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Abstract

Passengers have the opportunity to influence the driver's situation awareness and promote safer performance. This paper reports an investigation into the influence of passengers on driver situation awareness. 40 two-person teams performed an interactive verbal task, while one team member also undertook a simulated driving task. Half of the drivers were paired with driving-experienced passengers; the others took part with driving-novice passengers. Dependent variables were Verbal Response Time (conversation modulation) and Situation Awareness. Results indicated that driving-novice passengers engaged in relatively more conversation than the driving-experienced passengers. Significant differences were found for total Situational Awareness between driving-experienced and driving-novice groups. Further analysis suggested that both experienced drivers and passengers had significantly better Situational Awareness of perceptual factors than driving-novices. Further, Verbal Response Times were found to be significantly predictive of Situational Awareness. Findings provide some support for the notion that passengers may have a positive effect on driver's attention in spite of their verbal interactions.

Keywords: Passenger experience, Situational Awareness, Conversation Modulation

Introduction

It is predicted that by 2030, road accidents will be the fifth most prevalent cause of global death (Abdalla, 2002). Driving is a highly challenging task, requiring substantial perceptual and cognitive abilities (Drews, Pasupathi & Strayer, 2008). When drivers engage in secondary activities such as conversing or texting, it significantly impairs their attention (Gaspar, Carbonari, Kaczmarski & Kramer, 2015). Distracted driving is a growing problem with abundant epidemiological and observational evidence linking distractions with driver impairment (Lansdown, Stephens, & Walker, 2015). Inattention and driver distraction has been shown to be the second largest predictor of driving fatalities (WHO, 2011; Craft and Presdolsky, 2008). According to McEvoy, Stevenson & Woodward (2006) on average a driver is involved in a distracting activity once every six minutes, of which, the most common reported was talking to passengers. Strayer and colleagues suggested that 21% of distraction was attributed to passengers and their verbal interactions (Strayer, Cooper, Turrill, Coleman Medeiros-Ward & Biondi, 2013). In recent years, several authors have identified the need for further research on the impact of passengers on driver inattention (Lansdown & Stephens, 2012; Strayer, Cooper, Turrill, Coleman Medeiros-Ward & Biondi, 2013).

The impact of passenger interaction on drivers could, however, be both positive and negative (Orsi, Marchetti, Montomoli, & Morandi, 2013). For example, while passengers being present is distracting, not all drivers are affected in the same way by their presence (Klauer, Guo, Simons-Morton, Ouimet, Lee, & Dingus, 2014); that is, more experienced drivers have been shown to be significantly less influenced by passengers than novice drivers (Ouimet, Pradhan, Simons-Morton, Divekar, Mehranian, & Fisher ,2013). Further, studies have shown that the influence of younger passengers (below the age of 30 years) on drivers (of any age) has resulted in higher accident rates when compared to drivers with adult passengers (Williams, Ferguson, & McCartt, 2007; Ehsani ,Haynie, Luthers, Perlus, Gerber, Ouimet, Klauer, & Simons-Morton, 2015).

The highest passenger distraction risk appears to be when young (novice) drivers travel with young passengers. One study (Carter, Bingham, Zakrajsek, Shope, & Sayer, 2014) indicated that 92% of the students were prone to engaging in passenger conversations during driving. Further, the student respondents reported that, young passengers affected their attention more when compared to adult passengers, although both groups did engage in conversation. Furthermore, in a study by Simon-Mortons (2005), higher risk driving was found in male-male driver passenger

pairs compared to female-female driver passenger pairs. Further research into the factors influencing driver-passenger interactions seems important to develop potential interventions leading to safer driving.

The specific impact of passengers on vehicle safety is equivocal with respect to other driver distractors. For example, some studies have suggested that drivers are more affected by conversations over the phone than passenger in-car conversations (Crundall, Bains, Chapman, & Underwood, 2005). The authors indicated that with in-car conversations, as opposed to conversations over the phone, verbal suppression can occur in line with the real time driving conditions. Further, the consequences of mobile phone use while driving have also been significantly linked to other indicators of reduced attention , such as missing traffic signals, slower responses to signals, or increased reaction time when braking or responding to hazards (Strayer & Drew, 2004).

