How do passengers influence drivers' propensities for angry driving? Different effects of supervisors versus friends

Tian-Yi Hu, Xiaofei Xie*, Xiao-Yan Han, Xiao-Qin Ma

Department of Psychology, Peking University, Beijing, 100871, PR China

A B S T R A C T

A lot of researchers discussed the influence of passengers on drivers' behaviors without reaching a consistent conclusion. This study aimed to offer some new evidence concerning this issue. The study examined different effects of supervisors and friends as passengers on drivers' propensities for angry driving. In Study 1, drivers were asked to freely imagine a passenger either as their supervisor or friend. Results showed that compared with driving alone, drivers' propensities for angry driving increased when the passenger was a friend but decreased when the passenger was a supervisor. These findings were consistent with the generally accepted social norm. In Study 2, drivers read a description about either an aggressive supervisor or a cautious friend. Results showed that the effects of passengers on drivers' angry driving propensities were correspondingly reversed, indicating that a clearer behavior standard conveyed by a passenger had a stronger effect on drivers. Self-monitoring propensity showed a main effect on drivers' propensities for angry driving in a standard-free situation. And self-monitoring propensity moderated the effect of a passenger's role on angry driving propensities in a standard-set situation. Impression management processes were discussed with respect to these findings.

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1. Introduction

People are social animals. We often feel social influence from others, groups, and societies. Drivers and passengers make a small car a social situation and cast social influence on each other. Under such influence, drivers' behaviors are changing. Driver's behavior is one of the major factors that cause road accidents (United States General Accounting Office, 2003). How do passengers influence drivers' behaviors? Do passengers promote safer driving or induce more risky driving behaviors? A lot of researchers discussed this issue without reaching a consistent conclusion. Many studies found that passengers usually exerted negative influence on drivers' behaviors. For example, the presence of passengers increased drivers' risky behaviors as well as accidents (Simons-Morton et al., 2005; Williams and Wells, 1995). In some studies, researchers found that the presence of a single passenger doubled the accident risk when driving alone, and that the risk increased still with more passengers (Chen et al., 2000; Doherty et al., 1998).

However, the presence of passengers is not always raising violence. Arnett et al. (1997) found that compared with driving alone, high-school students drove more safely with family members or friends present. Preusser et al. (1998) found that passengers' negative influence existed only when drivers were teenagers. Elder

passengers and female passengers were also found to promote cautious driving (Baxter et al., 1990). Concerning such inconsistency of the influence of passengers on drivers, researchers tried to take a second look at and explore deeper into passengers' characteristics, including age, gender, passenger–driver relationship (Arnett et al., 1997; Baxter et al., 1990; Conner et al., 2003; Hingson and Howland, 1993; Ouimet et al., 2010). Parker et al. (1992) found that subjective norm, not simply the presence of passenger could predict drivers' intention to commit driving violations. We argue that what affects a driver's behavior is not the passenger characteristic itself, but the driver's perception, or social cognition of the passenger. Social cognition includes *reasoning and judgment* of (1) self and others (e.g., "M is a young female and disapproves violence"), and (2) the relationship between self and others (e.g., "A is my best friend"). And such social cognition helps adjust people's behaviors (Yue, 2009). Researchers pointed out that driving was a kind of behavior that undertook social psychological functions such as promoting status in front of passengers (Møller and Gregersen, 2008). Thus drivers would form a social cognition of the passenger and guide their driving behaviors through an impression management process, which could offer a more consistent explanation of drivers' behaviors under passenger influence.

1.1. Impression management in driver–passenger interaction

Impression management is the process through which we try to manage the impression others form of us (Kenrick et al., 2010;

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* Corresponding author. Tel.: +86 10 6275 9999; fax: +86 10 6276 1081.
E-mail address: xiaofei@pku.edu.cn (X. Xie).

Leary and Kowalski, 1990). People actively change their behaviors for the purpose of fitting expectations from social situations and smoothing the interpersonal interactions, or the purpose of getting favorable appraisals and awards for themselves (Tedeschi et al., 1974).

Impression management consists of two components: impression motivation and impression construction (Leary and Kowalski, 1990). Impression motivation is a process that people are motivated to control impressions of other under certain conditions. When there are passengers present in a car, the driver may perceive himself/herself as "in the eye of public", which raise the impression motivation. Yet different passengers raise the driver's impression motivation to different levels. Despite the family relationship, there are two important relationships in people's daily interactions, one is with supervisors and the other is with friends. Here we limit one's supervisor to someone that has an officially higher rank than the person and usually takes direct or indirect supervising responsibility on the person, mostly in working settings. From our daily experience, there is usually a larger interpersonal distance between supervisor and subordinate than between friends. Moreover, the supervisor often holds a large amount of resource that the subordinate might need and the subordinate usually could not diminish the power of his/her supervisor over himself/herself. In contrast, people usually choose those with similar attitude or value as friends (Lau et al., 1990). Affective-related social support or emotional understanding is more possible to be induced between friends (Yue, 2006). Thus compared with a friend passenger, a supervisor passenger would raise more impression motivation of a driver and would have more influence on the driver's behavior.

