies the compared seat belt use data for the sex and age differences were not controlled for exposure, it is not possible to make a comparison on the level of use within sex and age groups between the two studies.

2.4.2 Front seat occupant characteristic affecting seat belt use

The present study found that sex and age of the front seat occupants were significantly related to their seat belt use. Present findings indicated that, a significantly higher proportion of females than males used a seat belt and seat belt use increased with age. These findings are parallel to the previous findings indicating being female and older age as positively related to seat belt use (Begg and Langley, 2000; Reinfurt et al., 1996; Steptoe and Wardle, 2001). By these results, the hypotheses of the study indicating that women would use seat

belt more than men and seat belt use would increase with age both on all roads were confirmed. Young people using seat belt less can be explained by their being more prone to take risks while driving, which is also supported by the accident involvement statistics from 2002, which indicated that young drivers between the age of 16-25 constituted the biggest driver group involving in fatal accidents in Turkey (T.C. İçişleri Bakanlığı, Emniyet Genel Müdürlüğü, Trafik Hizmetleri Başkanlığı, 2002).

2.4.3 Environmental factors affecting seat belt use

The present study found road type, day, and time as the environmental factors affecting the seat belt use of the front seat occupants. The present finding of the study indicating higher proportion of seat belt use on intercity roads than city roads for the all observed variables confirmed the hypothesis of the study, which stated that seat belts would be used more on intercity roads than on city roads. Lower proportion of seat belt use on city roads than intercity roads and in evenings than afternoons are parallel to the previous findings indicating driving during the night and in urban areas as the factors negatively related to seat belt use (Chliaoutakis et al., 2000; Fockler and Cooper, 1990; Li, Kim and Nitz, 1999). Ironically, although proportion of seat belt use was lower on the city roads than the intercity roads, the seat belts were found to be more effective especially in low speed accidents in urban areas (IRTAD, 1995). Higher proportion of seat belt use on intercity roads and in the afternoons could be explained by the relatively heavy traffic and perceived higher accident probability.

Not confirming the hypothesis of the present study, which stated that seat belts would be used less at the weekends than at the weekdays, it was found that proportion of seat belt use was higher at the weekends than at the weekdays. While evaluating this finding the fact that driver populations on the road change according to environmental factors such as day and time should be considered. That is, more middle and old aged front seat occupants who are more likely to travel at the weekends and use seat belt more than the young

front seat occupants, could explain higher proportion of seat belt use at the weekends.

2.4.4 Practical implications of the study

Findings of the present study have important implications especially for the seat belt use interventions aiming at increasing the seat belt use rates in Turkey. For more effective and successful seat belt use interventions, identifying the factors affecting seat belt use with well defining the features of the target non-user populations seem very essential and important

Because being male and young were front seat occupant characteristics related to low seat belt use, especially male and young front seat occupants should be target groups for seat belt use interventions. Seat belt use campaigns and incentive programs could be developed specifically targeting male and young front seat occupants. For instance, through seat belt use campaigns giving visual and audible seat belt use messages specifically to male and young front seat occupants could be an effective way to increase seat belt use rates among them. Also, some rewards and incentive programs through seat belt use campaigns could be developed for promoting higher seat belt use especially among young and male front seat users. However, it should be noted that, although the proportion of seat belt use was least among the male and young front seat occupants, seat belt use proportion of the all front seat occupants was also very low, at 25%. Thus, seat belt use interventions firstly should target to increase the seat belt use rate of the all front seat occupants in Turkey. Wrong ideas and beliefs of the front seat occupants about the effectiveness of seat belt use in different environmental conditions, such as not needing to use seat belt in city roads, could be corrected through more informative seat belt use campaigns and educational programs. Also, more frequent police control for the cars traveling at the weekdays, on city roads and in the evenings could be an effective way to increase the seat belt use rates in these situations.

Considering the front seat occupant characteristics and environmental factors affecting seat belt use, seat belt use rates among the front seat occupants need be increased urgently in Turkey. While developing seat belt use

interventions, especially the core non-user populations such as the young and male front seat users and environmental conditions provoking less seat belt use such as traveling on city roads and at the weekdays should be considered carefully. Also, increased enforcement of the seat belt laws through more frequent and strict police controls and higher amount of fines for not using a seat belt seems essential to increase the seat belt use rates in Turkey.

2.4.5 Limitations of the study

Not observing intercity roads far from Ankara's city traffic was the main limitation of the study. Making observations on real intercity roads would probably lead to observing more front seat occupants using a seat belt. Another limitation of the study may be not looking at the interaction between the driver and front seat passenger in terms of the seat belt use. Seat belt use of the one front seat occupant might influence the seat belt use of the other front seat occupant sitting next to them. Lastly, not observing the front seat occupants in morning may be mentioned as another limitation of the study. To see whether traveling in the morning, especially in rush hours, change the seat belt use of the front seat occupants, observations could also be made during morning traffic.

CHAPTER 3

AN INTERVIEW STUDY ABOUT SEAT BELT USE

3.1 Introduction

3.1.1 Common reasons for using and not using a seat belt

Previous research has found that environmental and situational factors, self-protection, imitation, fear, experience, financial issues and legal issues were the common reasons for using a seat belt (Chliaoutakis et al., 2000; Fockler and Cooper, 1990). In their study, Chliaoutakis et al. (2000) found that the environmental factor, which included bad road and weather conditions and heavy traffic, was the first factor identified in the basic motivation of young drivers of Athens to use a seat belt. Similarly, Fockler and Cooper (1990) cited situational reasons for increasing seat belt use, including suspicion of police presence, being a passenger in someone else's car, driving with family members, high speed and dangerous road conditions. Imitation, including imitating relatives and close friends, and setting an example to others was the second factor in the basic motivation of young drivers of Athens to use a seat belt (Chliaoutakis et al., 2000). The third factor identified was self-protection, including avoidance of injury and death, protection from harm and feeling secure (Chliaoutakis et al., 2000). This was followed by a fear factor, including fear due to lack of trust of the driver and inexperience (Chliaoutakis et al., 2000). The fifth factor identified to explain the basic motivation of young drivers to use a seat belt was the experience factor, including having an accident in the past, knowing a relative or friend who had an accident, and witnessing an accident (Chliaoutakis et al., 2000). The last two factors identified were financial issues, including the risk of financial loss due to an accident and legal issues, including avoidance of punishments and compliance with traffic regulations and state rules (Chliaoutakis et al., 2000).

Risky behavior, discomfort when using a seat belt, underestimation of danger, wasting time, not having a habit of seat belt use and some situational factors have all been found to be common reasons of not using a seat belt (Begg and Langley, 2000; Chliaoutakis et al., 2000; Fockler and Cooper, 1990). Risky behavior, including not being compliant with regulations and having a risky personality was the first factor identified to explain young drivers' basic motivations to not use a seat belt in Chliaoutakis et al.'s study (2000). Discomfort when using a seat belt, such as feeling pressure and restrictions on movements, was found to be among the main reasons for not using a seat belt among young drivers (Begg and Langley, 2000; Chliaoutakis et al., 2000; Fockler and Cooper, 1990). Underestimation of danger and a perceived low risk of injury due to situational factors, such as driving slowly, having a safe car, being a good driver, and beliefs such as the notion that accidents only happen to others, was another main reason for not using a seat belt (Begg and Langley, 2000; Chliaoutakis et al., 2000). Driving for only short trips was found to be the main situational reason for decreasing the usage of a seat belt among the self-reported regular users (Fockler and Cooper, 1990). Not having a habit of using a seat belt, which leads to forgetting to use it, has been identified as another common reason for not using a seat belt among young drivers (Begg and Langley, 2000). The fear of being trapped in the car after an accident and not needing a seat belt due to the presence of an airbag in the car have also been reported as the other common reasons cited for not using a seat belt (OSU EHS Safety Training, 1993).

3.1.2 Car occupant characteristics affecting seat belt use

Gender, age and education levels of car occupants have been found to affect the frequency of seat belt use in previous research (Begg and Langley, 2000; Calisir and Lehto, 2002; Li, Kim and Nitz, 1999, Matsuura, Ishida, Ishimatsu, 2002; Reinfurt et al., 1996; Steptoe and Wardle, 2001). Seat belt use was found to be higher among females than males, older aged car occupants than younger car occupants, and among car occupants with the higher education levels compared to those with lower education levels (Begg

and Langley, 2000; Calisir and Lehto, 2002; Li, Kim and Nitz, 1999; Matsuura, Ishida, Ishimatsu, 2002; Reinfurt et al., 1996; Steptoe and Wardle, 2001). Also, some user characteristics such as gender, age, body weight and height were found to affect the perception of comfort and usability of seat belts (Balci, Vertiz and Shen, 2001). It was found that, females, drivers who were over 40 years old, and over-weight drivers had more comfort and convenience problems of seat belt use than males, younger drivers and non-overweight drivers, respectively (Balci, Vertiz and Shen, 2001).

3.1.3 Aims of the study

In the present interview study, common reasons for using and not using a seat belt during different trip types and conditions with the reported seat belt use frequency were investigated qualitatively, in a Turkish sample. The main aims were:

- 1) To investigate the reported seat belt use frequencies of the subjects in different trip types and conditions
- 2) To investigate the reasons for using and not using a seat belt in the given trip types and conditions
- 3) To investigate the reported benefits of using a seat belt use and factors that can increase the seat belt use
- 4) To find out whether demographic variables such as the sex, and age of the subjects effect the reported seat belt use frequencies and the reasons for using and not using a seat belt in the given trip types and conditions

3.1.4 Hypotheses of the study

Based on the findings of previous studies, the main hypotheses of the study were:

- 1) Reported seat belt use frequency would be higher for females, and older subjects when compared to males, and younger subjects, respectively.
- 2) Providing safety, situational conditions and avoiding punishment would be among the most frequently reported reasons for using a seat belt.

- 3) Having negative attitudes and beliefs about the effectiveness of using a seat belt, situational conditions and discomfort would be among the most frequently reported reasons for not using a seat belt.

3.2 Method

3.2.1 Participants

A total of 221 participants were interviewed by a group of interviewers. Sample characteristics of the participants are displayed in Table 3.1.

Table 3.1. Sample characteristics

	N	%
Sex		
male	121	54.8
female	100	45.2
Age		
	31 (mean)	11 (SD)
Occupation		
student	71	32
other	150	68
Education		
elementary and high school graduates	37	16.7
university students and graduates	184	83.3
License holder		
yes	171	77.4
no	50	22.6

Driving experience and frequency, past accident and seat belt use frequency information of the subjects who had a driving license are summarized in Table 3.2.

