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Driver Social Desirability Scale: A Turkish adaptation and examination in the driving context

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Abstract

The self-report data collection method is a widely used technique to gather information in studies related to road safety. One of the most considerable limitations of the method is social desirability bias. One way to overcome the possible detrimental effects of socially desirable responding is to control it using social desirability scales. The present study aims to adapt the Driver Social Desirability Scale into Turkish, examine its construct validity, and investigate the relationship between social desirability and driving-related measures. A total of 351 drivers between the ages of 19 and 59 completed a questionnaire including a demographic information form, the Driver Behavior Questionnaire (DBQ), the Driver Skill Inventory (DSI), the Two-Dimensional Social Desirability Scale (SDS), and the Driver Social Desirability Scale (DSDS). Factor analysis supported the two-factor structure of the DSDS in the Turkish sample. Social desirability correlated positively with age and driving experience. Female drivers reported higher levels of driver impression management, while male drivers scored higher on self-deception. Driver impression management was associated negatively with violations and perceptual-motor skills and positively with safety skills. Lastly, driver self-deception was related positively to violations, positive driver behaviors, perceptual-motor skills, and safety skills. The study shows that the Turkish version of DSDS is a reliable and structurally valid instrument.

Keywords Social desirability, Driver social desirability, Driver impression management, Driver self-deception, Driver behavior, Driver skill

1. Introduction

Traffic researchers have been trying to understand the causes of road fatalities for decades. The statistics show that the leading causes of road fatalities are human-related factors, e.g., speeding, drink driving, cell-phone use (World Health Organization, 2018). The landmark study conducted by Treat et al. (1977) stated that humans are solely responsible for 57% of road accidents and the contributing element for 90% of them. In Turkey, over one million accidents were recorded, in which 5473 people died, and 283234 people were injured in 2019. According to the Turkish Statistical Institute (2019), nearly 89% of the causes of accidents were attributed to preventable driver error. Therefore, the need to understand the dynamics of driver-related factors has growing importance.

The driver-related factors are generally investigated based on two components, driver behavior and driver skill (Evans, 1991). Driver behavior is known as driver's preferences regarding how to drive or their habitual driving style, e.g., driver's preferred speed or headway distance while following a leading car (Özkan & Lajunen, 2011). On the other hand, driving skill is defined as the best driving performance of a driver to the full extent of his/her mental and motor abilities, for example, driver's reaction times (Elander et al., 1993).

Various methods (e.g., self-report, observation, simulator) have been utilized to measure and investigate those factors. Numerous advantages distinguish self-report techniques among other techniques, such as low cost, time-saving, easiness to collect a large amount of data, and availability of information that cannot be obtained by other means (e.g., attitudes, belief). According to Lajunen and Özkan (2011), self-report techniques have been widely used to gather information about driver behaviors, e.g., the Driver Behavior Questionnaire (DBQ; Reason et al., 1990), and driving skills, e.g., the Driver Skill Inventory (DSI; Lajunen & Summala, 1995). Since

driver behavior is conceptualized as drivers' preferred style (how a driver usually drives), the drivers are considered to be aware of their behaviors. Thus, when asked to report these behaviors, drivers are expected to report the correct rate of their behavior. Driving skills, however, are conceptualized as a driver's maximum performance (what the driver can do), and therefore drivers may not be aware of their capabilities, such as their reaction times in case of emergency. Therefore, we can say that "the DSI is not an objective measure of driver skills, but rather an instrument for investigating a driver's view of his or her skills" (Lajunen & Özkan, 2021).

Despite those advantages, the self-report methods have a significant shortcoming, namely the social desirability bias. Social desirability bias has been defined as the tendency to give socially accepted and favorable answers (Paulhaus, 1984; Paulhaus & Reid, 1991). A variety of socially desirable responding (SDR) scales have been developed to control the SDR's potential effect on self-report instruments, such as the Marlowe-Crowne Social Desirability Scale (MCSDS; Crowne & Marlowe, 1960). In MCSDS, responses are given as agreements to general moral statements, e.g., "I can remember playing sick to get out of something." Even though MCSDS was constructed to measure one-factor SDR, Helmes and colleagues (2015) reported that MCSDS's one-factor construct could demonstrate the extent to which people attempt to manage their impression in social environments. However, Pauls and Stemmler (2003) argued that SDR measured by MCSDS could also be due to people's unrealistic positive self-view rather than impression management. As a contribution to this debate, Paulhaus (1984) proposed a two-factor model of social desirability bias. This model included self-deception, where respondents believed their overrated positive answers and responded honestly, and impression management, where respondents were aware of their positive answers given to impress others. The Balanced Inventory of Desirable Response (BIDR) was developed to examine the two-factor model (Paulhaus & Reid, 1991). The unintentionally biased nature of self-deception was argued to be