Impression motivation only determines the extent to which people are willing to change their behaviors. The second factor of impression management, impression construction, also affects people's behaviors (Leary and Kowalski, 1990). Impression construction process includes the person's expected image in front of others and the corresponding behaviors to achieve the image. In other words, one would form a specific image he/she expects to present in front of specific others (i.e., the impression management object) and adjust his/her behaviors to fit the image. The expected image is formed based on the perception of what the management object values. Such perception might come from the object's characteristics, roles, words, daily behaviors, etc. Sometimes even negative behaviors would emerge as an impression management result (Jellison and Gentry, 1978; Leary and Kowalski, 1990). Because many impression management results are presented as certain behaviors, in this paper we describe such perception as a kind of "behavior standard". During interpersonal interactions, an impression management object usually conveys his/her own value through a specific "behavior standard". Individuals would use the perception and judgment of this behavior standard to guide impression construction process. Impression construction thus is a process to present oneself based on received behavior standard. As a result, whether an individual could clearly perceive the behavior standard has a direct effect on the results of impression construction (usually specific behavior presented to the object). If an impression management object reveals a clear standard, individuals could fit the standard and present themselves correspondingly. When the object fails to convey a standard, individuals also need to present a reasonable and positive image. In this case, the behavior standard would be mainly determined by the specific social norm in the situation. Thus, the presence as well as the content of a behavior standard is of great importance to individual's impression management process.

Applying to driver–passenger interactions, research found that the existence of passengers could impel drivers to reduce non-desired behaviors (Ellison-Potter et al., 2001). But what are *non-desired* or *desired* behaviors? When a passenger does not deliver his/her behavior standard directly, the driver could not smoothly form an expected image in front of the passenger and thus would choose a desirable image according to the passenger's role. Specifically, when the passenger is a supervisor of the driver, we predict that the driver would construct his/her image as a mild and safe driver with low propensity for angry driving behaviors. When the passenger role is friend, the driver would perform more casually due to a lower impression motivation, which could result in high propensity for angry driving behaviors when encountered with an angry situation. This prediction is similar to the results from a qualitative study, in which the drivers interviewed mentioned different impression management goals with respect to different interaction objects. For example, drivers reported slowing down the speed to show responsibility when a parent or a client was in their cars, while speeding up to show off driving skill when a friend was aside (Fleiter et al., 2010). When the driver could clearly perceive a passenger's behavior standard, it is expected that the driver would change his/her own behaviors accordingly. Thus a reversed behavior standard would lead to reversed propensity for angry driving. This clear standard, rather than the passenger role, would dominate the impression construction direction.

1.2. Self-monitoring: individual differences in impression management

Self-monitoring, which refers to the extent to which an individual concerns with environmental cues and self behaviors, and the ability of adjusting self-presentation in social interactions, is closely related to the impression management (Snyder, 1974). Gangestad and Snyder (2000) posited that the main goals of self-monitoring were to maintain positive self-image and to help impression management. A great amount of research has been conducted on the construct and scale-development of self-monitoring and an agreement was reached that self-monitoring generally consisted of two major components, self-monitoring ability and self-monitoring propensity (Briggs et al., 1980; Gangestad and Snyder, 2000; Lennox and Wolfe, 1984; Li and Zhang, 1998). A person with high self-monitoring ability *can* exercise control over impression management process (e.g., sensitive to specific social cues and knowing what is proper to do or to say under a certain circumstance), while a person with high self-monitoring propensity *does* exercise control over impression management process (e.g., taking value of being liked by others and actively changing behaviors to fit the environment) (Li and Zhang, 1998). Self-monitoring affects people's behaviors of impression management, such that high self-monitors are more cautious in choosing an image strategy which has a potential to be undesirable. The results of impression management process could also be different with different levels of self-monitoring. For example, high self-monitors were more likely to get liked when using ingratiation and low self-monitors were likely to be regarded as toadies (Turnley and Bolino, 2001).

Applying to driving situation, high self-monitors would adjust their behaviors flexibly according to passengers, while low self-monitors would behave more according to the determination of inner-self. As a result, we expected that high self-monitors would display more differences in the driving behaviors with different passengers present. Moreover, the two components of self-monitoring would cast different effects on driver's behaviors in different situations. Specifically, when a passenger delivered a clear behavior standard, the driver could easily behave according to the standard. Thus, self-monitoring propensity rather than self-monitoring ability would exert more effect on drivers' behavior propensities. The comparative dominance of the two components would be reversed when there was no clear behavior standard.

1.3. Current study

Angry emotion and aggressive driving behavior have become great concerns in traffic safety due to their high frequencies and serious consequences. For example, in a survey of 2657 of drivers from Finland, the United Kingdom, and Netherland reported reacting aggressively to a wide range of on-road situations and in some situations such as inconsiderate driving, the proportion of drivers getting angry reached as much as 85% (Parker et al., 2002). In spite of the large amount of research on driving anger, the negative expressions (e.g., violent behaviors, aggressive behaviors, etc.) of driving anger, not the antecedents such as situational factor, were the major concerns in these studies. Moreover, drivers offended during driving would usually feel frustrated, which sometimes poses a threat to their self-image and consequently activates impression management motivation. Thus, the current study used (propensity of) angry driving behaviors as the major dependent variable to explore the effects of passengers on driving behaviors, under the theory of the impression management. We explored the different effects of friend passengers and supervisor passengers under both a standard-free condition (Study 1) and a standard-set condition (Study 2). We expected that the ability and the propensity components of self-monitoring would affect differently in the two studies.

2. Study 1: Passengers with no behavior standard

The main goal of Study 1 was to explore the natural effects of two different roles of passengers—supervisor and friend—on drivers' propensity for angry driving under the condition of no behavior standard from the passengers. The passengers' behavior standards were not manipulated. We posited that when the driver could not perceive clearly passengers behavior standard, the driver would take impression management process according to the passenger's role. Specifically, if the role of the passenger was supervisor, the driver's impression motivation was high and the driver would take a generally desirable norm as a behavior standard to adjust his/her behaviors. Thus the driver would prefer to present himself/herself as a safe and kind driver and lower the propensity for angry driving. On the other hand, if the passenger was a friend, the driver's impression motivation was relatively low. Under the condition of no behavior standard from the passenger, the driver would behave more casually and display a higher propensity for angry driving. Thus we posited Hypotheses 1 and 2.