Table 3.2 Driving license holders' characteristics

	N	%
The years since a driver had obtained the driving license	9.9 (mean)	9.1 (SD)
Driving frequency		
every day	73	42.7
often	35	20.5
sometimes	21	12.3
rarely	38	22.2
never	4	2.3
Past accident		
yes	95	56.9
no	72	43.1
Seat belt use frequency		
always	85	50.3
often	35	20.7
sometimes	31	18.3
rarely	15	8.9
never	3	1.8

3.2.2 Instrument and the data collection

An interview form including some demographic and driving related background information with the questions about the seat belt use in different trip types and conditions were used in the interview study. An example of the interview sheet can be seen in Appendix B. The demographic information consisted of the sex, age, occupation, education level, and driving license status (driving license holder or not) of the subjects. The first question, asked how often a seat belt was used as a front seat passenger in the given trip types such as in short and long trips, and also asked for the reasons for using a seat belt in theses trip types. The second question, asked how often seat belt was used when traveling in minibuses, taxis, and in friend's car, and again asked for the

reasons. In the following several questions, benefits of using a seat belt, factors that can increase the seat belt use and whether it is necessary to use a seat belt more while traveling as a front seat passenger were asked, along with reasons. The remaining questions asked whether subjects used a seat belt in the presence of children in the car, let their children sit in the front seat, and made them use seat belt, along with the reasons for doing so. In all questions, the interviewees were asked to answer the questions thinking of the times that they were front seat passengers.

Students in a traffic psychology class conducted the interviews with acquaintances, who were from different age groups and occupations. Before they make the interviews, the students were trained and organized in how to conduct the interviews by the author. After they accepted to be interviewed, a semi-structured interview including open and closed questions about seat belt use was made face to face with each interviewee. A direct interview approach was used, as before starting the interviews, the purpose of the interview as the general concerns about seat belt use were explained to them. The interviewees were assured about the anonymity of the information they gave, before starting the interviews. Completing one interview lasted about 20-30 minutes.

3.2.3 Data entrance and analysis

In the first step of data entrance process, all the answers given by the subjects for each question were checked through separately and answer categories were obtained for the each question. In the second step, numerous answer categories were reduced to main answer categories by putting together similar answers into one category. In the next step, variables were formed from the main answer categories for the each question. While entering the data, for the related answer categories “1” was entered if the subject gave that answer and “0” was given if the subject did not give that answer. Reported frequencies of the seat belt use in different trip types and conditions were categorized into five response groups, which were always, often, sometimes, rarely, and never.

In the data analysis, besides simple descriptive statistics, independent-samples t-test, and chi-square statistics were used.

3.3 Results

3.3.1 Seat belt use frequencies in different trip types

Reported seat belt use frequencies and the mean response values for each trip type are displayed in Table 3.3. It appears from the table that, seat belt use frequencies were highest in outside the city trips, followed by trips during bad weather and nighttime. Seat belt use frequencies were lowest in inside city trips followed by in trips made in daytime and good weather. Reported seat belt use frequencies in all trips in general appear to be high with a mean response value of 2.1, indicating an “often” response.

Table 3.3 Seat belt use frequencies for different trip types (%)

<i>Trip type</i>	<i>Response Category</i>					Mean Response value
	Always (1)	Often (2)	Sometimes (3)	Rarely (4)	Never (5)	
all trips in general	46.6	21.3	15.4	10.9	5.9	2.1
inside city	45.7	10.4	13.6	14.0	16.3	2.5
outside city	74.2	15.4	4.5	3.6	3	1.4
in night	62.4	14.9	13.1	6.3	2	1.7
in daytime	44.8	16.7	20.4	10.0	8.1	2.2
in bad weather	71	14.9	6.8	4.1	3.2	1.5
in good weather	43.9	16.7	19	12.2	8.1	2.2

3.3.2 Frequencies of the reasons reported for using a seat belt in different trip types

The frequencies of the reported reasons for using a seat belt in different trip types are displayed in Table 3.4. Safety as a reason for using a seat belt means protection from the injury and fatality during an accident, and feeling safe due to using a seat belt. Habit as a reason for using a seat belt means that

using seat belt is a habitual behavior made automatically in all trip types, while others' opinions means complying with close others', such as the family members and drivers', ideas about using a seat belt, considering their warnings and imitating them. Following reasons were moral norm, which means being a good person who is compliant with the seat belt rules and regulations and a good model to others, and avoiding punishment, which means avoiding taking traffic fines and paying money for not using a seat belt. Another two reason were no trust to the others, which means not trusting the driver of the car and other drivers in traffic who drive riskily and can cause accidents, and situational conditions, which means some situational factors that can increase the seat belt use such as a long trip, high speed and dangerous weather and road conditions. Lastly, other reasons included the less frequently reported reasons for using a seat belt such as being pregnant and existence of airbag in the car.

From Table 3.4 it appears that the most frequently reported reason for using seat a belt in all trip types was providing safety. Situational reasons, habit and avoiding punishment appear as other more frequently reported reasons for using a seat belt. On the other hand, obeying the moral norms, no trust to the others, others' opinion and other reasons appear as the less frequently reported reasons for using a seat belt.

Table 3.4 Frequencies of reported reasons for using a seat belt for different trip types (%)

<i>Trip types</i>							
<i>Reasons</i>	all trips in general	inside city	outside city	in night	in daytime	in bad weather	in good weather
safety	68.8	57.5	86.0	78.7	61.1	87.8	62.9
habit	8.6	6.3	7.7	6.3	7.7	6.8	10.0
others' opinion	3.6	1.8	1.4	0.9	0.9	0.9	2.3
moral norms	3.6	3.6	3.6	3.6	4.1	3.2	3.6

Table 3.4 continued

<i>Reasons</i>	<i>Trip types</i>						
	all trips in general	inside city	outside city	in night	in daytime	in bad weather	in good weather
avoiding punishment	10.4	8.6	12.2	7.7	8.1	5.9	6.8
no trust to others	2.7	3.2	3.2	3.6	3.6	2.3	5.0
situational conditions	5.4	6.8	31.7	31.2	14.5	36.2	9.0
other reasons	0.9	0.0	0.5	0.0	0.0	0.0	0.5

3.3.3 Frequencies of the reasons reported for not using a seat belt in different trip types

Frequencies of the reasons reported for not using seat belt in different trip types are displayed in Table 3.5. As the first reason for not using a seat belt, no relevance to safety means feeling no need to use seat belt, not believing its usefulness and effectiveness with underestimating the accident probability and danger. As the second reason, no habit means not having the habit of using seat belt and so forgetting to use it most of the times. As other reported reasons for not using a seat belt, while situational conditions means some situational factors decreasing seat belt use such as short trips, low speed and good weather; discomfort means feeling discomfort because of some reasons such as pressure on the body, feeling hot and restrictions on the movements due to seat belt use. Following reasons for not using seat belt were others' opinion, which means complying with the ideas of the close others and the drivers who do not favor seat belt use and imitating them, and over trust to the driver, which means feeling over trust to the driving skills of the driver and so not expecting accident. Lastly, other reasons included the less frequently reported reasons for

not using a seat belt such as finding it distracting, belief in destiny and not using the front seat.

From Table 3.5 it appears that, situational conditions followed by no relevance to safety, discomfort and no habit were the most frequently reported reasons for not using a seat belt in most of the trip types. On the other hand, other reasons, compliance with the others' opinion and over trust to the driver were the less frequently reported reasons for not using a seat belt in most of the trips types.

Table 3.5 Frequencies of reported reasons for not using a seat belt for different trip types (%)

<i>Reasons</i>	<i>Trip types</i>						
	all trips in general	inside city	outside city	in night	in daytime	in bad weather	in good weather
no relevance to safety	5.4	9.0	0.9	2.7	5.4	2.3	8.1
no habit	7.7	5.9	0.9	2.3	3.2	1.8	5.0
situational conditions	7.7	21.3	0.5	3.2	13.6	0.9	9.5
discomfort	7.2	9.0	1.8	3.6	4.1	3.6	4.1
others' opinion	0.0	1.4	0.5	0.5	0.0	0.0	0.0
over trust to the driver	0.9	0.5	0.0	0.5	0.0	0.0	0.0
other reasons	2.7	0.5	1.8	1.4	0.9	0.5	0.5

3.3.4 Seat belt use frequencies in minibus, taxi and a friend's car

Reported seat belt use frequencies in minibus, taxi and friend's car are displayed in Table 3.6. As it appears from the table, reported seat belt use frequencies of the front seat passengers was highest in a friend's car, while it was lowest in minibuses, and moderate in taxis.

Table 3.6 Frequencies of reported seat belt use in minibus, taxi and friend's car (%)

<i>Vehicle type</i>	<i>Response category</i>					Mean response value
	Always (1)	Often (2)	Sometimes (3)	Rarely (4)	Never (5)	
minibus	27.6	3.2	4.5	2.7	61.2	3.7
taxi	38.0	4.5	9.0	2.3	46.2	3.1
friend's car	58.8	8.6	14.0	3.2	15.4	2.1

3.3.5 Frequencies of the reasons reported for using and not using a seat belt in minibus, taxi and friend's car

Frequencies of the reasons reported for using and not using a seat belt in minibus, taxi and friend's car are displayed in Table 3.7. It appears from the table, safety followed by no trust to the driver was the most common reasons reported for using a seat belt in minibus, taxi and friend's car. The most frequently reported reason for not using a seat belt in minibuses was lacking/broken/invisible seat belts. The next most frequently reported reason was other reasons including the answers not using front seat, feeling safe in the crowd and its not being compulsory to use seat belt in minibuses. Others' opinions meaning being afraid of the drivers' and other passengers' reactions and not wanting to look strange because of using a seat belt was a commonly reported reason for not using a seat belt in both minibuses and taxies. Situational conditions and not having the habit of using a seat belt and other reasons including answers such as sitting in the back seat, presence of an air bag and feeling nervous with seat belts because it is a reminder of the probability of an accident were the most frequently reported reasons for not using a seat belt in both taxies and friends' cars.

