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A Survey of Drivers' Attitudes Toward Speed Limit Violations

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This work investigates the attitudes of drivers in relation to speed limits in Greece. The analyses are based on data collected through completion of a questionnaire by 207 drivers. Compliance with speed limits on urban and interurban roads is compared and analyzed versus drivers' views on the relation between speeding and probability of road accidents. The main reasons for speed limit violations were determined through a "self and other" approach and the profile of speed limit offenders was investigated by use of discriminant analysis. The dominant factors underlying the various reasons for speeding are defined through factor analysis. Finally, the possible effects of the conclusions of this investigation on relevant safety campaigns are discussed.

INTRODUCTION

Traffic safety research usually concentrates on analyses of data concerning numbers of accidents and their interrelation with corresponding traffic flows and road geometric characteristics. And although useful results can arise from these analyses, they are the reflection of driver behavior, which is only indirectly assessed through these results. It is, however, generally accepted that driver behavior as expressed through the level of speed adopted, the path followed, the way maneuvers are accomplished, and the reaction to perceived risk, is critical in explaining traffic safety phenomena and in adopting traffic safety policies (Sabey & Taylor, 1980).

The two main factors that are related to the road user and that contribute to a road accident are (a) the manipulation error (e.g., speeding, illegal overtaking, etc.), and (b) the perception error (e.g., wrong assessment of speed, distance, etc.). For a specific driver with a specific driving skill and perception capability, it is obvious that the probability of a manipulation error and the probability of perception error increases as the speed increases (Hale, 1990; Godwin, 1984).

It has been widely accepted (Transportation Research Board [TRB], 1984; Godwin, 1984; Garber & Gadiraju, 1989; Hale, 1990; Commision of the European Communities [CEC], 1991) on the basis of international research that there is a clear linkage between road accident rate and vehicles' speed variability, and that crashes at higher impact speeds have a greater probability of resulting in a fatality.

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Posted speed limits contribute to reducing speed variability. Although international experience with speed limits has not established quantitative relationships between reductions in posted speed limits and accident rates, there is also a consensus concerning the positive safety effects of lower speed limits. It is also accepted that speeding increases the probability of accident occurrence (Organization for Economic Cooperation and development [OECD], 1981; TRB, 1984; Mason, Seneca, & Davinroy, 1992).

Recently, the EEC Committee of Experts on Road Safety proposed (CEC, 1991) a radical policy on speed limits to be followed by EEC member countries. This policy is mainly referred to:

- The extension of speed limits, in the range between 100 and 130 km/h (62.5 and 81.25 miles per hour) for rural motorways and between 80 and 100 km/h (50 and 62.5 miles per hour) for urban motorways, to the entire motorway networks of the community.
- The reduction of general speed limits on ordinary roads to 90 km/h (56.25 miles per hour) if they are higher at present.
- The adoption of 50 km/h (31.25 miles per hour) as the primary reference speed limit for the urban road networks.

Public acceptance of the basic intent of speed limits is considered crucial for their success. However, any attempt to inform the drivers through a road safety campaign about speed limits has to rely on the knowledge of the drivers' attitudes toward them (OECD, 1975; Myers, 1983). It has to be pointed out that safety information presented by the mass media may have little effect, because most individuals may feel that the message is directed to their fellow drivers who are less safe and skillful than themselves. This phenomenon is attributed (Groeger & Brown, 1989; Goszczynska & Roslan, 1989; McKenna, Stanier, & Lewis, 1991, Delhomme, 1991; Quimby, Downing, & Callahan, 1991), to the self-serving bias (i.e., the tendency to perceive oneself favorably) in the areas of driving abilities, risk perception, and driving regulations.

This research investigates drivers' attitudes toward speed limits in Greece. The main objectives of this work are to determine the reasons for speed limit violations through a "self and other" approach, to define the factors underlying the various reasons for speeding, to determine the profile of those that exceed speed limits, and to discuss how the conclusions of these investigations could affect a relevant safety campaign.

DATA COLLECTION

The analysis of drivers' attitudes toward speed limits was based on data collected through the completion of a questionnaire specifically created for this research. The final questionnaire was pilot tested prior to its distribution for this study.