related to personality characteristics such as high self-esteem and ego enhancement. That is, the self-deception bias could be used unconsciously either to enhance their positive view for pleasure or to avoid threats to self-esteem (Özkan & Lajunen, 2011; Paulhaus & Reid, 1991). On the other hand, impression management referred to the conscious attempt to cheat in responses to show a positive self-image to others (Paulhaus & Reid, 1991). Accordingly, the public social settings might lead the respondents to give more biased answers than private social settings (Özkan & Lajunen, 2011; Paulhaus & Reid, 1991). Impression management has particularly been seen as a severe problem in traffic behavior studies (Özkan & Lajunen, 2011). For example, drivers' reports on accident history, number of tickets, speeding behavior could be more prone to impression management (af Wåhlberg, 2010; af Wåhlberg et al., 2010; Lajunen et al., 1997).

As the most popular measurement, the DBQ's vulnerability to the SDR has been tested several times. Lajunen and Summala (2003) examined impression management bias in self-reported driving in different situations (public vs. private). The results showed a slight relationship between the DBQ items and impression management. However, af Wåhlberg (2010) argued that the findings might be applied to only differences between the situations because the study was based on a between-subject design; different respondents were included in different social situations. Later, Sullman and Taylor (2010) replicated the study with a within-subject design. The findings were parallel to the study of Lajunen and Summala. The impression management bias was not found to be affecting the responses given to the DBQ items. Wickens and colleagues (2008) also argued that the DBQ is a biased-free instrument. However, af Wåhlberg (2010) noted that the lie scale for measuring social desirability (i.e., BIDR) in these studies was not driving specific, which might have influenced the results. According to af Wåhlberg (2010), insignificant or small correlations were found because SDR included questions taken from daily life ("I sometimes tell lies if I have to") rather than from traffic.

120 The only SDR scale specific to traffic conditions is the Driver Social Desirability Scale (DSDS;
121 Lajunen et al., 1997). It was constructed based on the two-factor model of Paulhaus (1984) (i.e.,
122 self-deception and impression management), and the items were developed as traffic targeted.
123 Lajunen and colleagues (1997) found that self-reported accidents correlated negatively with
124 impression management. This result was tested and supported by different researchers (af
125 Wåhlberg et al., 2010; af Wåhlberg, 2010; Conner & Lai, 2005). af Wåhlberg et al. (2010) found
126 a mixed relationship between age and SDR. For example, age and SDR were negatively
127 correlated among fleet drivers but positively correlated among young drivers and truck drivers.
128 In addition, impression management was positively, but self-deception negatively related to
129 driving experience (af Wåhlberg et al., 2010). The researchers have claimed that impression
130 management is more influenced by mileage than self-deception (Lajunen et al., 1997). It is
131 possible that due to high mileage and exposure to different types of situations, experienced
132 drivers are well aware of their driving style and have, therefore, a less biased view of their driving
133 than less experienced drivers. On the other hand, experienced drivers might have a stronger urge
134 to lie about their driving styles than inexperienced drivers because an experienced driver is more
135 aware of the risks related to risky driving style.

136 af Wåhlberg (2010) conducted a comprehensive study including various driver behavior scales,
137 including the violation dimension of the DBQ and the DSDS factors. The scales were distributed
138 three times to participants in driver education and two times to randomly selected drivers. The
139 violation scale of the DBQ correlated negatively with impression management among both
140 groups. When controlled for impression management bias, the correlations between violations
141 and the self-reported accident numbers fell nearly by half. Also, as noted earlier (af Wåhlberg et
142 al., 2010), the number of accidents correlated negatively with impression management. It seems
143 that self-reported aberrant behaviors and accident rates are all susceptible to the SDR.

Moreover, the DSI (Lajunen & Summala, 1995) was also tested for its sensitivity to socially desirable responses. Few studies have examined the relationship between reported driving skills and SDR. Lajunen and his colleagues (1997) investigated the relationships between self-reported driver skills and socially desirable responding in Australia and Finland. Impression management correlated positively with safety skills in both countries, whereas it correlated negatively with perceptual-motor skills in the Finnish sample. Self-deception correlated positively with perceptual-motor skills and safety skills in both countries. The strongest correlation was found between self-deception and perceptual-motor skills. Ostapczuk and colleagues (2015) found similar results in German samples and concluded that the DSI is liable to the social desirability bias. The strongest relationship was found between self-deception bias and motor skills. These findings indicate that drivers might have an unrealistic view of their perceptual-motor skills since the DSDS self-deception scale measures driver overconfidence (Lajunen et al., 1997).