H1. When the driver was asked to freely imagine driving with a passenger who is either a supervisor or a friend, the driver would display a higher propensity for angry driving when the passenger was a friend comparing with a supervisor.

H2. Self-monitoring ability would moderate the effect of passenger role on the driver's propensity for angry driving. Compared with those of low self-monitoring ability, drivers of high self-monitoring ability would differ more in behavior propensity with a supervisor versus a friend passenger.

2.1. Method

2.1.1. Participants

Two hundred and nine volunteer drivers took part in the experiment described as a "driving-situation imagining study". Among them were 147 men and 60 women, and two participants did not report gender. The average age was 33.51 years old (ranging from 20 to 56 years, $SD = 8.82$ years). The average driving experience was 5.11 years (ranging from 1 to 24 years, $SD = 4.40$ years). Each participant was randomly assigned to one of the three conditions. There were 51 participants in the no-passenger group (average age = 36.31 ± 8.71 years old, average driving experience = 4.96 ± 4.87 years), 101 in the supervisor–passenger group (average age = 31.65 ± 7.92 years old, average driving experience = 5.39 ± 4.56 years), and 57 in the friend–passenger group (average age = 34.35 ± 9.78 years old, average driving experience = 4.77 ± 3.69 years).

2.1.2. Measures

2.1.2.1. Propensity for angry driving (PAD). Combining several relevant concepts (e.g., road rage, aggressive driving behavior) and elaborations in previous research (e.g., Millar, 2007; Shinar, 1998; Van Rooy et al., 2006; Zhao and Huang, 2003), we defined "angry driving behavior" as the behaviors that should satisfy the following three conditions: (1) occur in traffic situations, (2) induced by the emotion of anger, and (3) include interacted aggression such as physical attack, verbal attack, offensive gesture, as well as non-interacted expression such as response propensity, intentions and thoughts. The propensity for angry driving (PAD) is the tendency of a person to display angry driving behaviors. We developed and revised Propensity for Angry Driving Scale (PADS) for Chinese driver. The initial nine items and the response choices were selected from four sources: a driving log study[1], the PADS developed by DePasquale et al. (2001), interviews of several drivers, and discussions with other colleagues in the research group. Each item described a driving situation. The drivers were asked to choose from four responses to indicate the best one that could describe his/her reaction in the situation. An example of the items was as follows (see Appendix A for all the initial items):

You are driving your car down a road. Without warning, another car pulls out in front of you from a parking lot. You had to brake suddenly to avoid hitting it. How do you respond?

(a) Let out a sigh of relief and drive on.
(b) Lean out your window and yell at the other driver.
(c) Honk your horn to let the other driver know they almost caused an accident.
(d) Follow and stop the other car so you can teach him a lesson with force.

Three items were removed due to low discrimination of responses (the differences of either responses were lower than 0.5). The final scale consisted of 6 items with good reliability (Cronbach's $\alpha = .82$) and the standardized scores of each response were determined (see Table 1) following the procedure provided by DePasquale et al. (2001). For example, Response (2) for item 3 was scored 5.13. For each subject, PAD score was the sum of 6 scores for the 6 items, ranging from 7.64 (sum of the 6 lowest scores for each item) to 36.16 (sum of the highest scores for each item). A higher score indicated a higher propensity for angry driving.

In Study 1, the scale was adapted to the condition of supervisor–passenger and friend–passenger to inform the participants of the presence of passengers. For example, the item

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[1] The purpose of the driving log study was to collect angry events and responses on road, as well as to offer external validation of the current study. Three hundred driving logs were delivered to convenient participants with 263 responses (response rate 87.67%). Among were 195 men and 68 women. The average age was 35.6 years old (ranging from 21 to 57, $SD = 8.5$). The average driving experience was 6.3 years (ranging from 1 to 35, $SD = 5.7$). The driving log was a self-report driving record. The participants recorded whatever angry events they encountered during driving and some related information soon after finishing driving. Related information included: demographic information, driving experience, driving frequency, average weekly driving distance, with passenger(s) or not, general description of the angry events, self-rated anger (5-point scale), and behavior responses to the events. If the driver was with one or more passengers, the driver needed to choose the most important one from the passenger(s) and recorded the passenger's gender, age, occupation and relation to the driver.

Table 1
Standardized scores for each response in propensity for angry driving.

Item	Response (1)	Response (2)	Response (3)	Response (4)
1	1.32	5.29	3.61	5.90
2	2.65	1.10	4.94	5.45
3	3.13	5.13	1.29	6.13
4	4.10	5.26	1.26	5.97
5	5.13	1.48	6.42	4.23
6	1.19	3.81	5.00	6.29

described above was adapted into "You are driving your car down a road *with your supervisor/friend on your side. . . .*"

2.1.2.2. Self-monitoring.
Self-monitoring was measured by Chinese Self-Monitoring Scale developed by Li and Zhang (1998), which consisted of two subscales, ability and propensity. The two dimensions were independent with a non-significant correlation of .06. The Ability subscale consisted of 13 items (Cronbach's α = .79) and the Propensity subscale consisted of 10 items (Cronbach's α = .67). The participants were asked to rate from 1 (extremely uncharacteristic) to 5 (extremely characteristic) on each item. A higher score indicated a higher self-monitoring ability/propensity. An item example of the ability subscale item was "In an unfamiliar situation, I can quickly realize how to behave appropriately." and an example for the propensity item was "In order to get along and be liked, I tend to be what people expect me to be rather than anything else.".