The questionnaire consists of three parts. The first part includes a number of questions referring to the driving experience and the vehicle. The second part refers to the driver views about speed limits and speed determining factors on highway curves. The final part deals with personal characteristics of the driver (age, sex, etc.).

The questionnaires were distributed to a sample of randomly chosen drivers to be completed in the absence of any interviewer and to be collected by a specific date. A total of 207 fully completed questionnaires were collected in this way.

The age of those who answered the questionnaire ranged from 18 to 68 years old, while the number of years of driving experience ranges from 1 to 42 years. The sample of drivers includes both male and female drivers as well as drivers unmarried and married, with or without children. Their level of education ranges from elementary to university education. The size of their car engine ranges from 600cc to 2200cc, while the car ownership period ranges from 1 to 29 years.

SPEED LIMIT COMPLIANCE

The percentage of drivers (reportedly) complying with the speed limits on urban and interurban roads are given in Table 1.

A first look at Table 1 reveals that in both cases drivers complying with speed limits are

TABLE 1
SPEED LIMIT COMPLIANCE ON URBAN AND INTERURBAN ROADS

Speed limits compliance	Urban Roads		
Interurban Road	Always/Most of the time	Seldom/Never	Total
Always/Most of the times	124 92.5% (±4.5) 73.8% (±6.6)	10 7.5% (±4.5) 25.6% (±13.7)	134 100% 64.7% (±6.5)
Seldom/Never	44 60.3% (±10.2) 26.2% (±6.6)	29 39.7% (±10.2) 74.4% (±13.7)	73 100% 35.3% (±6.5)
Total	168 81.2% (±5.3) 100%	39 18.8% (±5.3) 100%	207 100% 100%

Note: In each cell of the table the first number denotes frequency, the second number denotes row percentage (and confidence interval at a = 0.05) and the third number denotes column percentage (and confidence interval at a = 0.05).

greater in number than those not complying with them. Furthermore, the percentage of drivers complying with speed limits always or most of the time on urban roads is higher than the corresponding percentage on interurban roads.

As far as driver consistency in relation to speed limit compliance on urban and interurban roads is concerned, a high percentage (73.9%; 153/207), ranging by ±5.8% at a level of significance 0.05, has a consistent behavior. This result is reinforced by the application of the χ^2 test of independence to the 2×2 Table 1, which gave a χ^2 value equal to 32.17, definitely higher than 3.86 (i.e., the critical χ^2 value for one degree of freedom at the 0.05 level of significance). As a consequence, it is accepted that speed limit compliance on urban and interurban roads is not independent.

It is however interesting that among drivers that seldom or never comply with the speed limits on interurban roads, at least half of them (the corresponding confidence interval at a level of significance $\alpha = 0.05$ is approximately 50% to 71%) comply always or most of the time with the speed limits on urban roads. It should also be mentioned that there is a very small percentage, ranging from 3% to 12% ($\alpha = 0.05$), among drivers complying with speed limits on interurban roads who do not comply with speed limits on urban roads. Similar driver views emerged from a road users attitudes investigation (Quimby et al., 1991) in England where the posted speed limits are almost identical to those in Greece on urban roads (30 mph) and motorways (70 mph). In that research, 70% of the respondents considered the speed limits on urban roads to be about right, but this percentage drops to 53% when it comes to motorways.

According to the previous analyses, the percentages of drivers who reportedly violate speed limits are rather considerable. In this context it was interesting to investigate whether the drivers admit that speeding could increase the probability of accident occurrence. The percentages of drivers admitting the above statement, among those complying and those not complying with speed limits on interurban roads, are given in Table 2.

The application of the χ^2 test of independence on the 2×2 Table 2 gave a χ^2 value equal to 29.6, which is definitely higher than 3.86, (i.e., the critical χ^2 value for one degree of freedom at the level of significance $\alpha = 0.05$). As a consequence, speed limit compliance on interurban roads and the belief that speed limits could reduce accidents cannot be considered as independent. It is however worth noting that among those who seldom or never comply with speed limits, 35% to 58% of them at approximately a 5% level of significance, reportedly believe that speed limits could reduce accidents.