Table 3.7 Frequencies of the reported reasons for using and not using a seat belt in minibus, taxi and friend's car (%)

<i>Reasons for using a seat belt</i>	minibus	taxi	friend's car
safety	28.5	38.5	62.9
no trust to the driver	7.7	9.5	17.2
others' opinion	0.0	2.7	5.9
avoiding punishment	0.0	3.2	5.0
habit	0.0	0.0	3.6
other	2.7	1.8	0.9
<i>Reasons for not using a seat belt</i>			
lacking/broken/invisible seat belt	18.6	4.1	0.0
no relevance to safety	5.0	5.4	2.7
situational conditions	5.4	11.3	7.2
others' opinion	11.8	6.8	3.2
no habit	10.0	8.1	5.9
discomfort	5.0	4.1	3.2
over trust to the driver	2.7	2.7	0.0
other reasons	13.6	15.8	4.1

3.3.6 Reported benefits of using a seat belt and factors that can increase seat belt use

Frequencies of the reported benefits of using a seat belt and factors that can increase seat belt use as a front seat passenger are displayed in Table 3.8. It appears from the table that safety, followed by avoiding punishment were the most frequently reported benefits of using a seat belt. Situational reasons followed by avoiding punishment for not using a seat belt were the most frequently reported factors that can increase seat belt use. More seat belt use propaganda including all kinds of educational and media programs and campaigns emphasizing the consequences of not using a seat belt in the

accidents, safety and no trust to the others appear as the other frequently reported factors that can increase seat belt use.

Table 3.8 Frequencies of the reported benefits of using a seat belt and factors that can increase seat belt use (%)

	Benefits of using a seat belt	What can increase seat belt use?
safety	97.7	18.1
avoiding punishment	10.4	28.5
moral norms	4.5	2.3
more propaganda	0.0	19.5
situational reasons	0.0	31.7
no trust to the others	0.0	16.7
others' opinion	0.0	10.9
habit	0.0	10.0
other reasons	1.8	10.0

3.3.7 Seat belt use as a model to the children

Most of the subjects (91.9%) answered “yes” to the question “do you use seat belt as a front seat passenger when your children are in the car”. In terms of the reasons why they wanted to use a seat belt when their children were in the car, the most frequently reported reason was being a good model to their children (65.6%), followed by wanting to be safe (23.5%) and having an habit of using a seat belt already (8.1%).

3.3.8 Demographic variables and reported seat belt use frequencies

The effect of the sex on the mean value of the reported seat belt use frequency for all trips in general was tested through independent-samples t-test. The results indicated that, there was a significant difference between males and females in reported seat belt use frequency for all trips in general ($t_{1, 219} = 2.3$, $p < 0.05$), with females reporting more seat belt use (mean 1.9) than males (mean 2.02). The relationship between age and reported seat belt use frequency

for all trips in general was tested through Pearson correlation and no significant correlation was found between age and reported seat belt use frequency ($r = -0.12$, n.s.) Lastly, the effects of having a driving license or not and having an accident or not in the past on the mean value of the reported seat belt use frequency for all trips in general were tested through independent sample t-tests. The results indicated that, there was no significant difference in terms of the reported frequencies of seat belt use between the driving license holders and non-holders ($t_{1, 219} = -0.88$, n.s.), and between the subjects who had an accident in the past and who did not ($t_{1, 165} = 1.82$, n.s.).

3.3.9 Demographic variables and reasons reported for using and not using a seat belt

The relationship between the demographic variables, which were sex, past accident (yes, no) and being driving license holder (yes, no), and reasons reported for using and not using a seat belt in all trips in general were tested through chi-square statistics. Safety as a seat belt use reason and sex were found to be significantly related ($\chi^2_{1} = 5.7$, $p < 0.05$); a significantly higher proportion of females (77%) were reporting safety as a reason for using a seat belt than males (62%). Similarly, safety as a reported reason for using a seat belt and past accident ($\chi^2_{1} = 5.0$, $p < 0.05$) and no relevance to safety as a reported reason for not using a seat belt and past accident ($\chi^2_{1} = 4.7$, $p < 0.05$) were found to be significantly related. A significantly higher proportion of the subjects (79.2%) who did not have an accident in the past reported safety as a reason for using a seat belt than the subjects who had an accident in the past (63.2%); and a significantly higher proportion of the subjects (6.3%) who had an accident in the past reported no relevance to safety as a reason for not using a seat belt than the subjects who did not have an accident in the past (0.0%). No significant relationship was found between having a driving license or not and reported reasons for using and not using a seat belt.

3.4 Discussion

In the present interview study, common reasons for using and not using a seat belt during different trip types and conditions were investigated qualitatively. The present results showed some similarities as well as some differences with those of the previous observation study. Both studies showed a higher rate of seat belt use in outside city trips compared to the inside city trips and a higher rate of seat belt use among females compared to males. On the other hand, although the general observed seat belt use percentage was considerably low with 25% in the previous observation study, the reported seat belt use frequency for all trips in general in the present study was higher with a mean response value of 2.1, indicating an “often” response. The discrepancy between the observed and reported seat belt use rates can mostly be explained by the subjects’ tendency to give socially desirable answers in the interviews, which probably leads to higher reports of seat belt use. Some previous studies explained the discrepancy between the observed and reported seat belt use rates with social desirability concerns and some demographic features of the subjects, and emphasized the importance of considering the driving or traveling conditions (Fockler and Cooper, 1990; Stulginskas, Verreault and Pless, 1985). Another explanation for that discrepancy between the observed and reported seat belt use frequencies was the automatically triggered seat belt use schemas which a person can not be aware of or has an inaccurate description about (Yoshida, 1998).

3.4.1 Reported seat belt use frequencies and reasons for using and not using a seat belt in different trip types

Present findings indicating higher seat belt use percentages reported for outside city trips followed by trips in bad weather conditions and night times are supported by previous findings indicating increased seat belt use in trips with higher accident probability such as long trips and trips in bad weather and road conditions (Chliaoutakis et al., 2000; Fockler and Cooper, 1990). Similarly, lower seat belt use frequency reported for the inside city trips was supported by previous findings indicating traveling in short distances as one of

the main reasons for not using a seat belt (Chliaoutakis et al., 2000; Fockler and Cooper, 1990).

Safety, situational factors, habit and avoiding punishments as the most frequently reported seat belt use reasons for most of the trips were also found as the common reasons for using a seat belt in previous studies (Chliaoutakis et al., 2000; Fockler and Cooper, 1990). The hypothesis of the study stating that providing safety, situational conditions and avoiding punishment would be among the commonly reported reasons for using a seat belt was confirmed by the present findings. Safety as the most frequently reported seat belt use reason could be interpreted such that, the overall low seat belt use rates among Turkish people does not show that they do not accept the safeness of using a seat belt. Compliance with the close others' opinions as a seat belt use reason do not appear as strong as it was in Chliaoutakis et al.' study (2000). Overall the low seat belt use rates among Turkish people may explain why compliance with the close others', who probably do not use a seat belt as required, opinion and imitating them is not a common reason for using a seat belt.

Situational conditions, not believing the effectiveness of seat belt use with underestimating the danger, discomfort and no habit as the most frequently reported reasons for not using a seat belt were also found as the common reasons for not using a seat belt in previous studies (Begg and Langley, 2000; Chliaoutakis et al., 2000; Fockler and Cooper, 1990). The hypothesis of the study stating that not believing the effectiveness of seat belt use, situational conditions and discomfort would be among the commonly reported reasons for not using a seat belt was confirmed by the present findings. As the most frequently reported reason for not using a seat belt situational conditions indicate the importance of traveling conditions in determining the seat belt use.

3.4.2 Safety as a benefit of using a seat belt and factor that can increase seat belt use

A difference appears between the reported frequency of safety as a benefit of using a seat belt and a factor that can increase seat belt use. While,

safety was the most frequently reported benefit of using a seat belt, it was the fourth most frequently reported factor that can increase seat belt use. That discrepancy between the reported frequency of safety as a benefit of using a seat belt and a factor that can increase seat belt use could be explained by the lack of comparison between benefits against risk while making seat belt use decision (Calisir and Lehto, 2002). Instead of being a result of comparing benefit against risk, seat belt use was mostly found to be an habitual behavior mainly affected by person's gender, age, GPA and perceived usefulness of seat belts and perceived risk in a possible accident (Calisir and Lehto, 1996, 2002).

3.4.3 Demographic variables and reported frequency of seat belt use and reasons for using and not using a seat belt

The present finding indicating that females reported a higher seat belt use rate than males confirmed the related hypothesis of the study, which stated that reported frequency of the seat belt use would be higher among the females than the males. Higher seat belt use frequencies reported by the females than the males are supported by the previous findings indicating higher seat belt use rates among the females compared to the males (Begg and Langley, 2000; Li, Kim and Nitz, 1999; Reinfurt et al., 1996). However, no significant relation was found between age and reported frequency of seat belt use in all trips in general. Therefore, the hypothesis of the study stating that reported frequency of seat belt use would be higher among older subjects than younger subjects was not confirmed. One explanation for that finding could be the subjects' over reporting their seat belt use frequencies due to some social desirability concerns.

In terms of the relationship between some demographic variables and reasons for using and not using a seat belt, reporting safety as a seat belt use reason was found to be significantly higher among the females than males. This can be explained by the women's safer and healthier life styles compared to the men (Chliaoutakis, Darviri and Demakakos, 1999; Steptoos and Wardle, 2001). Interestingly, among the participants who had an accident in the past frequency of reporting safety as a reason for using a seat belt was lower than

among those who did not have an accident in the past. Similarly, among participants who had an accident in the past, frequency of reporting no relevance to safety as a reason for not using a seat belt was higher than among those who did not have an accident in the past. These findings may be indicating that having an accident does not necessarily change the perceptions of the subjects about safety as a seat belt use reason. That may be because the accidents they had may not explicitly show the usefulness of seat belt in preventing injuries, such as when a seat belt user is unharmed while a non-user is killed or seriously injured.

3.4.4 Practical implications

Findings of the present study have important practical implications especially for all kinds of seat belt use interventions. Knowing the specific reasons for using and not using a seat belt in different trip types and conditions are very likely to contribute to the preparation of more effective and successful seat belt use interventions.

In terms of the implications of the reported reasons for using a seat belt, there are a few points to mention about. Safety and habit as the most frequently reported seat belt use reasons appear as the strong reasons for using a seat belt, which is good and should be improved even more. Avoiding punishment as the other commonly reported seat belt use reason indicates the importance and necessity of more traffic fines and control for higher seat belt use rates. It should be noted that, situational reasons and avoiding punishment as the most frequently reported seat belt use reasons are more temporary reasons. That is, they lead to seat belt use only when the conditions are satisfied, such as when the weather is bad or there are traffic police on the road. However, safety and especially habit are stronger reasons, which are likely to lead to seat belt use more consistently. Thus, the final aim of seat belt use intervention should be to turn seat belt use into a habitual behavior not affected by some temporary factors such as situational conditions and presence of police.