2.1.3. Procedure
The participants were asked to read an instruction and imagine a driving situation. For no-passenger group, participants were instructed to imagine that he/she was driving alone. Participants were asked to fill in a form about some environmental information such as weather and road condition to ensure that the participants were involved in the imagining procedure. For the supervisor–passenger and the friend–passenger groups, participants were instructed to recall a supervisor or a friend he/she knew, and to imagine that he/she was driving while the supervisor/friend was aside. Participants were also asked to fill in a form about the passenger's information.

After the situation–imagination procedure, all the participants completed a questionnaire about propensity for angry driving and the self-monitoring scale.

2.2. Results

2.2.1. Effect of impression management
One-way ANOVA showed that drivers' PAD scores were significantly different across three conditions ($F(2,208)$ = 43.82, p < .001, η^2 = .30). Bonferroni post hoc test found that the PAD scores under three conditions were significantly different from each other (ps < .001). Specifically, the PAD score for the drivers of friend group (M = 23.38, SD = 5.72) was significantly higher than the PAD score for the drivers of alone group (M = 18.63, SD = 6.09), and both the two groups of drivers scored significantly higher than supervisor group (M = 14.80, SD = 5.16), supporting Hypothesis 1.

We divided the two passenger conditions into subgroups according to the descriptions of the passengers the participants imagined. For the supervisor–passenger group, 35 participants described the passengers as "introversive/cautious/steady". 47 participants described the passengers as "extroversive/unconstrained/open". The 19 participants left in this condition could not be clearly categorized into either subgroup. For the friend–passenger group, 43 of 56 participants described the friends as "extroversive/unconstrained/open". Nine participants described the friends as "extroversive/unconstrained/open", the number of which was too small to conduct parametric statistics such as ANOVA. The four participants left in friend condition could not be categorized into either group. Thus we compared four new groups (no-passenger, supervisor-introversive, supervisor-extroversive, friend-extroversive) to see whether a rough sketch of passenger could affect driver's angry driving. One-way ANOVA showed that the drivers' PAD significantly differed across the four groups ($F(3,172)$ = 26.00, p < .001, η^2 = .31) (see Fig. 1). Bonferroni post hoc tests revealed that all the groups were significantly different from each other (ps < .05), except for a non-significant difference between the supervisor-introversive group and the supervisor-extroversive group (p = .38).

2.2.2. Effect of self-monitoring
The participants who scored either the higher or the lower half of all the participants on the self-monitoring ability subscale were taken as either the high or the low self-monitoring ability group. A 2(self-monitoring ability: high/low) × 4(condition: no-passenger/supervisor-introversive/supervisor-extroversive/friend extroversive) two-way ANOVA on PAD revealed a main effect of condition ($F(3,168)$ = 23.31, p < .001, η^2 = .29), which was similar to the results in the last section. Either the main effect of
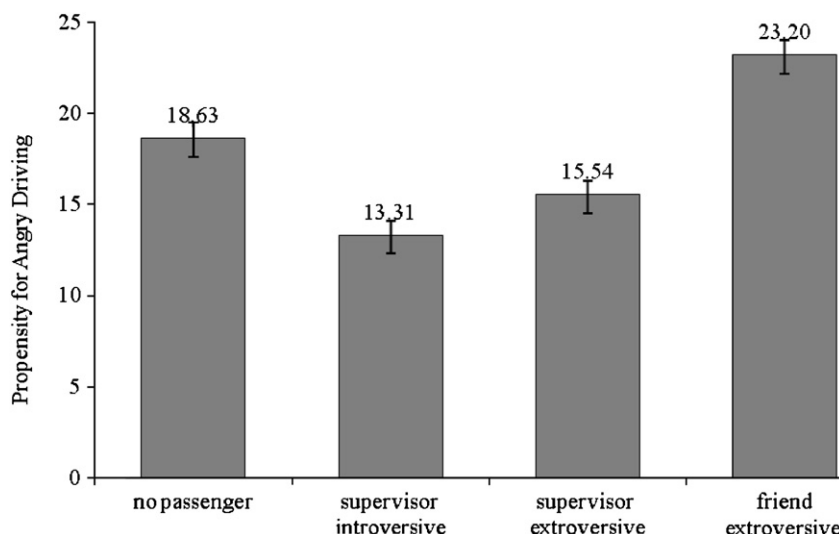
Fig. 1. Drivers' propensity for angry driving in four subgroups.

Table 2
Detailed information about four subgroups with high and low self-monitoring ability in Study 1.

		N	PAD mean	PAD SD
Low self-monitoring ability	No passenger	25	18.79	6.16
	Supervisor-introversive	21	12.68	5.07
	Supervisor-extroversive	28	15.25	5.48
	Friend-extroversive	18	21.73	5.23
High self-monitoring ability	No passenger	26	18.47	6.14
	Supervisor-introversive	14	14.25	4.23
	Supervisor-extroversive	19	15.95	4.26
	Friend-extroversive	25	24.26	4.99

Note: PAD, propensity for angry driving.

Table 3
Detailed information about four subgroups with high and low self-monitoring propensity in Study 1.

		N	PAD mean	PAD SD
Low self-monitoring propensity	No passenger	27	20.18	6.50
	Supervisor-introversive	14	15.02	5.37
	Supervisor-extroversive	26	16.56	4.38
	Friend-extroversive	22	23.64	4.98
High self-monitoring propensity	No passenger	24	16.88	5.17
	Supervisor-introversive	21	12.17	4.03
	Supervisor-extroversive	21	14.27	5.64
	Friend-extroversive	21	22.73	5.48

Note: PAD, propensity for angry driving.

self-monitoring ability or the interaction between self-monitoring ability and condition reached significance ($ps > .10$) (see Table 2 for the details about the eight groups). These results did not support Hypothesis 2.