1.3. Aim of the Study

The first aim of the study is to adapt the DSDS into the Turkish language and validate its two-factor structure. The second aim of the study is to investigate the relationship between scales of the DSDS, the DBQ, the DSI, and demographic variables in a sample of Turkish drivers.

2. Method

2.1. Participants and Procedure

The study was conducted with 351 active drivers between the ages of 19 and 59 (M = 25.02, SD = 7.46). The average lifetime kilometers driven was 39908.03 (SD = 80556.35); 47% of the participants were female (n = 165), and 53% were male (n = 186).

After receiving an ethical approval form from the Middle East Technical University Ethics Committee, a questionnaire package including informed consent, a demographic information form, the Driver Behaviour Questionnaire, the Driver Skill Inventory, the Two-Dimensional Social Desirability Scale, and the Driver Social Desirability Scale were distributed as an online survey. Some of the participants earned bonus points in the courses for their voluntary participation. Lastly, the anonymity of all participants was ensured.

2.2. Measures

2.2.1. The Driver Behaviour Questionnaire (DBQ)

The Driver Behavior Questionnaire was developed by Reason and colleagues (1990) to measure aberrant driver behaviors. Sümer and colleagues (2002) adapted the scale into Turkish. The scale consists of 28 items and four factors that are aggressive violations, ordinary violations, errors, and lapses. The DBQ is a 6-point Likert-type scale from 'never' (0) to 'always' (5). As an addition to the DBQ, Özkan and Lajunen (2005) developed the Positive Driver Behavior Scale, which aims to measure positive driver behaviors. The scale was evaluated with the same 6-point Likert-type scale as the DBQ. Including 14 items of the Positive Driver Behavior Scale to the DBQ, a total form with 42 items was used in the present study. Higher scores in a given factor represent

187 a higher frequency of the related behaviors. In the present study, the internal consistency
188 reliabilities of the factors were found as .75 for lapses, .86 for errors, .68 for aggressive violations,
189 .86 for ordinary violations, and .89 for positive driver behaviors.
190
191 ***2.2.2. The Driver Skill Inventory (DSI)***
192 The Driver Skill Inventory was developed to measure drivers' self-assessments of their driving
193 skills (Lajunen & Summala, 1995). The DSI is based on a 5-point Likert-type scale measuring
194 respondents' view of their skills ranging from 'very weak' (1) to 'very strong' (5). The DSI
195 contains 20 items representing two sub-scales measuring perceptual-motor skills and safety
196 skills. Perceptual-motor skills refer to vehicle handling skills (e.g., "performance in a critical
197 situation," "fluent lane-changing in heavy traffic") and safety skills to the ability to control one's
198 urges (e.g., "staying calm in irritating situations," "avoiding unnecessary risks"). Hence, safety
199 skills measure "safety orientation" (Lajunen & Summala, 1995). The scale was adapted into
200 Turkish by Lajunen and Özkan (2004). In the present study, the reliability coefficients
201 (Cronbach's alpha) were .88 and .79 for the perceptual-motor skill scale and safety skill scale,
202 respectively.
203
204 ***2.2.3. The Two-Dimensional Social Desirability Scale (SDS)***
205 The two-Dimensional Social Desirability Scale developed by Akın (2010) was used to measure
206 the participants' social desirability scores. The SDS consists of 29 items and two factors: self-
207 deception (SD) and impression management (IM). Higher scores represent higher levels of social
208 desirability. The respondents evaluate the appropriateness of the 29 statements with a 5-point
209 Likert-type scale ranging from 'not appropriate' (0) to 'totally appropriate' (4). The self-deception

scale consists of 13 items (Cronbach's Alpha = .81) and the impression management scale includes 16 items (Cronbach's Alpha = .85).

2.2.4. The Driver Social Desirability Scale (DSDS)

The driver Social Desirability Scale was developed by Lajunen and colleagues (1997). The scale includes 12 items and two factors: driver impression management (DIM) and driver self-deception (DSD). The first factor (DIM) consists of 7 items, and the second factor consists of 5 items. The scale was translated into Turkish by three independent experts whose mother tongue is Turkish. Later, in a panel discussion, these experts reviewed each item and finalized the Turkish translation. The Turkish translation of the items was cross-checked with the original items by the first author of the DSDS development study, who also has a good command of Turkish. During the translation process, the content of one item was changed. The item, "I have never exceeded the speed limit or crossed a solid white line in the center of the road when overtaking," was translated as "I have never exceeded the speed limit" to clarify the meaning of the item and to avoid the double question. The item was loaded on the same factor as the original version. The rest of the items were translated as in the original form. The response scale of the DSDS is a 7-point Likert-type scale from 'not true' (1) to 'very true' (7). On the original scale, only first, fourth and seventh anchors were labeled as "not true, quite true, very true." Unlike the original scale, remained anchors were also entitled as "rarely true, somewhat true, mostly true, almost always true," respectively. The Cronbach's Alpha levels of the factors are presented in the result section of the current study.