Moreover, findings from Volrath, Meilinger & Krüger (2002) suggest an overall protective effect on vehicle safety from passengers. Bedard and Meyers (2004) report the presence of passengers reduces the incidence of some potentially unsafe behaviours. For example, passengers may highlight potential errors like driving the wrong way or missing the destination. However, other driving cues such as traffic signs, apparent hazards or warnings, have been shown to be ignored by passengers (Vollrath, Meilinger, & Krüger, 2002). Positive effects were found to be dependent on age, driver gender and the number of passengers. Also, potential positive passenger influence was reduced when drivers experienced difficult situations, for example, night time driving or unfamiliar roads. Overall, there appears to be some potential promise that verbal interactions from passengers could convey a positive safety effect on drivers under normal driving conditions. Such an opportunity warrants further investigation.

One explanation for the positive passenger effect could be the shared situational awareness of in-car passengers. Drews et al. (2008), suggest that both passengers and drivers have a tendency to modulate their conversation according to the given demands of the driving situation. For example, drivers will frequently and intuitively withdraw from a conversation when approaching a complex junction and this may affect passenger's interactions as well. This phenomenon of conversation modulation was previously studied by Gugerty et al. (2004) who explored verbalisation rates with both remote and in-car passengers. Findings potentially indicate how

mobile phone conversations and passenger conversations affect a driver's performance. The study hypothesised that in-car passengers will show more conversation modulation and thus interfere less with the driving task. Conversely, remote passengers (stimulating a mobile- phone conversation) will show less conversation modulation and interfere more with the driving task. Results indicated that driver's found conversations with remote passengers more detrimental to their Situation Awareness than those with local passengers. Drews et al. (2008) suggested that in-car passenger conversations are often modulated to support the driver by directing attention to, for example, the surrounding traffic, unlike mobile-phone conversations, supporting the findings from Crundell et al. (2005).

Both Gugerty et al. (2004) and Drews et al. (2008) report that mobile-phone conversations, in particular, can negatively impact driver's Situation Awareness, while 'local (in-car)' passenger conversations were found to have limited impact. This may not be due purely to modified conversation pace (Gugerty et al. 2004) but also to modulation of conversational content. For example, Drews et al. (200) suggested that passenger conversations may actually be useful for navigation tasks, i.e., when approaching an exit. Consequently, through development of a 'shared' Situational Awareness, passenger conversations may offer the potential for a positive effect on driver's performance.

Many studies investigating conversational demands on the driver have, for ethical and methodological reasons, adopted the use of driving simulators. Some authors have argued that the use of laboratory and simulation methods in these studies, rather than real world driving tasks, has weakened the research area. For example, Strayer et al. (2004) argues that measurement of conversational modulation is not a valid analogue of natural in-car conversations. However, Gugerty et al. 2004, defends use of a verbal task by suggesting that listening, comprehending and speaking do not interfere substantially with the spatial task of driving, but the act of generating a verbal response does. Thus, the task reproduces a verbal response component, and along with associated experimental performance data, avoids problems with a lack of empirical control from studies with more naturalistic conversational interactions.

Assessment of Situational Awareness focuses on the cognitive impact of the task and the attentive capacities of the individual (Endsley, 2000). For example, awareness of the dynamic spatial scene, perception of objects, their relative speeds, along with comprehension of hazards

and projection of future events (Endsley, 2000). Actions in the driving task may become proceduralised for experts, while also being mindful that drivers are not always attentive (Walker, Stanton, Kazi, Salmon, & Jenkins, 2009). Consequently, a driver may be either not aware of, or not able to consciously access environmental situational data. Cognitive slips or lack of attention may underlie accident risk, not just measures of driving performance, per se. Consequently, researchers (for example, Orsi, Marchetti, Montomoli, & Morandi, 2015; Scholz, Antonishek, & Young, 2005) have suggested testing Situational Awareness may provide a better measure of safe driving than purely 'physical' performance measures. Indeed, Walker et al. (2009) suggest that training drivers to improve their Situation Awareness skills may aid them to maintain active decision-making while driving.