A possible interpretation, in line with the idea put forward by Rumar (1988), is that these drivers overassess their driving abilities, a fact that could provide them with a sense of security in thinking that they can control all traffic situations. This fact would obviously

TABLE 2
SPEED LIMIT COMPLIANCE VERSUS BELIEF THAT SPEED LIMITS COULD REDUCE ACCIDENTS ON INTERURBAN ROADS

Drivers believing that speed limits:	Drivers complying with speed limits		
	Always/Most of the time	Seldom/Never	Total
Could reduce accidents	111 76.6% (±6.9) 82.8% (±6.4)	34 23.4% (±6.9) 46.6% (±11.4)	145 100% 70.0% (±6.2)
Could not reduce accidents	23 37.1% (±12.0) 17.2% (±6.4)	39 62.9% (±12.0) 53.4% (±11.4)	62 100% 30.0% (±6.2)
Total	134 64.7% (±6.5) 100%	73 35.3% (±6.5) 100%	207 100% 100%

Note: In each cell of the table the first number denotes frequency, the second number denotes row percentage (and confidence interval at a = 0.05) and the third number denotes column percentage (and confidence interval at a = 0.05).

contribute to their poor perception of risk, in the sense that although they perceive a hazard, they think they can avoid it. A similar explanation reported by Simon and Corbett (1991) is that drivers can accept the general premise of a link between accidents and speeding but deny that it has any personal application.

PREDICTION OF DRIVERS SPEEDING ATTITUDES

Variables Selection

The above analyses gave some interesting results concerning speeding but these results do not allow the prediction of the speeding attitudes of the drivers. As a consequence, it was decided to investigate their attitudes further to determine whether speed limit compliance is randomly distributed among drivers or it depends on certain characteristics of them. This work investigated a number of variables that were considered capable of influencing their attitudes and therefore possibly capable of predicting the drivers' speeding behavior. These variables can be grouped in three different categories: those related to driving experience; those related to various driver characteristics; and those related to the vehicle characteristics (Mostyn & Sheppard, 1980; TRB, 1984; Quimby et al., 1991).

More specifically, the number of years of drivers license possession and the number of years of driving experience were considered in the first category; while age, sex, profession, education level, marital status of the driver, and the number of kms (miles) driven the previous year totally and separately on interurban roads were considered in the second category. Finally, the variables in the third category were the capacity of the engine, the age of the vehicle, and whether the vehicle was bought new or second hand.

Discriminant Analysis

In order to investigate whether speed limit violation is influenced by the above variables and if so, to quantify this influence, discriminant analysis was used (Cooley & Lohnes, 1971; Green & Rao, 1972). Discriminant analysis allows the distinction among several mutually exclusive groups on the basis of a number of variables. The data available are the values of the variables for cases whose group membership is known. Discriminant analysis identifies the variables that are important for distinguishing among the groups and develops a procedure for predicting group membership for new cases whose group membership is undetermined.

This is achieved by establishing linear "discriminant functions," the number of which depends on the different groups, and which have the form:

$$D_i = B_0 + B_{i1} + B_{i2}X_2 + \ldots + B_{ij}X_j$$

where D_i denotes the ith discriminant function, X_j denotes the values of the discriminant variable j, and B_{ij} denotes the coefficient of discriminant variable j for discriminant function i. The capability of the discriminant functions in allocating various cases in the groups considered is measured by the percent of correctly grouped cases among the cases considered for developing these functions.

Discriminant analysis is used in this work to develop a model that can predict whether the driver complied with the speed limit or not on interurban roads on the basis of his/her characteristics. The analysis distinguishes between two groups of drivers: those that reportedly comply with speed limits always or most of the time, and those that comply with them seldom or never. As a consequence, only one discriminate function is developed. The discriminant analysis was carried out by use of the SPSS statistical package (Norusis, 1988) adopting the Wilkes' Lambda (Tatsuoka, 1971) as selection criterion.