231 ***2.2.5. Demographic Information Form***

232 In this form, participants were asked to indicate their demographic information such as age, sex,
233 and some driving-related information such as total mileage, last year's mileage, licensing year,
234 accident involvement, and the total number of offenses.

235

236 **3. Results**

237

238 **3.1. Factor Analysis on the Driver Social Desirability Scale**

239

240 A factor analysis on the DSDS was conducted using principal component analysis. For the
241 rotation, varimax with Kaiser Normalization was used. The Kaiser-Meyer-Olkin measure of
242 sampling adequacy was as .849, and Bartlett's Test of Sphericity was significant ($df = 66$, $p <$
243 .001), showing that the correlation matrix from the items of the scale is factorable. The two-factor
244 structure was the best factor solution based on the original factor structure and scree plot
245 solutions.

246 The first factor can be labeled as 'driver impression management', and it consisted of seven items
247 with .88 Cronbach's alpha reliability. The factor explained 41.71% of the variance, and the initial
248 eigenvalue of the dimension was 5.00. The communality values of the items ranged from .488 to
249 .795. The second factor can be labeled as 'driver self-deception,' and it consisted of five items
250 with .77 Cronbach's alpha reliability. The factor explained 18.17% of the variance, and the initial
251 eigenvalue of the dimension was 2.18. The communality values of the items ranged from .189 to
252 .807 (see Table 1).

253

Table 1. *Factor loadings and the communality values of the items of the Driver Social Desirability Scale with varimax rotation*

Items	Component		Communality
	1	2	
If there were no police control, I would still obey speed limits.	**.89**	.07	.80
I have never exceeded the speed limit.	**.83**	-.01	.68
I always obey traffic rules, even if I'm unlikely to be caught.	**.82**	.15	.69
I have never wanted to drive very fast.	**.73**	.14	.55
I have never driven through a traffic light when it has just been turning red.	**.72**	.13	.54
I have never overtake in places where overtaking is prohibited.	**.68**	.17	.49
I always keep a sufficient distance from the car in front of my car.	**.60**	.47	.58
I always know what to do in traffic situations.	.09	**.90**	.81
I am always sure how to act in traffic situations.	.10	**.83**	.69
I never regret my decisions in traffic.	.22	**.73**	.58
I always remain calm and rational in traffic.	.30	**.72**	.60
I don't care what other drivers think of me.	-.02	**.43**	.19

Note. Factor labels. First factor = driver impression management, Second factor = driver self-deception. Factor loadings < .3 are suppressed. Bold indicates factor loadings in the relevant factor

3.2. Correlations

Pearson bivariate correlation coefficients between variables and means and standard deviations of the study variables are presented in Table 2. Age correlated positively with license year, kilometers driven in the previous year, lifetime mileage (km), driver self-deception, aggressive violations, perceptual-motor skills, impression management, and self-deception but negatively with lapses. Drivers' licensing year was positively correlated with kilometers driven in the

previous year, lifetime mileage, driver self-deception, aggressive violations, perceptual-motor skills, and impression management, and negatively with lapses. Kilometers driven in the previous year correlated positively with lifetime mileage, aggressive violations, ordinary violations, driver self-deception, perceptual-motor skills, and self-deception, and negatively with driver impression management and safety skills. Lifetime mileage was positively correlated with driver self-deception, aggressive violations, perceptual-motor skills, self-deception, and negatively with lapses.

Driver impression management positively correlated with driver self-deception, positive behaviors, safety skills, impression management, self-deception, and negatively with errors, aggressive violations, ordinary violation, and perceptual-motor skills. Driver self-deception correlated positively with positive behaviors, perceptual-motor skills, safety skills, impression management, self-deception, and negatively with lapses, errors, and ordinary violations. Dimensions of aberrant driver behaviors correlated positively with each other and negatively with safety skills, impression management, and self-deception. Positive behaviors correlated positively with perceptual-motor skills, safety skills, impression management, and self-deception. Besides, perceptual-motor skills correlated positively with aggressive violations, ordinary violations, positive behaviors, safety skills, impression management, self-deception, and negatively correlated with lapses and errors. Safety skills correlated positively with impression management and self-deception. Finally, impression management positively correlated with self-deception.

3.2. Sex Differences between Variables

Independent samples t-test analyses were conducted to investigate the sex differences among variables (see Table 3). There were significant differences between female (N = 165) and male (N = 186) drivers in driver impression management, errors, aggressive violations, ordinary violations, perceptual-motor skills, and self-deception. Female drivers reported higher levels of driver impression management than male drivers, whereas male drivers had higher levels of errors, aggressive violations, ordinary violations, perceptual-motor skills, and self-deception than female drivers.