The participants who scored either the higher or the lower half of all the participants on the self-monitoring propensity subscale were taken as either the high or the low self-monitoring propensity group. A 2(self-monitoring propensity: high/low) × 4(condition: no-passenger/supervisor-introversive/supervisor-extroversive/friend-extroversive) two-way ANOVA on PAD also revealed a main effect of condition ($F(3,168) = 25.66$, $p < .001$, $\eta^2 = .31$). Moreover, the main effect of self-monitoring propensity was significant ($F(1,168) = 8.36$, $p < .01$, $\eta^2 = .05$). The drivers with low self-monitoring propensity scored higher on PAD ($M = 18.85$, $SE = .58$) than those with high self-monitoring propensity ($M = 16.52$, $SE = .57$) (see Table 3 for the details about the eight groups).

2.3. Discussion

No matter what characteristics the supervisor had, a supervisor passenger could generally reduce the driver's propensity for angry driving comparing with driving alone. When the supervisor passenger did not deliver a clear standard of driving, the driver behaved according to a generally accepted social standard and presented himself/herself as a gentle and safe driver. When the situation did not offer a clear behavior standard from passengers, the drivers did not actively adjust the behavior according to superficial characteristics of the passenger. When the passenger was a friend of the driver, the driver would show an increased propensity for angry driving. This indicated that the driver's impression motivation was lower in front of friends and would not intentionally control his/her behaviors or display socially desirable behaviors.

The results were further supported by the analysis of data from the driving log study. Among the 263 responses there were 48 reports of a supervisor passenger present during the driving, 30 reports of a friend passenger, and 110 reports of driving alone[2]. A preliminary summary of the drivers' responses showed that when the passenger was a supervisor of the driver, the driver hardly behaved angrily. The drivers usually exercised forbearance even when he/she reported "very angry". The driver's angry driving behaviors (blaspheming, flashing, etc.) increased apparently when the passenger was a friend. To quantify the effect of passengers' role on drivers' angry driving behaviors, three traffic experts rated the drivers' responses from "quite gentle" to "quite extreme" on a 7-point scale. The inter-rater consistency was .97. One-way ANOVA showed that there was no significant difference across the three groups as to the level of angry emotion ($F < 1$). However, the ratings of the responses were significantly different across the three groups ($F(2,178) = 11.53$, $p < .001$, $\eta^2 = .11$). Bonferroni post hoc analysis revealed that the rating of friend–passenger group ($M = 4.03$, $SD = 1.21$) was significantly higher than the other two groups ($p < .01$), and that the no-passenger group ($M = 3.04$, $SD = 1.42$) scored marginally higher than the supervisor–passenger group ($M = 2.46$, $SD = 1.44$) ($p = .055$). These results showed the same pattern of drivers' propensity for angry driving when driving alone, driving with a supervisor, or with a friend. These results added to some extent external validity to the lab study in Study 1.

Moreover, most drivers described his/her friends as extroversive. This was probably because those who were extroversive, open and cheerful were more likely to make friend. It was also possible that an extroversive person was more likely to pop out from a participant's mind to be a friend.

Self-monitoring is a stable personality trait (DePasquale et al., 2001). When the situation did not offer a clear behavior standard from the passenger, self-monitoring ability did not affect driver's PAD, which did not support our hypothesis. It was possible that

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[2] For supervisor group, the average age was 34.00 ± 8.81 years old and the average driving experience was 9.67 ± 8.20 years. For friend group, the average age was 33.67 ± 9.55 years old and the average driving experience was 6.34 ± 6.60 years. For no-passenger group, the average age was 35.31 ± 7.76 years old and the average driving experience was 5.36 ± 3.85 years.

when the passengers did not display a clear behavior standard, the drivers just used an easily accessible standard to guide their behaviors. Although the passengers showed different characteristics, the drivers were not inclined to link the superficial characteristics to behavior standards. Moreover, in such a situation, a safe and mild driver might be a generally reasonable image or behavior standard. This was demonstrated by the main effect of self-monitoring propensity on the propensity for angry driving; drivers with higher self-monitoring propensity tended to show fewer propensities for angry driving.

3. Study 2: Passengers with reversed behavior standard

In Study 2, we directly manipulated the passenger's behavior standard toward the reversed direction. Specifically, the supervisor passenger was described as being aggressive and pro-violent, while the friend passenger was described as forbearing and pro-safe. We expected that the drivers would adjust their behaviors accordingly when such standards were clearly delivered by passengers. As for the effect of self-monitoring, because the behavior standard was clearly described, the ability to perceive the standard and construct one's own behaviors would not be important. However, the propensity component of self-monitoring, which was more closely related to impression motivation, would play a more important role in affecting drivers' behaviors. The above reasoning led to Hypotheses 3 and 4.

H3. When the passenger was clearly described concerning the behavior standard, such that the supervisor passenger was pro-violent and the friend passenger was pro-safe, the driver would display a higher propensity for angry driving when the passenger was a supervisor than when the passenger was a friend.

H4. Self-monitoring propensity would moderate the effect of passenger role on driver's propensity for angry driving. Compared with those of low self-monitoring propensity, drivers of high self-monitoring propensity would differ more in behavior propensity with a supervisor versus a friend passenger.

3.1. Method

3.1.1. Participants
One hundred volunteer drivers took part in this experiment described as a "driving-situation imagining study" and they were randomly assigned to one of the two conditions. Among them were 69 men and 31 women. The average age was 34.32 years old (ranging from 22 to 64 years, $SD = 9.28$ years). The average driving experience was 5.66 years (ranging from 1 to 30 years, $SD = 5.65$ years). As for the two conditions, there were 47 participants in the reversed-standard-supervisor group, 53 in the reversed-standard-friend group.