Thorough analysis of the variables considered led to the conclusion that only four variables have statistically significant effects on driver speeding behavior. The corresponding discriminant function that emerged is the following:

$$D_1 = -0.343 + 0.533ED + 0.378KS - 0.397AG - 1.091SX$$

where:

ED = the level of education (1 for elementary school, 2 for high school, 3 for polytechnic, 4 for university education)

KS = the number of kms driven on interurban roads during the previous year (1 for < 2,000; 2 for 2,000–5,000; 3 for 5,000–10,000; 4 for 10,000–15,000; 5 for 15,000–20,000; 6 for 20,000–30,000; 7 for >30,000)

AG = the driver age in years (1 for 18–24; 2 for 24–30; 3 for 30–40; 4 for 40–50; 5 for 50–60; 6 for >60)

SX = the driver sex (1 for male, 2 for female)

According to the discriminant analysis results, drivers with discriminant function values lower than 0.19 are allocated to the group of drivers complying with speed limits always or most of the time, while drivers with corresponding values higher than 0.19 are allocated to the other group.

The success in allocating the drivers of the sample to the two groups by use of discriminant function D_1 is given in Table 3. It can be seen that the total percentage of successful allocations is about 65%.

A close look at the discriminant function D_1 reveals that as the age of the driver increases, so does the speed limits compliance. It can also be seen that female drivers comply more with the speed limits. This is a rather reasonable result given that older drivers and female drivers are expected to have a more conservative driving behavior (Mostyn & Sheppard, 1980; TRB, 1984; Evans, 1991; Quimby et al., 1991).

On the contrary, compliance with the existing speed limits decreases as the annual number of kms (miles) driven on interurban roads and as the level of education of the driver increases. This is a rather reasonable result for the experienced drivers (TRB, 1984), and a rather challenging result to social scientists for the educated drivers, as education seems to contribute to speeding (i.e., to riskier behavior).

TABLE 3
CLASSIFICATION RESULTS OF DISCRIMINANT FUNCTION D_1 FOR INTERURBAN ROADS

Speed limits compliance	Total number observed in sample	Predicted Allocation	
		Group 1	Group 2
Group 1: Always/Most of the time	134	82 61.2%	52 38.8%
Group 2: Seldom/Never	73	20 27.4%	53 72.6%

Total percentage of cases correctly allocated: 65.2%

As far as compliance with speed limits on urban roads is concerned, the analysis revealed that the variables influencing speeding in a statistically significant way are the same as those for interurban roads except that the total annual number of kms driven is used instead of the corresponding number on interurban roads.

REASONS FOR SPEED LIMIT VIOLATIONS

The data collected during the survey include answers concerning the possible reasons why the drivers themselves violate speed limits as well as the possible reasons why they believe the "other drivers" violate speed limits. The same group of 10 different reasons shown in Table 4 were assessed on the basis of their importance to speed limit violations both by themselves and by the other drivers. The importance was rated on an 11-point scale. The zero end was defined as "of no importance" and the 10 as "very important."

The mean grade and corresponding confidence interval ($\alpha = 0.05$) for each possible reason for speeding is given in Table 4, separately for the drivers themselves and for the other drivers. These grades are also depicted in Figure 1. A first look at these grades reveals that the mean grade for each reason is always lower for the drivers themselves than it is for the other drivers (with the exception of reason b, which is almost identical).

It is noteworthy that although the grand mean grade for all reasons concerning speeding for the drivers themselves (i.e., 4.01), is lower than the corresponding grand mean for the other drivers (i.e., 6.24), the variation of the mean grade for each reason is significantly higher in the former case than in the latter. Thus, the ratio of the mean grade for each reason over the mean grade for all reasons ranges from 0.43 to 1.66 for the drivers themselves, and from 0.84 to 1.14 for the other drivers.

The above initial conclusions indicate that analyses should concentrate on the relative importance of each reason within each category (drivers themselves and other drivers) rather than comparing directly corresponding grades of the two categories.