As the second most frequently reported reason no relevance to safety emphasizes the need for more informative media and education campaigns and

programs aiming to educating people about the effectiveness of seat belts in the accidents. In that kind of campaigns and programs, including some visual illustrations showing the consequences of not using a seat belt in the accidents could be more effective in persuading people for using a seat belt and changing their belief and perceptions about the ineffectiveness of seat belt use. As the one of the more frequently reported reasons for not using a seat belt, discomfort indicated the importance of designing and producing more comfortable and convenient seat belts to increase seat belt use rates. Especially engineers and car producers seem to have important roles in designing and producing more comfortable and convenient seat belts considering the needs of all kinds of car occupants with different bodily features. Lastly, no habit as a more frequently reported reason for not using a seat belt once more indicates the importance of having the habit of using a seat belt in high seat belt use rates. All of these reported reasons for not using a seat belt are important for their contribution to improving seat belt use rates because they provide a better understanding for the basic motivations underlying low seat belt use. The final aim of the all kinds of seat belt use interventions should be to minimize or even eliminate all of these reasons for not using a seat belt.

Lower seat belt use rates in minibuses and taxis are a problem area related to seat belt use in general, for which remedial actions should be taken. No trust to the driver in minibuses and taxis as the second most frequently reported reason for using a seat belt indicates the problem of risky and unsafe driving among the minibus and taxi drivers. Lacking, broken or invisible seat belts as the most frequently reported reason for not using a seat belt in the minibuses indicate the necessity of improving seat belts in minibuses for higher seat belt use rates. As the second most frequently reported reason for not a using seat belt in the minibuses, other's opinion including being afraid of the driver's and the other passenger's reactions and imitating them were identified. This finding shows that using a seat belt use in a minibus is not a common behavior, which might lead a socially bad image for the user. Stronger enforcements for the seat belt legislation and seat belt use interventions seem to have important roles to increase seat belt rates in both minibuses and taxis. Seat

belt use interventions should aim to turn using a seat belt in both minibuses and taxis into a socially accepted and approved behavior for all front seat occupants.

More educational information about seat belt use including all kinds of media and educational programs and campaigns emphasizing the consequences of not using a seat belt was a frequently reported factor that can increase seat belt use. This finding clearly indicates the necessity of increasing that kind of seat belt use information to improve seat belt use rates among all front seat occupants. Through media campaigns about seat belt use, especially showing visual illustrations about the consequences of not using a seat belt during an accident could be very effective for increasing seat belt use rates.

Most of the subjects reported that they would use seat belt when their children are in the car for being a good model to them. This finding shows the importance of being a good model to the children in health related behaviors such as seat belt use, for the parents. Thus, in seat belt use messages especially targeting middle-aged people with children, being a good model to their children by using a seat belt could be emphasized to increase seat belt among them.

3.4.5 Limitations of the study

Social desirability concerns of the subjects, which might have affected the answers of the participants, could be one limitation of the subjects. Because the subjects might have wanted to look socially desirable and approved, they might have reported higher seat belt use frequencies and pretended to be safer than the actual. One way to understand whether social desirability concerns of the subjects affected their answers could be make a study design in which subjects are interviewed after their seat belt use were observed. In such a study design, it could be easily understood whether there was a discrepancy between the actual and reported seat belt use rates. Not having a homogenous sample in terms of education level and occupation of the participants was another limitation of the study. Most of the participants had a university education and were students. With a more homogenous and representative sample, more

reliable and valid results about common reasons for using and not using a seat belt in different conditions could be obtained.

CHAPTER 4

EXPLAINING SEAT BELT USE WITH THE THEORY OF PLANNED BEHAVIOR AND HEALTH BELIEF MODEL: A SOCIAL PSYCHOLOGICAL PERSPECTIVE

4.1 Introduction

4.1.1 Social psychological predictors of seat belt use

Besides car occupant characteristics and situational factors, there are also some social psychological factors such as attitudes, beliefs, and intentions affecting the seat belt use of car occupants (Chliaoutakis et al., 2000; Phanér and Hane, 1975; Jonah and Dawson, 1982). Negative attitudes and beliefs about the effectiveness of seat belt use have been found to be negatively related to seat belt use (Begg and Langley, 2000; Fockler and Cooper, 1990). Not liking to use a seat belt and discomfort have been found to be among the main reasons for having negative attitudes towards using a seat belt (Begg and Langley, 2000; Fockler and Cooper, 1990). Surprisingly, having positive attitudes, beliefs and intentions about using a seat belt were not found to be strong predictors of actual seat belt use of drivers all the time (Chliaoutakis et al., 2000; Knapper, Cropley and More, 1976; Loo, 1984). It has been indicated that, although most car occupants agreed with the effectiveness of seat belt use, their actual seat belt use was low (Chliaoutakis et al. 2000; Knapper, Cropley and More, 1976; Loo, 1984). That significant divergence between intentions to use seat belt and actual seat belt use was mainly explained by drivers' not having a habit of using a seat belt (Calisir and Lehto, 2002; Chliaoutakis et al., 2000; Knapper, Cropley and More, 1976). As summarized by Calisir and Lehto (2002), the decision to use a seat belt was not a result of a comparison of risk against benefits all the time. Instead, seat-belt use was a habitual behavior that

was mainly affected by a person's gender, age, GPA and perceived usefulness of seat belts in a possible accident (Calisir and Lehto, 2002).

4.1.2 Theory of Planned Behavior and its applications to health behaviors

Theory of Planned Behavior (TPB) is among the commonly used social psychological theories explaining many health related behaviors (Åberg, 2001; Conner and Sparks, 1996; Stroebe, 2000). TPB (Ajzen, 1985, 1991) was extended from the "Theory of Reasoned Action" (TRA), which was the earlier work of Fishbein and Ajzen (1975). According to the TPB, the immediate predictors of behavior are intentions, which are determined by attitude, subjective norm and perceived behavioral control (Ajzen, 1985, 1991; Conner and Sparks, 1996). Attitudes are a person's overall evaluations of a behavior; while subjective norm consists of the person's beliefs about whether significant others think he/she should engage in that behavior (Ajzen, 1985, 1991; Conner and Sparks, 1996). Perceived behavioral control has both direct and mediated effects (by behavioral intention) on behavior and refers to the person's perception of control on engaging in that behavior (Ajzen, 1985, 1991; Conner and Sparks, 1996). TPB has been extended with the inclusion of new constructs. The basic TPB model included only attitudes, subjective norm and perceived behavioral control as the determinants of intentions, whereas extended TPB model additionally included "moral norm", "anticipated regret" and "habit" constructs (Åberg, 2001; Manstead and Parker, 1995). In the extended TPB, "moral norm" refers to the individual's personal beliefs about what is right and wrong to do, while "anticipated regret" refers to individual's reflecting the anticipated affective consequences of breaking internalized moral rules (Manstead and Parker, 1995). Inclusion of the "habit" construct to the theory especially aimed to cover the habitual and autonomous behaviors like driving which might not be volitional (Åberg, 2001). The addition of these new constructs to TPB has been found to improve its predictive power significantly (Åberg, 2001; Manstead and Parker, 1995).

TPB has been applied to many health and traffic behaviors (Diaz, 2002; Lajunen and Räsänen, 2004; Parker, 2002; Parker et al., 1992; Parker, Lajunen

and Stradling, 1998). In their study, Parker et al. (1992) found a stronger relationship between subjective norm and behavioral intention to commit driving violations than that between attitudes and behavioral intention. Later Parker, Lajunen and Stradling (1998) found that attitudes, subjective norm and perceived behavioral control were all independently and significantly predictive of reported commission of aggressive violations on the road. Similarly, both in Diaz's (2002) and Lajunen and Räsänen's more recent studies (2004), attitude, subjective norm and perceived behavioral control were all significantly related to the behavioral intention. After adding the perceived behavioral control to the TPB, its success at predicting behavior and intentions improved (Madden, Ellen and Ajzen, 1992; Parker et al., 1992).

4.1.3 Health Belief Model and its applications to health behaviors

Health Belief Model (HBM) is another commonly used social psychological theory applied to many health behaviors (Sheeran and Abraham, 1996; Stroebe, 2000). Threat perception and behavioral evaluation are the two main aspects of the HBM. Threat perception includes two components, which are perceived susceptibility to health breakdown and anticipated severity of the consequences of health breakdown (Sheeran and Abraham, 1996). Behavioral evaluation also consists of two components, which are perceived benefits of the health behavior and perceived barriers to enact the health behavior (Sheeran and Abraham, 1996). In addition, "cues to action" which refers to some triggers like social influence, health education campaigns to do the health behavior, and "health motivation" which refers to one's readiness to be concerned about the health matters in general were included in the HBM (Sheeran and Abraham, 1996).

HBM has been applied to various health behaviors including having cervical cancer screening, condom use and bicycle helmet use (Adih and Alexander, 1999; Byrd et al., 2004; Lajunen and Räsänen, 2004; Laroque et al., 1997; Li et al., 2003). For example, the relatively low amount of cervical screening among young Hispanic women in U.S. was explained with the perceived barriers related to having cervical screening (Byrd et al., 2004).

Similarly, the perceived susceptibility to HIV and the perceived barriers to condom use were found to be significant predictors of condom use among young men (Adih and Alexander, 1999). In another study about condom use, the perceived benefit of avoidance of pregnancy was found to be among the strongest predictors of condom use (Laroque et al., 1997). In their study about bicycle helmet use, Lajunen and Räsänen (2004) found that the perceived barriers and cues to action components were the strongest predictors of helmet use among teenagers.

4.1.4 Comparing TPB and HBM

Review of the studies comparing TPB and HBM in explaining some health behaviors mainly indicated more predictive power of TPB and better fit of it to the data over HBM, although both theories had a good predictive value (Bish, Sutton and Golombok, 2000; Buscemi and Saint, 2003; Lajunen and Räsänen, 2004). TPB was reported to be a more integrated and extended model that had more predictive success compared to the other specific theories (Stroebe, 2000). On the other hand, HBM was reported to be more economical and parsimonious than TPB in terms of the questions employed (Mullen, Hersey and Iverson, 1987).

4.1.5 Aims of the study

In the present study seat belt use of front seat passengers in urban and rural roads was examined with the TPB models and HBM. Aims of the study were:

- 1) To explain seat belt use on urban and rural roads with the basic and extended TPB models and HBM
- 2) To compare the TPB and HBM in terms of their predictive power and fit to the data
- 3) To identify the significant predictors of intentions to use seat belt and seat belt use behavior within the TPB and HBM

4.1.6 Hypotheses of the study

The hypotheses of the study were:

- 1) In the TPB models, attitudes, subjective norm and perceived behavioral control all would be significant predictors of intentions to use a seat belt for both urban and rural roads.
- 2) In HBM model, perceived benefits and perceived barriers of using a seat belt use would be the significant and strongest predictors of seat belt use behavior for both urban and rural roads.
- 3) Compared to the HBM, TPB models would have a higher predictive power and show a better fit to the data.