This Study explores how driver and passenger conversations influence Situational Awareness. Selected passengers are either driving-experienced or driving-inexperienced (novice). It is hypothesised that,

1. Driving-experienced passengers will modulate their own conversation and this will lead to modulation by drivers; promoting safer driving when compared to conversations between driving--novice passengers and drivers.
2. Driving-experienced participants, regardless of their role as a driver or passenger will have improved Situational Awareness relative to inexperienced participants; and
3. Increased conversational modulation will improve Situational Awareness.

Method

Participants

80 participants took part in the study. They were university students ranging in age from 19 to 24 (M = 20.9, SD = 1.14). Participants were recruited from different universities based in United Arab Emirates (UAE).

All driving-experienced participants had a valid UAE driving license, at least one year experience, and drove at least three days a week, see Table 1.

The ‘Drivers’ (N = 40, 17 males) consisted of drivers with minimum experience of one year and maximum of three years (M = 2.3, SD = 0.4). Drivers were divided into two groups(N=20, 7 males; N=20, 12 males) that were randomly paired with passengers that had two categories. They drove an average of five days per week (M = 5.5, SD = 1.23). The ‘Passengers’ were allocated to one of two categories: those with driving experience (N = 20, 13 males) and those without (N= 20, 9 males). Passengers with driving experience had an average of two years driving experience (M = 2.1, SD = 0.5) and they drove an average of five days per week (M = 4.8, SD = 1.5). Two groups were defined, 20 Drivers paired with 20 driving-experienced Passengers, and the 20 Drivers paired with 20 driving-novice Passengers, see Table 1.

Design

The study had a Between-Subjects design. The two Independent Variables were a) Role (driver or passenger), and b) Experience (driving-experienced vs driving-novice passengers). There were two Dependant Variables, Situation Awareness (measured using the Situation Awareness Global Assessment Technique or SAGAT, Endsley,1994), and Conversational Modulation (measured via verbal response times in seconds). The study was approved by the School of Life Sciences Ethics Committee at Heriot-Watt University.

Materials

The Driving task employed a low-fidelity driving simulator in which participants observed driving scenes using a 17-inch laptop screen depicting different roadway scenarios. These videos were designed using the City Car driving simulator developed by Microsoft. Video scenes presented vehicles, traffic, hazards and pedestrians. Six different scenarios were presented. For example, Scenario 1 starts at a traffic signal, gradually progressing on to a highway with 4 lanes. Scenario 2 starts at a junction with two pedestrian signs and proceeds towards a two-way road. Scenario 3 starts with a two-way road, where the car overtakes the another vehicle using the second lane. Scenario 4 starts on a one way by-pass, with pedestrians walking along side and cars parked by the pavement. Scenario 5 starts on a 4 lane highway, the car gradually speeds, overtaking other vehicles on the left most lane. Scenario 6 starts on a 4 lane highway, the car gradually heads on to an exit where the car seems to apply sudden brakes because of traffic .All scenarios were during day time. The same car was used in all the scenarios. The stimulated

vehicle was a Volkswagen Golf, see figures 1 and 2. Each scenario was presented for 60 seconds after which Situation Awareness was evaluated using the SAGAT questionnaire.

(Insert figures 1 and 2 about here)

The SAGAT measures Situational Awareness at three levels, perceptual (Level 1), comprehension (Level 2), and projection (Level 3). Driving-relevant examples at (perceptual) Level 1 might be, did you notice any traffic signals? What was the vehicle's condition? How many lanes were present? Did you notice any warning signs? Level 2 examples might include, were there any vehicles behind? Where there any obstacles? Were there any cars driving over speed limit? Appropriate Level 3 tasks could be, is it safe accelerating at this particular scenario? What will the car in the centre of the lane do next?

During each 'drive' the respondents engaged in a verbal task similar to that adopted by Gugerty et al. (2004). Pilot testing of the original word game used revealed it to be difficult for participants to follow, leading to word repetitions. Therefore, participants were required, in turns, to associate words based on the previous utterance. For example, if the passenger said "blue" the driver might respond with "sky" or "water". Verbal tasks were always initiated by the passenger. Verbal Response Times were calculated for each interval between the words generated by drivers and passengers, i.e., the time (in seconds) from the end of the previous word to the initial utterance of the next word. Thus, mean Verbal Response Times were taken as the measure of conversation modulation.