3.1.2. Materials
The experimenter described the supervisor or the friend using two dimensions: characteristics and previous driving behaviors. The supervisor was described as "highly aggressive, agrees to settle down problems via violence, and frequently displays angry driving behaviors". The friend was described as "highly tolerant, agrees to forbear on conflicts, and never displays angry driving behaviors".

To ensure the effectiveness of the materials, 55 undergraduate students from Peking University were asked to rate the passengers in the material on the propensity for angry driving. Twenty-six students rated the supervisor and 25 students rated the friend. Independent-sample t test showed that the ratings of the two persons described were significantly different from each other ($t(49) = 30.31$, $p < .001$). The supervisor ($M = 30.89$, $SD = 2.89$) was rated higher on PAD than the friend ($M = 8.47$, $SD = 6.09$). This result

indicated that the two descriptions actually delivered different behavior standards.

3.1.3. Measures and procedure
The measures of propensity for angry driving and self-monitoring were identical to those of Study 1.

The procedure of Study 2 was identical to that of Study 1 except that participants were asked to *read a description* of either a supervisor or a friend and then imagine he/she was driving a car while that person was aside. After the situation–imagination procedure, all the participants completed a questionnaire about propensity for angry driving and the self-monitoring scale.

3.2. Results and discussion

Independent-sample t test revealed that the drivers in the reversed-standard supervisor group scored significantly higher on PAD ($M = 23.62$, $SD = 4.93$) than those in the reversed-standard friend group ($M = 13.02$, $SD = 3.35$; $t(98) = 12.70$, $p < .001$), supporting Hypothesis 3.

Then we tested respectively the moderation effect of self-monitoring ability and self-monitoring propensity on the relationship between experimental condition and PAD. Using PAD score as dependent variable in the regression, we entered the standardized score of experimental condition and self-monitoring ability into the first level and the product of the two standardized score into the second level. Results revealed only a significant main effect of condition, which was similar to the last section (see Table 4).

As for self-monitoring propensity, a similar regression analysis also showed a significant main effect of experimental condition. Moreover, the moderation effect of self-monitoring propensity reached significance (see Table 5). For supervisor group, self-monitoring propensity had a non-significant positive correlation with drivers' PAD scores ($\beta = .25$, $p > .05$). For friend group, however, self-monitoring propensity significantly predicted drivers' PAD scores, with lower self-monitoring propensity leading to higher PAD ($\beta = -.35$, $p < .05$; see Fig. 2).

Study 2 revealed that when a passenger's behavior standard was explicitly offered, the driver's propensity for angry driving would adjust accordingly, through a match of impression construction. Moreover, when the behavior standard was direct and clear, only

Table 4
Regression model for the moderation of self-monitoring ability between experimental condition and propensity for angry driving.

Dependent variable: propensity for angry driving	Model 1 Beta	Model 2 Beta
Condition (supervisor = 0, friend = 1)	−.79***	−.79***
Self-monitoring ability	.05	.05
Condition × self-monitoring ability	–	−.10
R^2 change	62.50%	1.10%
F	80.81***	55.82***

*** $p < .001$.

Table 5
Regression model for the moderation of self-monitoring propensity between experimental condition and propensity for angry driving.

Dependent variable: propensity for angry driving	Model 1 Beta	Model 2 Beta
Condition (supervisor = 0, friend = 1)	−.79***	−.79***
Self-monitoring ability	.01	.02
Condition × self-monitoring ability	–	−.18**
R^2 change	62.20%	3.20%
F	79.82***	60.39***

** $p < .01$.
*** $p < .001$.

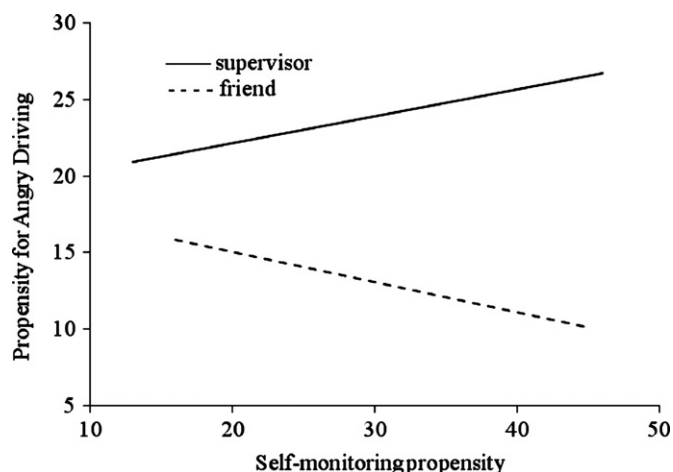**Fig. 2.** Drivers' propensity for angry driving in two conditions with high or low self-monitoring propensity (Study 2).

Table 6
Effect sizes of four comparisons between the passenger group and the control group ($M = 18.63$).

	PAD (M)	Effect size (η^2)
No standard-supervisor	14.80	.12
No standard-friend	23.38	.14
Reversed standard-supervisor	23.62	.17
Reversed standard-friend	13.02	.25

Note: PAD, propensity for angry driving.

the propensity component of self-monitoring moderated the influence of the condition. This finding indicated that the driver did not need to perceive the passenger's behavior standard through his/her self-monitoring ability since the standard was quite apparent. The extent to which the driver changed his/her behaviors according to the situational cues was dominantly depended on the driver's propensity to take impression management process.