4.2 Method

4.2.1 Participants

There were 277 participants, most of whom were Middle East Technical University students. The sample characteristics are displayed in Table 4.1.

Table 4.1 Sample characteristics

	N	%
Sex		
male	153	55.2
female	124	44.8
Age	21.8 (Mean)	5.0 (SD)
Education		
university student	242	89
high school graduate	30	10.9
primary school graduate	3	1.1
Driving license		
yes	109	40.1
no	163	59.9

4.2.2 Instrument and data collection

A questionnaire including demographic information and general traffic safety items with the TPB and HBM items applied to seat belt use was used in the study. The questionnaire is given in Appendix C. All the items except from the items of the health value construct were domain specific, which means respondents were asked to evaluate the items thinking of the times they traveled as a front seat passenger in a private car.

Most of the data were collected from the students either during class hours in METU Psychology Department or at different places in the campus. A small amount of the data was collected from young passengers, who were not university students, out of the campus. The respondents were assured about anonymity and confidentiality of the information they gave. Answering time for the questionnaire was about 15-20 minutes.

4.2.2.1 TPB Items

Within TPB components, behavior and intention were measured with two items. Attitude was measured with four items, which were rated by respondents on a semantic differential scale. Both subjective norm and perceived behavioral control were measured with two items. For the extended TPB model, habit, moral norm and anticipated regret constructs were measured separately by one item. One example item used for measuring each TPB component is displayed in Table 4.2.

Table 4.2 TPB items used in the study

Construct	Items	Alpha/r	Item example	Scoring
Behavior	2	0.55	How often do you use a seat belt while traveling in urban/rural roads as a front seat passenger?	1= always 7= never
Attitude	4	0.75	Using a seat belt next time I travel as a front seat passenger in a private car is something.	1= good 7= bad

Table 4.2 continued

Construct	Items	Alpha/r	Item example	Scoring
Subjective Norm	2	0.1	People who are important to me approve my using seat belt next time I travel as a front seat passenger in a private car.	1 = completely disagree 7 = completely agree
Perceived Behavioral Control	2	0.1	How much control do you feel over using a seat belt while traveling as a front seat passenger?	1= not at all 7= complete control
Habit	1	-	Using a seat belt while traveling as a front seat passenger is a habit, which I do without thinking.	1=completely disagree 7= completely agree
Moral Norm	1	-	Not using a seat belt next time I travel as front seat passenger in a private car would be very wrong.	1= not likely at all 7= very likely
Anticipated Regret	1	-	Not using a seat belt next time I travel as front seat passenger in a private car would make me feel very sorry.	1= not likely at all 7= very likely

4.2.2.2 HBM Items

Within HBM components, both perceived susceptibility and perceived severity were measured with two items. Perceived benefits were measured with three items and perceived barriers were measured with two items. Cues to action were measured with three items and respondents rated how often each of these cues reminded them to use a seat belt. Health motivation was measured by asking the respondents to order twelve values including health value according to their importance. One example item used for measuring each HBM component is displayed in Table 4.3.

Table 4.3 HBM items used in the study

Construct	Items	Alpha/r	Item example	Scoring
Susceptibility	2	0.50	Probability of having injured in an accident due to not using a seat belt is very high.	1=completely disagree 7= completely agree
Severity	2	0.70	Being injured in an accident due to not using a seat belt could lead to long-standing problems.	1=completely disagree 7= completely agree
Benefits	3	0.82	Using a seat belt decreases my risk of being injured in an accident.	1=completely disagree 7= completely agree
Barriers	2	0.65	Using a seat belt might be difficult.	1=completely disagree 7= completely agree
Cues to Action	3	0.79	How often driver's using a seat belt reminds you using seat belt?	1= never 5= very often
Health value	1	-	Nothing is as important as good health.	1= most important 12= least important

4.2.3 Statistical Analyses

Structural equation modeling (SEM) was conducted using the EQS program and maximum likelihood estimation procedures. LM and Wald tests, which are post hoc model fitting tools (Tabachnick and Fidell, 2000), were also used. Multiple criteria were used in the assessment of the models' fit, which were model χ^2 , Root Mean Square Error of Approximation (RMSEA), comparative fit index (CFI), and the goodness of the fit index (GFI). According to Tabachnick and Fidell (2000), if the ratio of χ^2 to the degrees of freedom is less than 2, this could be taken as an indication of good-fitting model. RMSEA value equal or less than 0.06 and both CFI and GFI values, which range from

0.00 to 1.00, with values greater than 0.90 indicated a good fit (Tabachnick and Fidell, 2000, Garson, 2001).

4.3 Results

4.3.1 General opinions about traffic safety and seat belt use effectiveness

According to the simple frequency analysis results, 58% of the respondents reported traffic in Turkey as dangerous, while 34% of them reported it as very dangerous. Only 0.7% of the participants reported traffic in Turkey as not dangerous. Also, 56% of the participants reported that most of the victims' lives could be saved, if the victims had used seat belt. Only 0.4% of the participants reported that almost none of the victims' life could be saved, while 3.3% of them reported that almost all of the victims' lives could be saved, if the victims had used a seat belt. The correlation between the item asking about the effectiveness of seat belt use and those items asking about personal seat belt use frequency for both urban ($r= 0.10$, n.s.) and rural roads ($r= 0.06$, n.s.) were not significant.

4.3.2 Gender, age and self-reported seat belt use

To test whether there was a difference between males and females in reported seat belt frequency, independent-samples t-test was conducted. Results showed that there was not a significant difference between males and females in reported seat belt use frequency for both urban ($t_{1, 273}= 0.47$, n.s.) and rural ($t_{1, 274}= -0.29$, n.s.) roads. Relationship between age and reported frequency of seat belt use was tested through Pearson correlation coefficient. Results showed that age and reported frequency of seat belt use was not significantly correlated for both urban ($r= -0.015$, n.s.) and rural ($r= -0.022$, n.s.) roads.

4.3.3 Fit of the TPB

Fit statistics for the basic and extended TPB models are displayed in Table 4.4. While basic TPB models showed good fit to the data, extended TPB models showed unacceptably low fit to the data.

Table 4.4 Fit statistics for basic and extended TPB models

Fit Index	Basic TPB model		Extended TPB Model	
	Urban traffic	Rural traffic	Urban traffic	Rural traffic
χ^2	72.44	67.88	263.42	261.9
df	40	40	73	73
CFI	0.95	0.96	0.78	0.78
GFI	0.96	0.96	0.87	0.87
RMSEA	0.06	0.05	0.10	0.10

4.3.4 Effects of the individual TPB model components

Because the extended TPB models showed unacceptably low fit to the data, only the basic TPB model with standardized structural equation coefficients for urban and rural roads are displayed in Figure 4.1. The basic model accounted for 30% of variance in seat belt use on urban roads and 50% of variance in seat belt use on the rural roads. Attitudes and subjective norm had a positive and significant relationship to intentions to use a seat belt both for urban and rural roads. Paths from perceived behavioral control to intention to use a seat belt and seat belt use behavior were not significant for both urban and rural roads. Also, path from intention to use a seat belt to seat belt use behavior was not significant for both urban and rural roads.

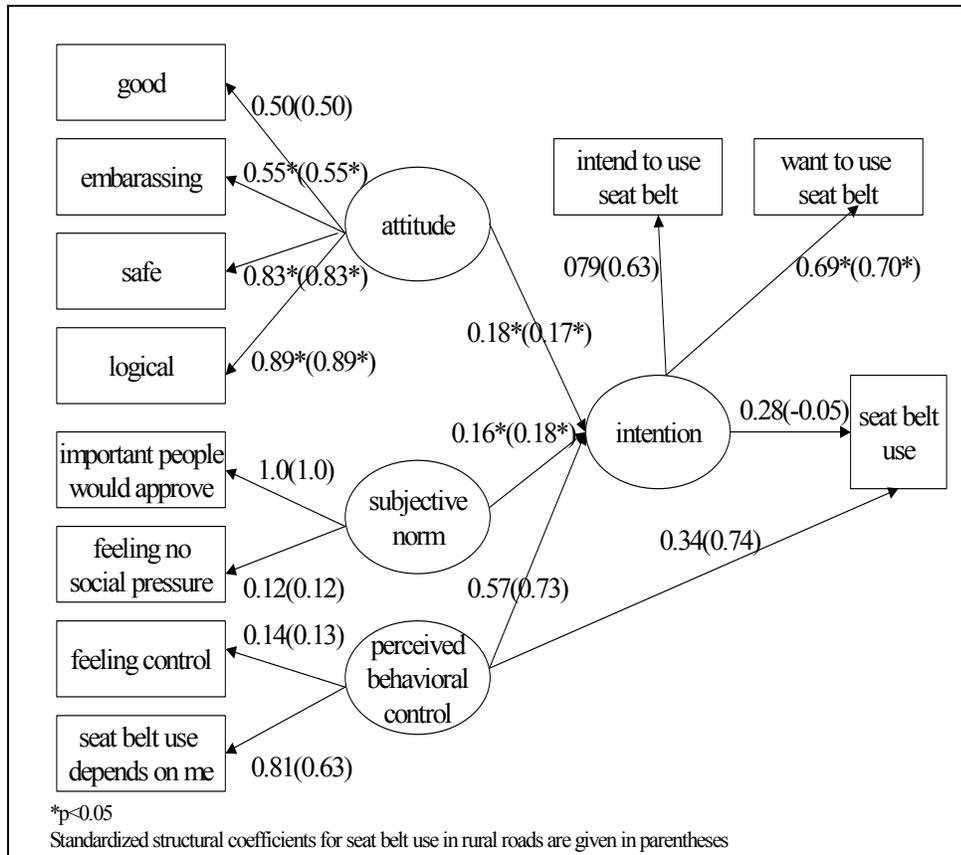


Figure 4.1 Seat belt use on urban and rural roads explained with the basic TPB model

4.3.5 Fit of the HBM

Fit statistics for HBM are displayed in Table 4.5. All fit indexes were unacceptably low.

Table 4.5 Fit statistics for HBM

Fit Index	Urban traffic	Rural traffic
χ^2	225.76	222.57
df	71	71
CFI	0.86	0.86
GFI	0.88	0.88
RMSEA	0.10	0.10

4.3.6 Effects of the individual HBM components

The HBM with the standardized structural equation coefficients for urban and rural roads are displayed in Figures 4.2. The model accounted for 23% of variance in seat belt use on urban roads and 13% of variance in seat belt use on rural roads. For urban roads, perceived benefits had a positive and significant relation to seat belt use behavior, while perceived barriers and cues to action had a negative and significant relation to seat belt use behavior. For rural roads, only perceived benefits and health value had a positive and significant relation to seat belt use behavior.