Table 3. *Sex differences among study variables*

Variable	Female		Male		
	M	*SD*	*M*	*SD*	*t* (349)
Driver impression management	4.76	1.46	3.96	1.36	5.36***
Driver self-deception	4.58	1.12	4.71	1.08	-1.08
Lapses	1.93	0.57	1.85	0.60	1.24
Errors	1.54	0.52	1.68	0.68	-2.10*
Aggressive violations	2.17	0.90	2.46	0.90	-2.99**
Ordinary violations	1.81	0.65	2.23	0.82	-5.29***
Positive driver behaviors	4.43	0.91	4.32	0.84	1.10
Perceptual-motor skills	3.63	0.64	3.94	0.59	-4.65***
Safety skills	3.76	0.54	3.66	0.54	1.74
Impression management	3.52	0.63	3.42	0.57	1.53
Self-deception	3.32	0.54	3.43	0.53	-1.95

*p<.05; **p<.01; ***p<.001

Table 2. *Bivariate correlations between study variables*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Age														
2. License year	.95***													
3. Previous year km	.18**	.20***												
4. Lifetime km	.58***	.57***	.60***											
5. Driver impression management	.01	-.03	-.25***	-.10										
6. Driver self-deception	.21***	.20***	.13*	.23***	.36***									
7. Lapses	-.12*	-.11*	-.02	-.12*	-.10	-.22***								
8. Errors	-.09	-.07	.04	-.08	-.23***	-.22***	.73***							
9. Aggressive violations	.13*	.16**	.16**	.16**	-.40***	-.07	.29***	.40***						
10. Ordinary violations	-.06	-.03	.21***	.03	-.61***	-.11*	.48***	.63***	.54***					
11. Positive behaviors	.09	.06	.04	.05	.19***	.31***	-.26***	-.37***	-.08	-.20***				
12. Perceptual-motor	.21***	.24***	.29***	.30***	-.19***	.47***	-.24***	-.11*	.23***	.14**	.25***			
13. Safety skills	.09	.07	-.12*	.00	.53***	.43***	-.19***	-.27***	-.36***	-.45***	.37***	.30***		
14. Impression management	.19***	.15**	-.05	.07	.52***	.39***	-.22***	-.26***	-.24***	-.38***	.25***	.18**	.41***	
15. Self-deception	.11*	.09	.04	.11*	.27***	.53***	-.26***	-.21***	-.14**	-.18**	.21***	.39***	.39***	.57***

Note: *p<.05; **p<.01; ***p<.001

3.3. Relations between Social Desirability and Driving Outcomes

In order to examine the unique contribution of driving specific social desirability and the effects of general and driving specific social desirability on driver behaviors and driving skills, seven hierarchical regression analyses were conducted (see Table 4). In regression analyses, age, gender, and the previous year's kilometers were entered as control variables in the first step. In the second step, two dimensions of general social desirability (i.e., self-deception and impression management) were entered into the model. In the third step, after controlling the effects of demographic variables and general social desirability, two dimensions of driving specific social desirability (i.e., driver impression management and driver self-deception) were entered in the model. Finally, the dimensions of driver behaviors (i.e., lapses, errors, aggressive violations, ordinary violations, and positive driver behaviors) and driver skills (i.e., perceptual-motor skill and safety skill) were separately entered as the dependent variable. Thus, a total of seven hierarchical regression analyses were carried out.

The overall model was significant for lapses ($F(7, 341) = 4.91$, $p < .001$) and explained 9% of the variance ($R^2 = .09$). Self-deception (95% CI [-.35, -.07]) was negatively related to lapses. Drivers with higher self-deception scores reported fewer lapses than drivers with lower self-deception.

The model was significant for errors ($F(7, 341) = 5.45$, $p < .001$) and explained 10% of the variance ($R^2 = .10$). Impression management (95% CI [-.30, -.04]) was negatively related to errors. Drivers with higher impression management scores reported fewer errors than drivers with lower impression management.

The model was significant for aggressive violations ($F(7, 341) = 11.53$, $p < .001$) and explained 19% of the variance ($R^2 = .19$). Impression management (95% CI [-.54, -.16]) and driver

impression management (95% CI [-.30, -.15]) were negatively related to aggressive violations. Male drivers reported more aggressive violations than female drivers. Also, drivers with higher last year kilometers and less general impression management and driver impression management reported higher aggressive violations.

The model was significant for ordinary violations ($F(7, 341) = 34.26$, $p < .001$) and explained 41% of the variance ($R^2 = .41$). Driver self-deception (95% CI [.05, .20]) was positively and impression management (95% CI [-.59, -.29]) and driver impression management (95% CI [-.36, -.25]) were negatively associated with ordinary violations. Male drivers reported more ordinary violations than female drivers. Also, drivers with higher previous year's kilometers, higher self-deception, and less general impression management and driver impression management reported higher ordinary violations.