4. General discussion

The current study revealed the potential influence of passengers on drivers' behaviors. Passengers with different roles (supervisor versus friend) and different standards (with versus without a clear behavior standard) affected drivers' propensities for angry driving in opposite directions. Two studies found that the drivers changed their propensities for angry driving according to their perceptions of the passengers' behavior standards. These findings offered new insights that the social influence of passengers on drivers could go beyond simple characteristics such as gender or age of the passengers.

4.1. Impression management: passenger's role versus behavior standard

In reviewing the two studies, we found one result particularly interesting. In Study 1, although some supervisors were described by the drivers as "extroversive/unconstrained/open", the drivers' PAD were lower than those who drove alone (15.54 versus 18.63). Yet the pro-violence supervisor in Study 2 resulted in a higher PAD of drivers compared with no-passenger condition in Study 1 (23.62 versus 18.63). This might indicate that when the drivers offered the description of a supervisor or a friend, they did not explicitly realize the relationship between the characteristics and the behavior standard. Under such no-standard situation, the passenger's role would guide the drivers' construction of a desired behavior. These results could also explain some of the conflicting findings from previous studies on what kind of passengers would raise aggressive or safe driving. Sometimes the drivers constructed their behaviors according to the external role or superficial characteristics of the passengers, while in other times the behavior standards of the passengers could be explicitly perceived and guided the drivers' behaviors.

To further clarify the different influence of the passenger role and the passenger's behavior standard, we reanalyzed the four passenger groups in the two studies. The drivers' PAD scores of four

passenger groups were compared separately with that of the control (no-passenger) group in Study 1 and resulted in four effect sizes (see Table 6). The η^2s of the two no-standard groups were lower than those of the two reversed-standard groups. The drivers were more influenced by the behavior standards that were clearly conveyed (through a clear description of the passenger's characteristics and previous angry driving behaviors) than by those that were not clearly delivered. The perception of a freely imagined passenger could surely lead the drivers' behaviors towards a "reasonable and socially desirable" direction. However, such "reasonable behaviors" were not as clear as those in Study 2. Moreover, the results showed that friends cast a greater influence on drivers. Although the drivers had more impression motivation when the passenger was a supervisor, the behaviors in front of a supervisor might still restrict the driver's behaviors to a smaller range.

Wilde (1982) proposed in the risk homeostasis theory that the risk preference of drivers and passengers would take a dynamic process through inter-influencing. In this dynamic process, the differences between the risk preferences of the two parties created social pressure for the drivers and raised the driver's psychological needs to diminish the conflicts (see also Heino et al., 1996). In the current study, drivers' propensities for angry driving may take a similar dynamic process. Passengers' preferences or behavior standards for angry driving created social pressure on drivers and push drivers to adjust their behaviors.

4.2. Self-monitoring: propensity versus ability

The current study found that under no clear behavior standard, self-monitoring propensity generally affected drivers' behavior propensities. When the behavior standards were explicitly described and made clear, self-monitoring propensity moderated the different effects of the behavior standards on drivers' propensities for angry driving. Self-monitoring ability, on the other hand, did not play a role in either situation. The reason for such results might be that in the situations of the current study, it was quite easy for the driver to form a reasonable image. When no clear behavior standard was offered, a nice driver was the most "safe" image to present in front of others, leading to a main effect of self-monitoring propensity. When a clear but opposite behavior standard was delivered by a supervisor versus a friend, self-monitoring propensity affected the varying within both conditions.

Snyder (1974) posited that a significant attribute of those of high self-monitoring was the perception of environmental cues. And self-monitoring is a stable trait that could exert influence across a wide range of situations (Estow et al., 2007; Klein et al., 2004). This might suggest that high self-monitors of the participants were more likely to display demand characteristics in the experiments. However, we have tried to minimize this possibility. Participants were assured in the experiments that the responses were anonymous and the data of the current study would be kept in confidential. Moreover, in both studies neither do we actually "convey" the behavior standards nor explicitly mention "behavior standard" to the participants. If at a minor level some participants did have demand characteristics, we assumed that the tendency

to response in a socially desirable manner or to fit the experimenters' expectations was consistent with the tendency to fit the passengers' expectations. Since high self-monitors are doomed to be highly sensitive to environment cues and sometimes the impression management process could even occur unconsciously (Cheng and Chartrand, 2003), we could not fully rule out the possibility of social desirability problem. Yet we could expect a similar pattern of the passenger effect in real driving situations, which was partly supported by the similar results from Study 1 and the driving log study (which was of higher external validity).

4.3. Practical implications

The influence of passengers was found in several experiments, while in the current study, a passenger who conveyed a clear behavior standard through driver–passenger interactions played an important role on the driver's behaviors. In spite of this potential implication in changing drivers' behaviors, most traffic education and advertisement keep focusing on the drivers. The interactions between the driver and passengers could help a lot on the improvement of traffic safety.

The results of this study offered two ways for traffic management department to promote drivers' safe behaviors and thus prevent road accidents. From the perspective of passengers, the passengers could be informed about the pattern of influence of passengers on drivers. The passengers could be educated to clearly convey a "safe" standard or a concern of accidents to the driver. From the perspective of drivers, safe education could directly set the passengers' standard for drivers and inform drivers of the passengers' expectation of a "safe driver" and a road environment with few accidents. The examples of the advertisement could wrote: "x% of the passengers favor a safe driver", "y% of the passengers prefer safe driving as opposed to speedy driving", "Most passengers are always worrying about being involved in a traffic accident".

4.4. Limitations and future directions

In the daily lives, drivers are encountered with various types of interpersonal relationships. However, in the current study we only focused on two types: supervisor and friend. Although we caught a general picture of drivers' impression management processes and the moderation effect of self-monitoring through these two important types of driver–passenger relationships, further research could explore such process in other relationships such as family members or strangers.