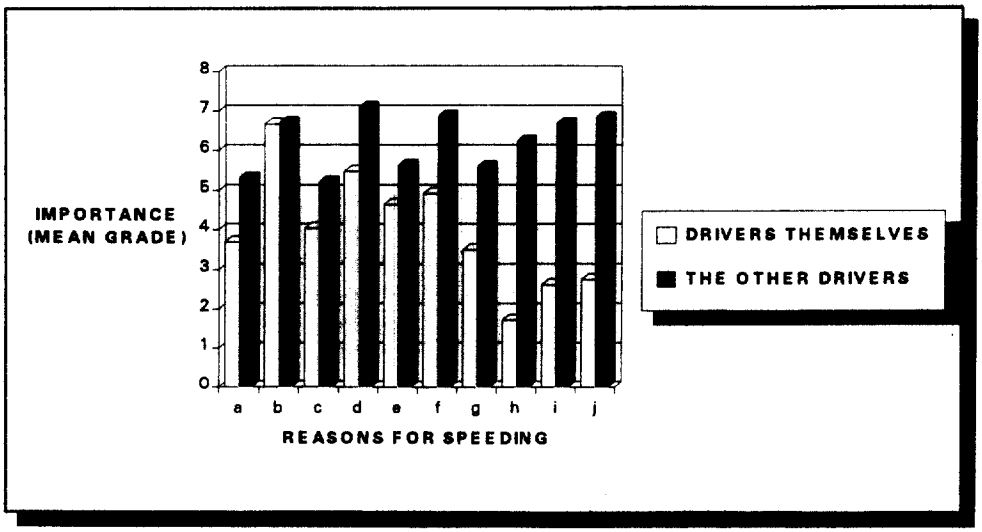
On the basis of the data shown in Table 4, the fact that speed limits are not reliable (reason b) is the first in importance of reasons for violating them by the drivers themselves. The second most important reason is that drivers are in a hurry (reason d). The third most important reason by the drivers themselves cannot be exactly determined due to the supercovering of the confidence intervals. Thus, the third reason is either the absence of police enforcement (reason f) or driver willingness to keep up with other traffic (reason e).

TABLE 4
REPORTED IMPORTANCE OF REASONS FOR SPEED LIMIT VIOLATION AND CORRESPONDING CONFIDENCE INTERVALS (α=0.05)

Possible reasons for speed limit violations	For the drivers themselves		For the "other" drivers	
	Mean Grade	Mean Over Grand Mean*	Mean Grade	Mean Over Grand Mean*
a. Do not pay attention to the speed limit signs	3.69 (±0.38)	0.90	5.34 (±0.34)	0.86
b. Do not consider the speed limit signs as reliable	6.67 (±0.36)	1.66	6.72 (±0.31)	1.08
c. Do not agree with speed limits	4.04 (±0.43)	1.01	5.24 (±0.33)	0.84
d. They are in a hurry	5.49 (±0.36)	1.37	7.12 (±0.26)	1.14
e. They want to keep up with other traffic	4.64 (±0.39)	1.16	5.67 (±0.29)	0.91
f. Absence of traffic police	4.93 (±0.37)	1.23	6.88 (±0.28)	1.10
g. They are emotionally upset	3.50 (±0.36)	0.87	5.63 (±0.28)	0.90
h. They want to show off to other drivers	1.73 (±0.31)	0.43	6.25 (±0.31)	1.00
i. They overestimate their driving abilities	2.62 (±0.34)	0.65	6.70 (±0.30)	1.07
j. They underestimate driving risk at high speeds	2.75 (±0.36)	0.69	6.85 (±0.30)	1.10
ALL REASONS	4.01 (±0.23)	1.00	6.24 (±0.16)	1.00

* Grand mean is the mean of all grades for all reasons.

FIGURE 1
RANKINGS, ON THE BASIS OF THE IMPORTANCE REPORTED BY THE DRIVERS, OF REASONS FOR SPEEDING ON INTERURBAN ROADS



*** Look at Table 4 for the meaning of reasons a - j**

Due to the small variation of the mean grade for each reason and the corresponding confidence intervals, the most important reasons for other drivers' speed limit violation cannot be determined clearly. However, it can be concluded that the three most important reasons are included in the following five reasons : being in a hurry (reason d), absence of police enforcement (reason f), underestimation of the risk of speeding (reason j), unreliability of speed limits (reason b) and overestimation of their driving abilities (reason i).