The model was significant for positive driver behaviors ($F(7, 341) = 7.03$, $p < .001$) and explained 13% of the variance ($R^2 = .13$). Impression management (95% CI [.09, .45]) and driver self-deception (95% CI [.09, .29]) were positively associated with positive behaviors. Drivers with higher impression management and driver self-deception reported higher levels of positive behaviors.

The model was significant for perceptual-motor skills ($F(7, 341) = 38.23$, $p < .001$) and explained 44% of the variance ($R^2 = .44$). Self-deception (95% CI [.29, .55]) and driver self-deception (95% CI [.20, .32]) were positively and driver impression management (95% CI [-.21, -.12]) was negatively related to perceptual-motor skills. Older drivers, male drivers, drivers with higher previous year's kilometers reported higher perceptual-motor skills than younger drivers, female drivers, and drivers with lower annual mileage, respectively. Also, drivers with

higher general self-deception and driver self-deception and less driver impression management reported more perceptual-motor skills.

The model was significant for safety skills ($F(7, 341) = 36.31$, $p < .001$) and explained 43% of the variance ($R^2 = .43$). Impression management (95% CI [.13, .33]), self-deception (95% CI [.14, .36]), driver impression management (95% CI [.12, .20]) and driver self-deception (95% CI [.04, .14]) were positively associated with safety skills. Older drivers and drivers with fewer previous year kilometers reported higher safety skills than younger drivers and drivers with higher kilometers. Also, drivers with higher general and driving specific social desirability reported higher safety skills.

Overall, the results showed that general social desirability was significantly associated with all forms of driver behaviors and skills. Moreover, driving specific social desirability contributed significantly to the model in all driver behaviors and skills except for lapses. Total variance explained by the overall model ranged between 9% and 44%. Drivers with higher driving specific impression management reported less aggressive violations, ordinary violations, perceptual-motor skills, and higher safety skills. Besides, drivers with higher driving specific self-deception revealed higher ordinary violations, positive driver behaviors, perceptual-motor skills, and safety skills.

Table 4. *Relations between Social Desirability and Driving Outcomes*

	Lapses					Errors					Aggressive Violations					Ordinary Violations				
	R^2	*df*	*FΔ*	*β*	*p*	R^2	*df*	*FΔ*	*β*	*p*	R^2	*df*	*FΔ*	*β*	*p*	R^2	*df*	*FΔ*	*β*	*p*
1st Step	.02	3, 345	2.38		.070	.02	3, 345	2.53		.057	.052	3, 345	6.28		.000	.11	3, 345	13.77		.000
Age				-.13	.022				-.10	.070				.10	.062				-.10	.058
Gender				-.07	.189				.10	.058				.13	.017				.24	.000
Last year km				.01	.850				.04	.487				.12	.023				.18	.001
2nd Step	.09	2, 343	12.44		.000	.08	2, 343	11.79		.000	.117	2, 343	12.68		.000	.22	2, 343	25.89		.000
Impression management				-.10	.125				-.17	.010				-.23	.000				-.35	.000
Self-deception				-.19	.003				-.12	.062				-.05	.476				-.01	.894
3rd Step	.09	2, 341	.94		.391	.10	2, 341	3.08		.047	.191	2, 341	15.67		.000	.41	2, 341	54.86		.000
Driver impression management				.02	.780				-.08	.219				-.36	.000				-.57	.000
Driver self-deception				-.09	.173				-.11	.096				.10	.114				.18	.001

Table 4. *Relations between Social Desirability and Driving Outcomes (continued)*

	Positive Driver Behaviors					Perceptual-Motor Skills					Safety Skills				
	R^2	*df*	*F*Δ	*β*	*p*	R^2	*df*	*F*Δ	*β*	*p*	R^2	*df*	*F*Δ	*β*	*p*
1st Step	.01	3, 345	1.63		.181	.15	3, 345	19.59		.000	.04	3, 345	4.13		.007
Age				.08	.133				.16	.001				.11	.036
Gender				-.08	.152				.19	.000				-.09	.090
Last year km				.04	.505				.23	.000				-.12	.027
2nd Step	.08	2, 343	12.27		.000	.27	2, 343	28.95		.000	.24	2, 343	46.54		.000
Impression management				.19	.003				-.02	.716				.26	.000
Self-deception				.10	.121				.37	.000				.26	.000
3rd Step	.13	2, 341	9.02		.000	.44	2, 341	51.96		.000	.43	2, 341	55.47		.000
Driver impression management				.04	.564				-.39	.000				.44	.000
Driver self-deception				.25	.000				.47	.000				.19	.000