Another limitation was the lack of direct measurement of the driver's perception on the passenger's behavior standard. We did not take this measure because such perception was quite a subtle process through the interaction between the driver and the passenger. Explicitly asking the drivers about their perceptions of the passenger's behavior standard might be a direct proof of the impression management process at the expense of external validity of the study. However, the results of the main effect of passenger standard and the moderation effect of self-monitoring could support our reasoning of the impression management processes taken by drivers. Moreover, in Study 2 a group of undergraduate students rated either the supervisor or the friend described in the materials on the propensity for angry driving and it can be inferred from the results that the drivers would perceive the two different persons in the expected way. Further research could be developed to seek some strategies to satisfy these goals.

In the current study we asked the drivers to imagine driving with a passenger aside. This method may lack external validity for we did not import a real passenger in the situation (and it was impractical to invite a driver to the study accompanied by his/her supervisor). However, the scenarios used in the PADS were validated in the current study as well as in several previous studies (Dahlen and Ragan, 2004; Maxwell et al., 2005). Such scenario imagining method in measuring drivers' behavior intentions was also common in other driving research (e.g., Ryeng, 2011). Adding a specific passenger in such a scenario would not raise much difficulty of imagination. Moreover, the data collected in the driving log study (which was conducted in a more externalized manner) reached a similar pattern of results when the passengers did not deliver a clear behavior standard, suggesting that the results from the current study may go beyond the imagining condition.

Appendix A. The propensity for angry driving scale

The following survey contains several different scenarios one might encounter while driving. Please read each of the scenarios carefully and decide which of the potential responses most closely match how you would respond in that situation.

1. You are driving your car down a road. Without warning, another car pulls out in front of you from a parking lot. You had to brake suddenly to avoid hitting it. How do you respond?
   (1) Let out a sigh of relief and drive on.
   (2) Lean out your window and yell at the other driver.
   (3) Honk your horn to let the other driver know they almost caused an accident.
   (4) Follow and stop the other car so you can teach him a lesson with force.
2. You are driving on a single lane road. For no reason the car in front of you is constantly braking and accelerating causing you to driver in the same manner. How do you respond?
   (1) Honk your horn and loudly curse at the driver.
   (2) Make to pass and stop the car so that you can beat the driver.
   (3) Slow down a little and keep a safe distance.
   (4) Deliberately tailgate the car and occasionally lay on the horn.
3. You are in a full parking lot. You see a driver leaving and you put on your blinker to indicate you intend to take the parking space. As the other driver pulls out, a second driver cuts in front of you from the other side and takes the parking space. How do you respond?
   (1) Glare angrily at the other driver as you move on to find another parking space.
   (2) Let out a sigh and look for another space to park.
   (3) Wait for the other driver to get out of the car and then scream at him/her for the inconsiderate behavior.
   (4) Stop your car, and approach the other car to teach the driver a lesson.
4. You are driving in a traffic jam. Out of nowhere, a car comes up from behind and attempts to squeeze in front of you. How do you respond?
   (1) Nothing, let the car squeeze in.
   (2) Roll down the window and yell at the other driver as you close ranks on the car in front of you to prevent the driver from cutting in front of you.
   (3) Let the car squeeze in but honk your horn to demonstrate your disapproval to the other driver.
   (4) Honk your horn and curse the driver in your car as you close ranks on the car in front of you to prevent the car from getting in front of you.

5. You are driving on the national highway. One of the cars in front of you keeps switching from one lane to another. Thus traffic is being slowed. How do you respond?
   (1) Yell at the driver in your car and honk your horn to show your displeasure.
   (2) Pull up next to the other car so that you can honk your horn and scream obscenities at the driver for blocking traffic.
   (3) Let out a sigh and slow down with the rest of the traffic.
   (4) Speed up to pass and stop the car so that you can teach him a lesson with force.

6. You are driving on a city street. Without warning, a pedestrian suddenly runs in front of your car nearly causing you to hit him/her. How do you respond?
   (1) Do nothing except feel grateful no one was injured.
   (2) Actually stop your car and get out to yell at the pedestrian for being careless and stupid, even try to beat him/her.
   (3) Yell the traffic rule at the pedestrian out your window.
   (4) Curse loudly at the pedestrian out your window telling them next time you are not going to stop.

7. You are driving on the highway. The driver in the car in front of you throws a half-full bottle out his/her car window. The bottle hits your windshield. How do you respond?
   (1) Honk your horn and yell at the other driver from within your car.
   (2) Speed up next to the car and yell obscenities or make obscene gestures at the other driver.
   (3) Let out a sigh and accept the bad luck.
   (4) Speed up so that you pass the car and then throw something out your window to hit the other car.

8. While making a left-hand turn you accidentally cut off another car. In response, the other driver follows you to the next inter-section at which point he/she pulls up to your car and proceeds to yell obscenities at you until the light turns green. When the light turns green the other driver takes off in a hurry. How do you respond?
   (1) Follow the car to the next intersection so that you can yell obscenities back.
   (2) Sigh in relief that the whole ordeal is over.
   (3) Tailgate and stop the car so that you can teach him a lesson with force.
   (4) Yell back at the other driver telling him to relax because it was an accident.

9. You are traveling in a single-lane road late at night and the car coming at you in the other lane has on high beams. You flash your lights but the bright lights of the other car do not change. How do you respond?
   (1) Wait for the car to pass so you can see the road again.
   (2) Honk your horn and yell out your displeasure.
   (3) Put your high beams on in retaliation.
   (4) Turn around and follow the other car with your high beams on.

Items 2, 4, and 6 were not included in the final scale.

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