The reason considered as the most important for speeding by the drivers themselves, (i.e., the unreliability of the speed limits), allocates no responsibility to the drivers for speeding. Furthermore, for the remaining three most important reasons for speeding, driver responsibility is only marginal. On the contrary, when it comes to other drivers behavior, two among the five reasons considered as significantly contributing towards speeding (i.e., underestimation of the dangers due to speeding and overestimation of driving capabilities), allocate a clear responsibility to the driver. These findings are in accordance with Codol (reported in Goszczyunska & Roslan 1989; Delhomme, 1991), who demonstrated that people ascribe to themselves more socially positive characteristics and less negative ones. Consequently, drivers attribute their own speeding to socially acceptable reasons while they attribute other drivers speeding to socially unacceptable ones.

It is believed that the drivers revealed, through their answers for the speeding behavior of the other drivers, those views and beliefs on their own speeding behavior that are socially unacceptable. As a consequence, it is believed that, although the answers concerning speeding reasons of other drivers may differ from those concerning the drivers themselves, these answers are closer to the actual speeding behavior of the drivers who answered the questions.

MAIN FACTORS AFFECTING SPEEDING BEHAVIOR

This analyses led to interesting results concerning the relative importance of each reason for drivers' speeding behavior. However, no information about the interrelationship of the various reasons for speeding, as expressed by the grades of each driver, can be extracted. Thus, the reasons for speeding were further investigated to determine whether there are

some underlying dimensions, or factors, that can be used to explain the complex phenomenon of speed limit violation.

The above investigation was carried out through factor analysis (Cooley & Lohnes, 1971; Bishop, Feinberg, & Holland, 1975). Factor analysis is a statistical technique used to identify a relatively small number of factors that can be used to represent relationships among sets of various interrelated variables. The basic model of factor analysis that was used, can be expressed as follows:

$$z_j = a_{j1}F_1 + a_{j2}F_2 + \ldots + a_{jm}F_m + d_jU_j \quad j = 1,2,\ldots,n$$

where:

z_j = variable j in standardized form
F_i = hypothetical common factors for all the variables
U_j = unique factor for variable j
a_{ji} = standardized multiple- regression coefficient of variable j on factor i (factor loading)
d_j = standardized regression coefficient of variable j on unique factor U_j.

The importance of each factor developed is assessed by the percentage of the total variable variance explained by the factor. Only factors with percentage variance explained higher than the percentage corresponding to each of the n variables (equal to $100/n$ for each variable due to the fact that each variable is standardized) are considered.

It should be mentioned that before adopting the factor analysis approach, the suitability of this approach for the case examined was considered by use of the Bartlett's test of sphericity significance level P (Norusis, 1988) and of the Kaiser-Meyer-Olkin index (KMO). Both tests gave satisfactory results to proceed with factor analysis in the present work ($P = 0.000 < a = 0.05$ in both cases of drivers themselves and the other drivers, $KMO > 0.5$ for both cases).

Factor analysis is used in the present work to develop factors underlying the importance of the various reasons for speeding, which in this case are the variables. The investigation was concerned both with relevant answers for drivers themselves and for the other drivers. The analysis was carried out by use of the SPSS statistical package (Norusis, 1988) adopting the varimax rotation method.

Three factors were determined by factor analysis for drivers themselves, explaining about 63% of the total variance. The factor loadings and the percentage of variance explained by each factor are given in Table 5.

Table 5 reveals that Factor 1 may be considered to account for reasons to speed related to egocentric behavior of the driver; Factor 2 can be considered to account for reasons to speed related to external influences that are not permanent; and Factor 3 accounts for reasons to speed related to the notion of speed limits (application of limits, reliability of signs etc.).

As far as other drivers are concerned, factor analysis gave three factors explaining together about 63% of the total variance. The corresponding factor loadings and the percentage of variance explained by each factor are given in Table 6.