4. Discussion

The present study adapted the Driver Social Desirability Scale into Turkish and investigated its relationship with a general social desirability scale, driver behavior, driving skill, and demographic variables. The original factor structure of the 12-item DSDS (Lajunen et al., 1997) with driver impression management scale with seven items and driver self-deception scale with five items was obtained in the Turkish sample. Also, the scales had good internal consistency reliabilities showing that the Turkish version of the DSDS is a reliable instrument. The two factors of the DSDS correlated moderately with each other. Additionally, the convergent correlations between general and driving specific impression management and self-deception were high, which indicates the high construct validity of the DSDS. On the other hand, the discriminant correlation between driver impression management and self-deception was small, while the driver's self-deception and impression management had a moderate intercorrelation.

In the current study, significant correlations between demographic variables and social desirability were found. For example, drivers had a higher tendency to respond in a socially desirable manner (i.e., DSD, IM, and SD) with increased age. In line with previous research, the concern for presenting favorable and positively biased self-descriptions to others increased with age (Barraclough et al., 2014). Moreover, the current study demonstrated that driving experience (i.e., kilometers driven in the previous year, lifetime mileage, and license year) correlated positively with driver self-deception and negatively with driver impression management. Contrary to nonsignificant relations between experience and the DSDS in previous studies (Barraclough et al., 2014; Lajunen et al., 1997), experienced drivers were inclined to show more positively biased yet subjectively honest responses and less impression

management. Similarly, Lajunen and Summala (1995) showed that experienced drivers rated themselves more skilled than inexperienced drivers.

Moreover, in terms of general socially desirable responding tendency, males were more inclined to self-deception than females, indicating that males hold a more unrealistic view of themselves, i.e., overconfidence in their capabilities. McKenna and colleagues (1991) showed that an overestimation of driving skills compared to an average driver was more prevalent among male drivers. Regarding driving specific social desirability, consistent with the previous study (Ostapczuk et al., 2015), female drivers showed more driver impression management than male drivers, whereas no difference was observed for driver self-deception. In other words, drivers' conscious attempt to present themselves as law-abiding and as rule-oriented drivers all the time (Lajunen et al., 1997) was observed in females more. High impression management scores can be interpreted as the need for social approval (Crowne & Marlowe, 1960; Lajunen et al., 1998; Paulhaus, 1984). In that sense, the need for social approval may be more salient for females than males. Similarly, Chung and Monroe (2003) also suggested that females are more likely to be affected by societal norms and values.

Driving specific social desirability was significantly associated with aberrant driver behaviors after controlling for the demographic variables and general social desirability. Accordingly, consistent with the literature (af Wåhlberg, 2010), drivers who were more vulnerable to driver impression management (i.e., deliberately attempting to show a favorable self-image to others) displayed fewer aggressive violations and ordinary violations. Additionally, drivers who were overconfident in their ability to make rational and correct decisions while driving -i.e., driver self-deception- (Lajunen et al., 1997) reported more ordinary violations. In other words, drivers

411 presented themselves as more rule-obedient and safe drivers to impress others while they
412 justified their ordinary violations by honestly believing their overrated abilities.

413 Positive driver behaviors were found to be prone to social desirability as well. It was found that
414 participants who had a positively biased self-view of themselves (i.e., driver self-deception)
415 were more likely to report more frequent positive driver behaviors. There is an effect of driving
416 specific social desirability for the intentionally performed driver behaviors such as aggressive
417 violations, ordinary violations, and positive driver behaviors (Özkan, 2006). However, for the
418 unintentional driver behaviors such as lapses and errors, no such effect was observed. After
419 controlling for demographic variables and general social desirability, driving specific social
420 desirability predicted intentional driver behaviors but not unintentional driver behaviors.
421 Intentional behaviors are influenced by social desirability because intentional behavior, by
422 definition, always includes an active choice that can be influenced by deliberate socially
423 desirable responding. Furthermore, concerning the strength of the relationships, stronger
424 associations for the driver impression management and intentional aberrant behaviors (e.g.,
425 ordinary and aggressive violations) and between the driver self-deception and positive driver
426 behaviors were observed. Accordingly, impression management seems to be more dominant
427 for "driver not committing aberrant driving behaviors or violation-free driver" self-image. In
428 contrast, self-deception seems to have a more dominant role for "driver engaging in positive
429 driver behaviors or prosocial driver" self-image. Therefore, it may be argued that drivers try to
430 convince others that they perform less aberrant behaviors and convince themselves that they
431 perform more positive driver behaviors than they actually do.