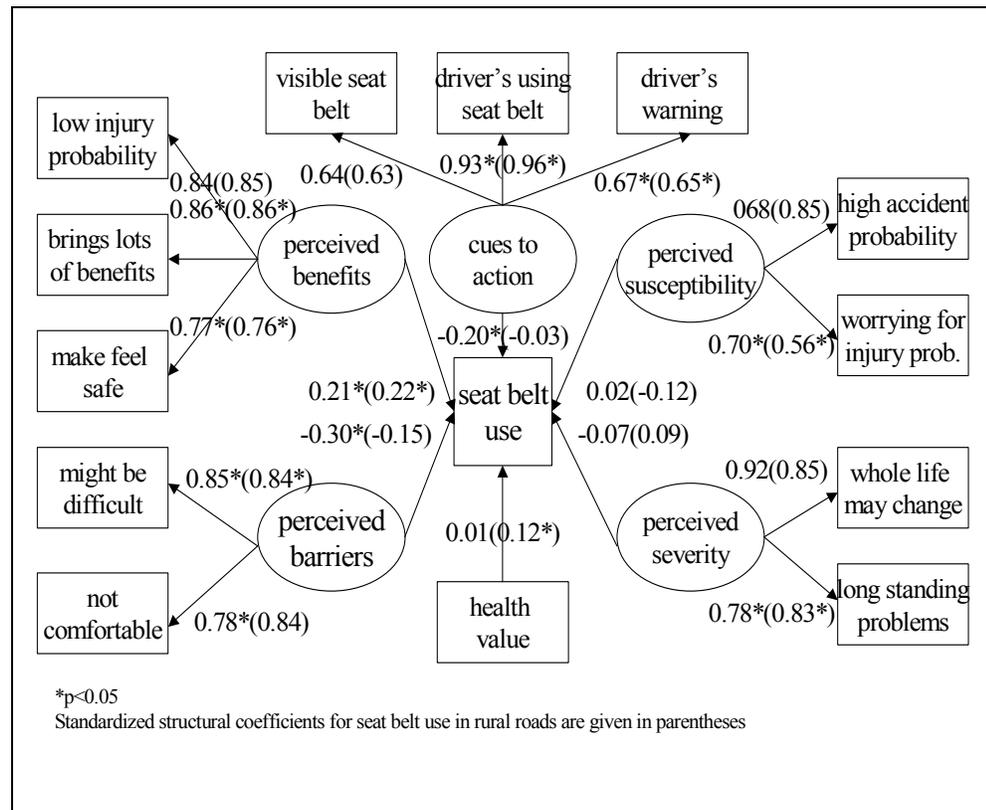


Figure 4.2 Seat belt use in urban and rural roads explained with the HBM

4.4 Discussion

In the present study, seat belt use of front seat passengers on urban and rural roads was explained with the basic and extended TPB models and HBM. A comparison of the models showed that basic TPB model fitted the data well, while extended TPB model and HBM showed low fit to the data. Confirming the third hypothesis of the study, compared to the HBM, basic TPB model explained a greater variance in seat belt use both on urban and rural roads and showed a better fit to the data. The TPB showing a better fit to the data and having more predictive power compared to the HBM are supported by similar, previous findings (Bish, Sutton and Golombok, 2000; Buscemi and Saint, 2003; Lajunen and Räsänen, 2004).

4.4.1 TPB and seat belt use

The basic TPB model showed a good fit to the data, while the extended TPB model including “anticipated regret”, “moral norm” and “habit” showed a low fit to the data. The decrease in the TPB model’s fit to the data after the addition of these three constructs may indicate that these constructs are not working well enough among Turkish passengers.

Within the basic TPB model, attitude and subjective norm were the significant predictors of intentions to use a seat belt for both urban and rural roads. This finding confirmed the first hypothesis of the study, which stated that attitude, subjective norm and perceived behavioral control all would be significant predictors of intentions to use a seat belt for both urban and rural road. These findings are similar to previous findings indicating attitude and subjective norm as the significant and strong predictors of behavioral intentions (Diaz, 2002; Lajunen and Räsänen, 2004; Parker et al., 1992). Some previous findings indicated perceived behavioral control as a strong, significant predictor of behavioral intentions (Lajunen and Räsänen, 2004, Madden, Ellen and Ajzen, 1992; Parker et al., 1992). However, in the present study perceived behavioral control was not a significant predictor of either intentions to use seat belt or seat belt use behavior for both urban and rural roads. Also, in contrast to

the conceptualization of the TPB and some previous findings indicating intention as the strong predictor of behavior, in the present study intentions to use a seat belt was not a significant predictor of seat belt use behavior for both urban and rural roads. Intentions' not being the significant predictors of seat belt use behavior could be explained by the reported divergence between intentions to use a seat belt and actual seat belt use (Chliaoutakis et al. 2000; Knapper, Cropley and More, 1976; Loo, 1984). Also, the non-significant correlation found between the opinions about the effectiveness of seat belt use and reported seat belt use frequency for both urban and rural roads reflect the divergence between seat belt use opinions and behavior.

4.4.2 HBM and seat belt use

Before discussing about the HBM findings, it should be noted that fit of the HBM to the seat belt use data for both urban and rural roads was unacceptably low. Within HBM, perceived benefits of using a seat belt were significant predictor of seat belt use on both urban and rural roads. Perceived barriers of using a seat belt were the strongest predictor of using a seat belt only on urban roads. The second hypothesis of the study, which stated that perceived barriers and benefits of using a seat belt would be the significant and strongest predictors of seat belt use behavior for both urban and rural roads, was confirmed by the present findings. These findings are parallel to some previous findings indicating perceived benefits and barriers as significant and strong predictors of some health behaviors such as cervical screening, condom use and bicycle helmet use (Byrd et al., 2004; Lajunen and Räsänen, 2004; Laroque et al., 1997). Interestingly, perceived barriers of using a seat belt was the strongest predictor of using a seat belt on urban roads but not even a significant predictor of using a seat belt on rural roads. That might be explained by the perceived lower accident probability on urban roads among front seat passengers, which may make the barriers of using a seat belt dominate over the benefits of using a seat belt use for them. Similarly, the perceived high accident probability on rural roads may be leading the benefits of using a seat belt to dominate over the barriers of using a seat belt for the front seat passengers.

Cues to action had a negative and significant relation to seat belt use only on urban roads. That unexpected negative relation between cues to action and seat belt use can be explained by the domain difference between the items asking cues to action and seat belt use frequency in the questionnaire. Cues to action items asked how often the given items reminded the front seat passengers to use a seat belt, while behavior items only asked seat belt use frequency in inside and outside city trips.

4.4.3 Practical implications

TPB results emphasize the important role of attitudes and subjective norms in developing intentions to use a seat belt. Through seat belt use campaigns, positive and strong attitudes towards using a seat belt should be aimed to develop stronger intentions to use a seat belt. Because the subjective norm was a significant predictor of intentions to use a seat belt, seat belt use campaigns should first aim to change the significant others' (peers, family members) opinions and attitudes in a favorable way towards seat belt use. Also, seat belt use campaigns should emphasize the significant others' positive opinions about using a seat belt in their messages. Divergence between the intentions to use a seat belt and actual seat belt use is a problem. To decrease that divergence, seat belt use should be a habitual behavior. Changing seat belt use into a habitual behavior should be among the prior aims of all kinds of seat belt use campaigns.

HBM results emphasize the important role of perceived benefits and barriers of seat belt use in actual seat belt use. Because the barriers were the strongest predictor of seat belt use on urban roads, seat belt use campaigns firstly should aim to decrease the perceived barriers of using seat belt on urban roads. Perceived benefits of using a seat belt were the second strongest predictor of seat belt use on urban roads and the strongest predictor of seat belt use on rural roads. Thus, through seat belt use campaigns perceived benefits of seat belt use on both urban and rural roads should be emphasized more.

4.4.4 Limitations of the study

Not having a representative sample was a limitation of the study. Because most of the respondents were Middle East Technical University students with a distinct socialization, the sample was not a good representation of young Turkish passengers in general. Another limitation of the study was not measuring the “cues to action” and seat belt use behavior items in the same domain.

CHAPTER 5

CONCLUSIONS

5.1 Strengths of the thesis

In the present thesis, seat belt use among Turkish front seat occupants was investigated through three separate studies, which were observational, interview and a survey studies. The observational study was useful for making a preliminary analysis about seat belt use rates and factors that affect seat belt use such as user characteristics and environmental factors. Then in the interview study, reasons for using and not using a seat belt in different trip types and conditions were investigated qualitatively. While the observational study was especially useful in identifying the problem of low seat belt use in Turkey, the interview study was useful in identifying the underlying reasons and motivations for not using a seat belt among Turkish front seat occupants. Lastly, in the survey study, seat belt use was investigated from a social psychological perspective using the Theory of Planned Behavior and Health Belief Model to explain seat belt use. Through the survey study, social psychological predictors of seat belt use such as attitudes and intentions could be investigated and compared.

Combining the results of the three studies about seat belt use is the major strength of the present thesis. Using three sources of seat belt use data analyzed using different methodologies made the present thesis very rich in terms of approaching seat belt use from several perspectives. Including the three studies in this thesis also made it possible to make a comparison between the different approaches and results about seat belt use. Another strength of this thesis can be seen in the three studies providing information and suggesting ways of how to increase seat belt usage rates in Turkey, where seat belt usage rates should be increased urgently for improved traffic safety.