A close look at Table 6 reveals that the factors determined to underlie the reasons for speeding for the other drivers have the same interpretation as those determined for the drivers themselves. This is a rather reasonable result, given that in the mind of each individual the same structure is expected to exist in the

TABLE 5
FACTOR LOADINGS OF THE ANALYSIS CONCERNING DRIVERS THEMSELVES

	Variables (Reasons * for speeding)										% Variance Explained
	a	b	c	d	e	f	g	h	i	j	
Factor 1	0.43	-0.21	0.38	0.32	0.21	0.14	0.73	0.79	0.83	0.73	40.5
Factor 2	-0.02	0.25	0.11	0.54	0.75	0.73	0.20	0.31	0.26	0.16	12.1
Factor 3	0.66	0.76	0.66	0.12	-0.03	0.26	-0.04	0.24	0.15	0.17	10.0

* See Table 4 for the meaning of reasons a-j

TABLE 6
FACTOR LOADINGS OF THE ANALYSIS CONCERNING THE OTHER DRIVERS

	Variables (Reasons * for speeding)										% Variance Explained
	a	b	c	d	e	f	g	h	i	j	
Factor 1	0.21	-0.08	0.08	0.05	0.01	0.30	0.58	0.82	0.86	0.85	32.2
Factor 2	0.01	-0.01	0.24	0.75	0.70	0.67	0.42	0.29	0.17	-0.19	15.9
Factor 3	0.75	0.75	0.71	0.03	0.19	0.00	0.02	0.09	0.07	0.07	13.8

* See Table 4 for the meaning of reasons a-j

relation among the reasons considered for both cases. However, the main difference concerning the case of drivers themselves and the case of other drivers, which emerges from the results of the above factor analysis and of the previous paragraph, is that these factors are given different weights (grades) in each case on the basis of whether or not they imply socially acceptable behavior.

The fact that reasons reflecting socially unacceptable behavior are overstated in the case of other drivers and understated in the case of drivers themselves can also be traced when each of the above factors is considered separately. Thus, for the case of other drivers, the factor accounting for the egocentric behavior understates the reason of driving under emotional upset (i.e., the less socially unacceptable reason among the reasons dominating this factor). Similarly, the factor accounting for not permanent external influences overstates, for the case of other drivers, the possibility of driving in a hurry, (i.e., the more unacceptable reason among those dominating this factor). Finally, the factor accounting for the notion of speed limits in general overstates for the case of drivers themselves the speed limit sign reliability for similar reasons.

DISCUSSION

This work investigated the main reasons for speed limit violations through a "self and other" approach and has outlined the profile of speed limit offenders. In contemplating these issues, the possible ways of affecting driver speeding behavior is emerging as an issue of first priority. Increasing traffic safety in the future has been conceived as a process of changing social norms related to traffic safety issues (Evans, 1991). The dramatic change in social norms related to smoking and hygienic way of life that has occurred in the last 25 years is emphasized as analogous successful efforts. In the context of affecting driver speeding behavior and modifying compliance (an outward conformity) with speed limits to acceptance (a sincere inward conformity), public awareness of the rationale of the enactment of speed limits is necessary.

According to these findings, a relevant safety campaign has to point out the differences in driver reasoning for the speeding behavior of themselves and the other drivers, as well as the assessed actual main reasons for speed limit violations (i.e., being in a hurry, underestimation of the risk of speeding, overestimation of driving abilities, and the desire to show off to other people). Target groups for the relevant safety campaign should be young, male, educated drivers who travel a lot on interurban highways as it was assessed in the present work through discriminant analysis. Media relevant campaigns should deal especially with interurban roads where the reported percentage of speed limit violations was higher than on urban roads.

In the safety campaign the "self-serving bias" phenomenon, which was observed in the present research as the reasoning for the speed limit violations, should be explicitly analyzed in order to avoid the prementioned tendency of individuals to think that the campaign message, although a proper one, is referring to the other drivers. The three main factors underlying the various reasons for speed limit violation, (i.e., egocentric behavior of the driver, external nonpermanent influences, and the notion of speed limits), which were identified in the present research could help the relevant efforts to influence driver attitudes.

Finally, the widespread serious discussion of the hazardous effects of speeding in the media, with the consequent deglamorizing of the speeding driver, could play a decisive role in the process of achieving the desired change in relevant social norms.

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