432 Driver skills were also associated with driving specific social desirability. Accordingly, drivers
433 who are less concerned about impressing others and believe in their overrated abilities reported

higher levels of perceptual-motor skills (Lajunen et al., 1998; Ostapczuk et al., 2015). On the other hand, drivers who were more susceptible to overrating their abilities (i.e., driver self-deception) and concerned for showing a positive self-image to others (i.e., driver impression management) reported higher safety skills. Altogether, these results suggest that drivers seem to have an unrealistic positive view of their driving skills, possibly distorting their risk perception and leading them to risky driving (Lajunen et al., 1998). Also, consistent with Lajunen and colleagues (1998), intentionally presenting oneself as a driver holding safety skills (e.g., safety-oriented driver) and over-trusting own vehicle handling abilities (e.g., skill-oriented driver) seems to be the most favored form of driver social desirability in terms of driver skills. Additionally, Martinussen and colleagues (2017) found that young male drivers' perception of driving skills was inaccurate, especially for hazard perception and detection skills, suggesting that socially desirable responding also seems to be an important factor in driving skills. This vulnerability of the driving skills to social desirability should be considered in future studies explicitly focusing on self-reported assessment of driving skills.

Özkan and Lajunen (2011) mentioned that impression management is a severe problem in traffic studies that require a self-report of undesirable behaviors such as accidents as guilty part and traffic citations. Previous studies have shown that self-reported violations, number of accidents, and number of tickets are susceptible to impression management (af Wåhlberg 2010; af Wåhlberg et al., 2010; Lajunen et al., 1997) and socially desirable responding (Barraclough et al., 2014), which is in line with the results of the current study regarding aberrant driver behaviors and driving skills. It means that social desirability tendency is likely to lead to under-reporting of aberrant behaviors (Lindeman & Verkasalo, 1995). The current study results showed further that the SDR tendency might relate to the over-reporting of positive behaviors. In conclusion, the findings of the present study suggest that both driver behaviors, including

458 aberrant and positive driver behaviors, as well as driving skills, were prone to social desirability
459 bias.

460 It should also be noted that, unlike previous studies (Lajunen & Summala, 1995; Sullman &
461 Taylor, 2010; Wickens et al., 2008), the general social desirability scale (i.e., SDS) is associated
462 with all driver behavior and driver skill components. As suggested by af Wåhlberg (2010), the
463 driving specific social desirability scale (i.e., DSDS) accounted for an additional amount of
464 variance in driver behaviors (except for lapses) and driver skills beyond what the general SDR
465 did. The DSDS accounted higher amount of variance in aggressive violations, ordinary
466 violations, and perceptual-motor skills than the SDS did. This finding underlined the increased
467 predictive power of industry-specific scales (e.g., Newnam & VonSchuckmann, 2012) and the
468 importance of using driving specific social desirability scales in traffic-related studies (Lajunen
469 et al., 1997). Additionally, the results showed that these popular measures (i.e., DBQ and DSI)
470 are vulnerable to social desirability to a considerable extent.

471 The study has a few limitations. The study sample is mainly composed of young adults;
472 therefore, the generalizability of the findings is somewhat limited. Although the present study
473 exhibited evidence of reliability and validity of the Turkish version of the DSDS, such as
474 internal consistency reliability, construct validity (i.e., discriminant and convergent validity),
475 and predictive validity, further research on the psychometric properties of the scale such as
476 predictive validity with different variables could be suggested. Also, the validity of the Turkish
477 version of the scale is suggested to be studied with different driver groups such as professional
478 drivers and older drivers.

479 The current study has both empirical and methodological contributions to the literature. The
480 relationship between driving specific social desirability and driver behavior factors (e.g., errors,

positive driver behaviors) was studied for the first time. To our knowledge, predispositions to social desirability (either general or driving specific) for positive driver behaviors have never been studied in the literature before. In terms of the methodological contribution, the study shows that the Turkish version of the DSDS is a reliable and valid instrument for measuring socially desirable responding in drivers' self-reports. The Turkish adaptation of the DSDS can be readily used in traffic behavior studies in Turkey, which should increase the reliability of the measurements. Furthermore, the current research provided evidence for the increased predictive power of driving specific scales (e.g., the DSDS) compared to general ones (e.g., the SDS) in terms of traffic-related variables.

5. Conclusion

In sum, the Turkish DSDS is a psychometrically reliable and valid instrument. In the current study, the popular self-report measures of driving (i.e., the DBQ and the DSI) are found vulnerable to social desirability bias. For the first time in the literature, positive driver behaviors were studied in terms of social desirability and were found vulnerable to social desirability. Also, even after controlling for the demographic variables and general social desirability scale, the driving specific social desirability scale accounted for a significant proportion of variance in intentional driver behaviors and driving skills. Thus, applied traffic research might benefit from the driving specific social desirability scale rather than the general social desirability scales. The Turkish version of the DSDS is a valuable tool for traffic safety research in Turkey.

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