5.2 Implications for traffic safety in Turkey

Although the Turkish traffic law requires that all front seat occupants of cars use a seat belt, the observation study found that, overall the seat belt use rate from all the observed front seat occupants was only 25%, which is extremely low. This finding clearly indicates the problem of low seat belt usage rate in Turkish traffic and highlights the need for urgent remedial action to improve seat belt usage rates in Turkey. Despite the seat belt legislation in Turkey, low seat belt use rates indicate that seat belt legislation is not as effective as expected. That might be because of the low enforcement of seat belt legislation by traffic police, low traffic fines for not using a seat belt and lack of enough enforcement programs and interventions to increase seat belt usage rates. Considering the effectiveness of seat belt use in reducing injury severity during accidents, increasing seat belt usage rates appear as an important step to be taken to improve traffic safety in Turkey. The suggested ways to increase seat belt usage rates in Turkey are:

- 1) Increasing primary enforcement seat belt legislation, which allows police officers to stop a driver for not using a seat belt, especially in situations where seat belt use tended to be low such as while traveling on city roads or during nights.
- 2) Increasing traffic fines to help persuade front seat occupants to use a seat belt.
- 3) Introducing seat belt use interventions and publicity campaigns, which aim to increase seat belt use rates considering the user characteristics and environmental factors affecting seat belt use

5.3 Suggestions for further studies

Because seat belt use rates can change as the front seat occupant groups change, the same sample could be used for the observation and interview studies. In a further study, the same front seat occupant group can be observed for their seat belt use behavior and then interviewed for their reasons for using

and not using a seat belt. In order to be able to observe and interview the same front seat occupants, a big parking area such as a shop center's parking area could be chosen. After recording the seat belt use of the front seat occupants in the cars, which would be parked in the parking place, they can be interviewed when they are out of their cars. In this way, the discrepancy between the observed and reported seat belt use frequency of the front seat occupants could be controlled. Also a further study can be conducted to see whether there is an interaction between the seat belt use behavior of driver and front seat passenger. It is likely that seat belt use behavior of driver and front seat passenger will affect each other mutually and in a similar way. That is, a front seat passenger will be more likely to use a seat belt when the driver uses and vice versa. Lastly, the present studies can be replicated in different cities with distinct front seat occupant groups and traffic environments. Seat belt use rates can differ between metropolitan cities such as Ankara and small cities, where seat belt use rates can be even lower due to low perceived risk and accident probability in traffic.

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APPENDIX B

INTERVIEW FORM

Sex:

Age:

Job:

Education level:

Do you have a driving license: ___Yes ___No

If yes, please answer the following three questions:

- a) When did you get your driving license? _____
- b) How often do you use car? _____
- c) Have you ever had an accident? _____
- d) How often do you use seat belt when driving a car? _____

Please answer the following questions:

1) How often do you use seat belt as a front seat passenger in the given conditions? Why?

- a) in general _____
- b) inside the city _____
- c) outside the city _____
- d) in short trips _____
- e) in long trips _____
- f) in the dark _____
- g) in the day time _____
- h) in winter _____
- i) in summer _____
- j) in bad weathers _____
- j) in normal weathers _____

1) Do you use seat belt as a front seat passenger in a dolmuş/ taxi/ in your friend's car? _____

Why? _____

2) What are the benefits of using seat belt while traveling as a front seat passenger? _____

3) What can increase your seatbelt use as a front seat passenger?

_____ Why? _____

4) Do you think you should use seat belt more often while traveling as a front seat passenger? _____ Why? _____

5) If you had your children in the car, would you use seat belt as a front seat passenger? _____ Why? _____

6) Would you let your children sit in the front of the car? _____

Why? _____

8) Would you make your children use seat belt? _____ Why? _____

APPENDIX C

SEAT BELT USE QUESTIONNAIRE

Cinsiyetiniz: ___ Kadın ___ Erkek

Yaşınız: _____

Eğitim düzeyiniz: _____

Ehliyetiniz var mı? ___ Evet ___ Hayır

Cevabınız evet ise lütfen aşağıdaki soruları cevaplayınız.

Araba kullanma sıklığınız: ___ Hemen hemen her gün ___ Haftada 3-4 gün ___ Haftada 1-2 gün ___ Ayda birkaç kez ___ Çok nadir

Geçen sene sürücü olarak tahminen kaç kilometre yol kat ettiniz? ___

Bir sürücü olarak ne sıklıkta emniyet kemeri kullanıyorsunuz?

Her zaman 1 2 3 4 5 6 7 Hiç bir zaman

Lütfen aşağıdaki soruları size uygun gelen sayıyı daire içine alarak cevaplayınız.

1) Türkiye’de trafiğin ne kadar tehlikeli olduğunu düşünüyorsunuz?

1 2 3 4 5

Çok tehlikeli Tehlikeli Ne tehlikeli Tehlikesiz Hiç tehlikeli
Ne tehlikesiz değil

2) Arkadaşlarınızdan ya da akrabalarınızdan kaç tanesi geçen sene ciddi bir trafik kazası geçirdi?

0 1 2 3 4 5 ya da üstü

3) Türkiye’de her yıl trafik kazalarında toplam kaç kişinin öldüğünü tahmin ediyorsunuz? _____

4) Kaza anında emniyet kemeri takılı olmayan ve hayatını kaybetmiş kişilerden, ne kadarı emniyet kemeri kullansaydı yaşıyor olabilirdi?

1 2 3 4 5
neredeysi hepsi çoğu yarısı birazı neredeysi hiçbiri

Lütfen aşağıdaki soruları, yanlarında bırakılmış boşluklara altta verilmiş ölçekte size uygun gelen sayıları yazarak cevaplayınız. Soruları cevaplar ken son bir yıl içinde özel arabalarda yaptığınız yolculukları göz önünde bulundurunuz.

1	2	3	4	5
Hemen hemen	Haftada	Haftada	Ayda	Çok nadir
Her gün	3-4 gün	1-2 gün	Bir kaç kez	

- _____ a) Genel olarak ön koltukta yolcu olarak seyahat etme sıklığınız nedir?
 _____ b) Genel olarak arka koltukta seyahat etme sıklığınız nedir?
 _____ c) Şehir içinde ön koltukta yolcu olarak seyahat etme sıklığınız nedir?
 _____ d) Şehirler arası yolculuklarda ön koltukta yolcu olarak seyahat etme sıklığınız nedir?

Lütfen aşağıda belirtilmiş olan durumlarda, bir ön koltuk yolcusu olarak ne sıklıkta emniyet kemeri kullandığınızı, maddelerin yanındaki boşluklara alttaki ölçekten uygun olan sayıları yazarak belirtiniz.

Her zaman	1	2	3	4	5	6	7	Hiç bir zaman
------------------	----------	----------	----------	----------	----------	----------	----------	----------------------

- _____ a) Genel olarak tüm yolculuklarda
 _____ b) Arka koltukta seyahat ettiğiniz yolculuklarda (arka koltukta emniyet kemeri varsa)
 _____ c) Şehir içindeki yolculuklarda
 _____ d) Şehirler arası yolculuklarda
 _____ e) Kısa yolculuklarda
 _____ f) Uzun yolculuklarda
 _____ g) Gündüz yolculuklarında
 _____ h) Akşam ya da gece yolculuklarında
 _____ i) Takside
 _____ j) Bir başkası kullanırken kendi arabanızda
 _____ j) Bir başkası kullanırken, bir akrabanızın ya da arkadaşınızın arabasında
 _____ k) Yazın
 _____ l) Kışın yol kayganken

Lütfen aşağıdaki ifadelerde belirtilmiş olan durumların sizin için ne kadar olası olup olmadığını, alttaki ölçekte verilen sayıları ifadelerin yanlarında bırakılmış olan boşluklara yazarak belirtiniz.

Çok küçük								Çok büyük
bir olasılık	1	2	3	4	5	6	7	bir olasılık

Aşağıdaki ifadeleri alttaki cümlelerin devamı olarak düşünüp değerlendirme yapınız.

Özel bir arabada, ön koltukta seyahat edeceğim en yakın yolculukta;

- _____ a)...emniyet kemeri takmanın verdiği fiziksel rahatsızlık gibi pratik nedenler, emniyet kemeri kullanımımı azaltırdı.
 _____ b)...emniyet kemeri kullanmam beni güvenli yapardı.
 _____ c)...emniyet kemeri kullanmamam beni çok üzzerdi.
 _____ d)...emniyet kemeri kullanmamam çok yanlış olurdu.

Lütfen aşağıda verilmiş ifadelere göre size uygun gelen sayıları daire içine alarak belirtiniz.

Ön koltukta seyahat edeceğim en yakın yolculukta, emniyet kemeri **kullanmak...**

Zararlı	1	2	3	4	5	6	7	Yararlı
Kötü	1	2	3	4	5	6	7	İyi
Cezalandırıcı	1	2	3	4	5	6	7	Ödüllendirici
Hiç hoş değil	1	2	3	4	5	6	7	Çok hoş
Heyecansız	1	2	3	4	5	6	7	Heyecanlı
Utanç verici	1	2	3	4	5	6	7	Utanç verici değil
Rahatsız edici	1	2	3	4	5	6	7	Rahatsız edici değil
Güvensiz	1	2	3	4	5	6	7	Güvenli
Zor	1	2	3	4	5	6	7	Kolay
Mantıksız	1	2	3	4	5	6	7	Mantıklı

Güvende olan bir ön koltuk yolcusu olmak..

Çok iyidir 1 2 3 4 5 6 7 Çok kötüdür

Emniyet kemeri kullanımı konusunda, önem verdiğiniz kişilerin sizin yapmanız gerektiğini düşündüklerini ne kadar yapmak istersiniz?

Hiç yapmak istemem 1 2 3 4 5 6 7 Çok yapmak isterim

Ön koltukta seyahat ederken emniyet kemeri kullanmak düşünmeden yaptığım bir alışkanlıktır.

Hiç katılmıyorum 1 2 3 4 5 6 7 Tamamen katılıyorum

Genel olarak ön koltukta seyahat ederken emniyet kemeri kullanımınız konusunda ne kadar kontrolünüz olduğunu düşünüyorsunuz?

Hiç kontrolüm olmadığını düşünüyorum 1 2 3 4 5 6 7 Tam kontrolüm olduğunu düşünüyorum

Lütfen aşağıda verilmiş olan her ifadeye ne derece katılıp katılmadığınızı verilen sayıları ifadelerin yanında bırakılmış boşluklara yazarak belirtiniz. Doğru ve yanlış cevap yoktur, sizin düşünce ve hisleriniz önemlidir.

Hiç **Tamamen**
katılmıyorum 1 2 3 4 5 6 7 katılıyorum

Aşağıdaki ifadeleri alttaki cümlenin devamı olarak düşünüp değerlendirme yapınız.

Özel bir arabada, ön koltukta seyahat edeceğim bir sonraki yolculukta;

- ___a)...emniyet kemeri kullanmaya niyetliyim.
___b)...emniyet kemeri kullanmamı benim için önemli olan kişiler onaylarlar.
___c)...emniyet kemeri kullanmamın benim için önemli olan kişiler için çok az bir önemi var.
___d)...emniyet kemeri kullanma konusunda herhangi bir sosyal baskı hissetmem.
___e)...emniyet kemeri kullanımım konusunda çevremde önem verdiğim kişilerin ne düşündüğü benim için hiç önemli değil.
___f)...emniyet kemeri kullanıp kullanmayacağım sadece bana kalmış bir şeydir.
___g)...emniyet kemeri takmazsam kendimi güvende hissetmem.
___h)...emniyet kemeri kullanmaktan hoşlanmam.
___ı)...arabasına bindiğim biri bana “emniyet kemerini takar mısınız” derse sinirlenirim.
___i)...emniyet kemeri kullanmamın beklenmediğini düşünüyorum.
___j)...emniyet kemeri kullanmayı isterim.
___k)...arkadaşlarım emniyet kemeri kullanmam gerektiğini düşünür.
___l)...emniyet kemerinin verdiği fiziksel rahatsızlık gibi pratik nedenlerden dolayı emniyet kemeri kullanmak istemem.