Participants were initially instructed to imagine that they are sitting in a car, with the 'passenger' sitting to the right of the 'driver'. They then observed driving scenario video sequences. During video playback, participants were instructed to engage in the word game (as outlined above) while observing the driving scenarios. Similarly, the drivers are instructed to respond to the word game and not initiate it. Each scenario lasted for sixty seconds, with participants undertaking six scenarios. After each trial, participants are instructed to complete the SAGAT.

Results

Results are presented addressing each hypothesis in turn.

Hypothesis 1

Hypothesis 1, supposes that driving-experienced passengers will modulate their conversation more than driving-novice passengers. This will lead to greater driver conversational modulation. A one-way ANOVA revealed significantly different Verbal Response Times across groups (F (3, 76) = 16.49, $p < 0.0001$). Further, Bonferroni post-hoc results showed that drivers and driving-experienced passengers were found to have the highest level of conversational modulation ($p < 0.0001$). They slowed their utterances in response to perceived driving demands, see Table 2 and Figure 3. Thus, the null is rejected for Hypothesis 1.Further, the highest level of conversation modulation was found when driving-experienced passengers were paired with drivers. Notably, this was significantly higher than driving-novice passengers paired with drivers; adding additional support to the finding for Hypothesis 1.

(Insert Table 2 about here)

(Insert Figure 3 about here)

Hypothesis 2

Hypothesis 2 addresses Situational Awareness with respect to driving experience. It states that Driving-experienced participants, will have improved Situational Awareness relative to driving-novice passengers. Overall Situational Awareness was investigated using a one-way ANOVA. Results indicated a significant difference between groups (F (3,76) = 26.8, $p < 0.0001$, see Table 2 and Figure 4). Bonferroni post-hoc testing revealed that Passengers who were driving-novices had lower overall Situational Awareness with respect to the other driving-experienced groups ($p < 0.0001$).. Therefore, the null is rejected for Hypothesis 2. All driving-experienced participants

in the study were found to have significantly higher Situational Awareness than the driving-novice passengers.

(Insert Figure 4 about here)

Potential differences in the levels of Situational Awareness were investigated using a one-way ANOVA. Level 1 Situational Awareness (perception of features) was found to be significantly different between groups (F (3,76) = 11.8, $p < 0.0001$), i.e., drivers with driving-experienced passengers (M = 4.2, SD = 0.5) were found to have significantly higher Level 1 Situational Awareness, when compared to drivers with driving-novice passengers (M = 3.3, SD = 0.6) and driving-novice passengers alone (M = 3.0, SD = 0.7) see Figure 5. Level 2 and 3 Situational Awareness were not revealed to be significantly different across groups.

(Insert Figure 5 about here)

Hypothesis 3

Hypothesis 3 states that increased conversational modulation will result to improved Situational Awareness. A linear regression was conducted to predict Situational Awareness from conversational modulation (Verbal Response Times). A significant positive relationship was found (F (1,78) = 9.37, p = 0.003, $R^2 = 0.11$). Participants' average Situational Awareness scores increased by 0.82 for each increased second of Verbal Response Time. Furthermore, while considering Situational Awareness levels, results indicated further significant positive relationships for both Situational Awareness Level 1 (F (1,78) = 9.10, p = 0.003, $R^2 = 0.32$) and Situational Awareness Level 2 (F (1,78) = 8.69, p = 0.004, $R^2 = 0.10$) with respect to Verbal Response Times. No significant regression was found for Situational Awareness Level 3 data.

Discussion

Conversational interactions between drivers and either, driving-experienced or driving-novice passengers were explored in the study reported in this paper. Hypothesis 1 considered whether driving-experienced passengers will modulate their own conversation and, this will lead to modulation of the driver's conversation to protect safe driving. Results showed driving-experienced passengers demonstrated significantly higher conversational modulation when compared to driving-novice passengers. Further, when drivers were paired with driving-experienced passengers, both groups demonstrate the highest levels of conversational modulation in the study. In Hypothesis 2, driving-experienced participants, regardless of their role (driver or passenger) were suggested to have improved Situational Awareness relative to driving-novice participants. All driving-experienced participants were found to have significantly higher Situational Awareness than the driving-novices. For Hypothesis 3, the suggestion was made that increased conversational modulation would result in improved driver Situational Awareness. . Linear regression showed a significant positive relationship between Verbal Response Times and total Situational Awareness scores. Results considering Verbal Response Times and each level of Situational Awareness were significant between Level 1, but not for levels 2 & 3.