Lütfen aşağıdaki ifadeleri okuduktan sonra yanlarında bırakılmış olan boşluklara altta verilmiş olan sayılardan uygun olanı yazarak, ifadelere ne derece katılıp katılmadığınızı belirtiniz. İfadeleri değerlendirirken özel arabalarda, ön koltukta yaptığımız yolculukları göz önünde bulundurunuz.

Hiç **Tamamen**
katılmıyorum 1 2 3 4 5 6 7 katılıyorum

- ___a) Emniyet kemeri kullanmadığım için bir kaza anında yaralanma olasılığım çok yüksektir.
___b) Bir kaza anında, emniyet kemeri kullanmamam sebebiyle yaralanma olasılığı beni endişelendiriyor.
___c) Gelecekte, bir kaza anında emniyet kemeri kullanmadığım için yaralanacağımı hissediyorum.
___d) Bir kaza anında emniyet kemeri kullanmadığım için yaralanma olasılığım düşüktür.
___e) Emniyet kemeri kullanmama alışkanlığım bir kaza anında yaralanma olasılığımı artırır.

Hiç **Tamamen**
katılmıyorum **1** **2** **3** **4** **5** **6** **7 katılıyorum**

Lütfen aşağıdaki ifadeleri, üstlerinde verilmiş cümlenin devamı olarak okuyup ve yukarıdaki ölçeği kullanarak değerlendiriniz.

Ön koltukta seyahat ederken meydana gelebilecek herhangi bir kazada, emniyet kemeri kullanmadığım için yaralanma düşüncesi;

- a)...beni korkutuyor.
- b)...çok kötü hissetmeme neden oluyor.
- c)...kalbimin hızlı atmasına neden oluyor.
- d)...ümitsiz hissetmeme neden oluyor.

Lütfen aşağıdaki ifadeleri altta verilmiş cümlenin devamı olarak okuyup değerlendirme yapınız.

Özel bir arabada, ön koltukta yolcu olarak seyahat ettiğim bir yolculuktaki bir kaza anında emniyet kemeri kullanmadığım için yaralanırsam;

- e)...kariyerim tehlikeye girebilir.
- f)...evliliğim ve önemli ilişkilerim tehlikeye girebilir.
- g)...ekonomik güvencem tehlikeye girebilir.
- h)...kendimle ilgili duygularım değişebilir.
- ı)...bütün hayatım değişebilir.
- i)...kaza nedeniyle yaşayacağım problemler çok uzun sürebilir.
- j)...aldığım yara, emniyet kemeri kullanıyor olmam durumunda alabileceğim yaradan daha ciddi olurdu.

Lütfen aşağıdaki ifadeleri altta verilmiş cümlenin devamı olarak okuyup değerlendirme yapınız.

Özel arabalarda, ön koltukta yolcu olarak seyahat ettiğim yolculuklarda düzenli olarak emniyet kemeri kullanmam;

- k)...bir kaza anında yaralanma riskimi azaltır.
- l)...bir kaza anında bana bir çok kazanç sağlar.
- m)...beni bir kaza ihtimaline karşı daha az kaygılı yapar.
- n)...kendimi daha güvenli hissetmemi sağlar.
- o)...benim için utanç verici bir şeydir.
- ö)...benim için çok zahmetlidir.
- p)...zor olabilir.
- r)...pratik olmayan bir şeydir.
- s)...ailemin benimle dalga geçmesine neden olabilir.
- ş)...rahatımı bozan bir şeydir.
- t)...zor olan bir alışkanlığı başlatmam demektir.
- u)...yapamayacağım bir şeydir.

Lütfen aşağıdaki ifadeleri okuduktan sonra ifadelere ne derece katılıp katılmadığınızı yanlarında bırakılmış boşluklara alttaki ölçekten size uygun elen sayıyı yazarak belirtiniz.

Hiç **Tamamen**
katılmıyorum 1 **2** **3** **4** **5** **6** **7 katılıyorum**

- _____ a) Eğer hasta olursam ne kadar çabuk iyileşeceğim bana bağlıdır.
_____ b) Doktorumla düzenli olarak görüşmek, benim için hastalıkları engellemenin en iyi yoludur.
_____ c) İyi bir sağlıktan daha önemli bir şey yoktur.
_____ d) Ne yaparsam yapayım, eğer hasta olacaksam olurum.
_____ e) Sağlığım kontrolüm altındadır.
_____ f) Ne zaman kendimi iyi hissetmesem, bir doktora danışmalıyım.
_____ g) Sahip olduğumuz en önemli şey sağlığımızdır
_____ h) Sağlığımı etkileyen bir çok şey tesadüfen olur.
_____ i) İyi bir sağlığa sahip olmanın mutlu bir hayatta küçük bir yeri vardır.
_____ j) Sağlığımı etkileyen en temel şeyler kendi yaptıklarımızdır.
_____ k) Ailemin hasta olmam ya da sağlıklı kalmamda birçok etkisi vardır.
_____ l) Bir hastalıktan ne kadar çabuk iyileşeceğimde şansın büyük bir etkisi vardır.
_____ m) Eğer kendime dikkat edersem hastalıkları engelleyebilirim.
_____ n) Sağlığımdan daha çok önemseydiğim bir çok şey vardır.
_____ o) Sağlığım, sağlık çalışanlarının kontrolü altındadır.
_____ p) İyi bir sağlığa sahip olmak, büyük ölçüde iyi bir kadere sahip olmakla ilgilidir.
_____ q) Eğer doğru davranışlarda bulunursam sağlıklı kalabilirim.
_____ r) Bir hastalıktan iyileşmiş olmam, çoğunlukla diğer insanların (doktorlar, hemşireler, ailem ve arkadaşlarım gibi) bana iyi bakmış olmalarından kaynaklanır.
_____ s) Ne yaparsam yapayım, hasta olma olasılığım vardır.
_____ t) Hasta olduğum zamanlarda, bunun tek sorumlusu kendimdir.
_____ u) Sağlığım ile ilgili olarak sadece doktorumun bana yapmamı söylediklerini yaparım.
_____ v) Eğer kısmetse sağlıklı kalabilirim.

Lütfen aşağıdaki ifadeleri, yanlarında bırakılmış boşluklara altta verilmiş ölçekten uygun olan sayıları yazarak değerlendiriniz. Değerlendirmenizi yaparken ön koltukta seyahat ettiğiniz yolculukları göz önünde bulundurunuz.

Hiç **Tamamen**
katılmıyorum 1 **2** **3** **4** **5** **6** **7 katılıyorum**

- _____a) Emniyet kemeri kullanıp kullanmayacağıma karar vermek sadece bana kalmış bir şeydir.
- _____b) Çoğunlukla emniyet kemeri kullanırım çünkü polis tarafından ceza yazılmasından korkarım.
- _____c) Eğer bir kazada emniyet kemeri kullanmadığım için yaralanırsam, yaralanmamın suçu bendedir.
- _____d) Sürücünün emniyet kemeri kullanımını konusundaki düşüncesi, emniyet kemeri kullanımımı etkiler.
- _____e) Eğer düzenli olarak emniyet kemeri kullanırsam, bir kaza anında yaralanma olasılığımı düşürürüm.
- _____f) Bazı durumlarda, sürücünün araba kullanma becerilerine olan güvensizliğim emniyet kemeri kullanımımı artırır.
- _____g) Çoğunlukla kendi güvenliğim için emniyet kemeri kullanırım.
- _____h) Gideceğimiz yolun uzunluğu emniyet kemeri kullanımımı etkiler.
- _____i) Emniyet kemeri kullanırım çünkü gerçekten yararı olduğuna inanıyorum.
- _____j) Yağmur, karanlık ve tehlikeli bir yol gibi kötü koşullarda seyahat ediyor olmak emniyet kemeri kullanımımı artırır.
- _____k) Durum ne olursa olsun, emniyet kemeri kullanmamamın sonuçlarından sorumluyumdur.
- _____l) Emniyet kemeri kullanırım çünkü emniyet kemeri kullanmak benim için otomatik bir davranıştır.

Aşağıda, insanların hayatlarında önemli buldukları bir takım değerlerin listesi verilmiştir. Lütfen verilen değerleri, yanlarında bırakılmış boşluklara en önemli bulduğunuza "1" ve en önemsiz bulduğunuza "12" yazarak önem sırasına göre sıralayınız.

- _____a) Ulus ve başarısı
- _____b) Kültür ve bilgi
- _____c) Heyecanlı ve renkli bir hayat
- _____d) Özgürlük ve bağımsızlık
- _____e) Aile ve arkadaşlar
- _____f) Sağlık ve kişisel güvenlik
- _____g) Adalet ve doğruluk
- _____h) İç dünyamızı bilme
- _____i) Maddi durumun iyi olduğu rahat bir hayat
- _____j) Zevk ve eğlence
- _____k) İşteki başarı
- _____l) Dünya barışı ve çevre

Lütfen aşağıda belirtilmiş olan durumların, ön koltuk yolcusu olduğunuz yolculuklarda size emniyet kemeri kullanmayı ne sıklıkta hatırlattığını, ölçekteki sayılardan uygun olanlarını maddelerin yanında bırakılmış boşluklara yazarak belirtiniz.

1	2	3	4	5
Hiç bir zaman	Nadiren	Bazen	Sıklıkla	Çok sık

- _____ a) Arabada emniyet kemerinin görünür olması
_____ b) Sürücünün emniyet kemeri takıyor olması
_____ c) Sürücünün size emniyet kemerini takmanızı söylemesi
_____ d) Arabadaki diğer yolcuların emniyet kemeri takıyor olması
_____ e) Arabadaki diğer yolcuların size emniyet kemerini takmanızı söylemesi
_____ f) Ailenizdeki kişilerin size emniyet kemerini takmanızı söylemesi
_____ g) Arkadaşlarınızın size emniyet kemerini takmanızı söylemesi
_____ h) Emniyet kemeri kullanımı ile ilgili güvenlik kampanyaları
_____ ı) Kazalarla ilgili televizyon ve gazete haberleri
_____ i) Polisin arabayı durdurması