In summary, drivers paired with driving-experienced passengers showed better comprehension of their surroundings and better abilities in multitasking such as engaging in both verbal task and the driving task, than drivers paired with driving-novices. Presumably passengers with driving experience modulated their conversation to some degree, due to a shared understanding — informed by relevant knowledge of driving. This in turn may motivate them to focus more on the driving task. Driving-novice passengers were perhaps more engaged with the verbal task while the drivers or driving-experienced passengers were perhaps more appropriately focussed on the driving task. Current results would seem to support this. Further, other studies reinforce this outcome, with findings indicating in-car passengers modulate their conversation when compared to mobile-phone conversations (Strayer et al., 2013; Drews et al., 2004; Crundall et al., 2005; Drews et al., 2008 and Klauer et al., 2014). Further, results are consistent with findings from Gugerty et al. (2004). However, Gugerty's findings suggested that Verbal Response Times

varied according to driving task demands amongst experimental groups. It is now pertinent to consider the impact of such behaviour on the driver's Situation Awareness.

Results indicate that participants who are driving-experienced individuals had higher Situational Awareness scores compared to driving-novices. However, this finding was not consistent for all levels of Situational Awareness. For Level 1 Situational Awareness (perception), results show that experience led to better awareness. However, current findings contradict results from Scholz et al. (2005). In that study, Level 1 Situational Awareness questions were relatively easy to administer when compared to Level 2 or 3. Drivers frequently reported no difficulty in perceiving environment conditions (Level 1). One might assume that it is cognitively less taxing to perceive environmental details, when compared to the demand from investing additional effort to comprehend (Level 2) or predict (Level 3) the potential future state of the environment (Scholz et al., 2005). One further factor that could have contributed to the difference in results is the inclusion of the dual task condition, this study included a word game as the second consecutive task. However, Scholz et al.'s (2005) study measured driver's Situational Awareness in on a driving task alone.

Experienced passengers seem to benefit drivers in terms of Level 1 Situational Awareness. The condition with driving-experienced passengers scored almost 10% greater than the condition with driving-novice passengers. However, for the more cognitively demanding levels 2 & 3 Situational Awareness, significant differences were not found between driver and passenger groups. This outcome is perhaps rather surprising as one may reasonably assume that experienced drivers would have spare resource as a consequence of their skill acquisition. Therefore, if any level-specific significant differences were to emerge in the data, the more challenging levels of Situational Awareness might be the first indicators of any differences. In this case, perhaps the study design was not sufficiently sensitive to bring out any such differences.

As indicated above, several other studies have suggested passengers may have a positive influence on driver attention (Volrath et al., 2002; Orsi et al., 2013; and Gasper et al., 2015). Additionally, perhaps the potential for 'shared awareness' between the driver and passenger may facilitate other potential benefits (Drews et al., 2008). For example, encouragement of positive safe-driving behaviours such as suggesting taking a break on a long drive. Further, findings

suggest that when participants modulate conversation more it tends to positively influence situational awareness scores, and this was particularly evident in the condition with both driving-experienced passengers and drivers.

This study sought to investigate whether passenger's influence on driving could have a positive effect via modulation of in-car conversations. However, minor inconsistencies with regard to Hypothesis 2 and Hypothesis 3 do raise some limitations that warrant further consideration. There may be several reasons why in spite of passengers modulating their conversation, drivers Situational Awareness for levels 2 and 3 were not strongly significantly different. First, it is possible that drivers with passengers are generally affected by conversations regardless of whether it is modulated or not. For example, numerous studies suggest that conversations require attention and are therefore cognitively demanding. Such a task may, in some situations significantly divert attention from the primary driving task (Strayer and Drews, 2004). Horberry et al. (2006) stated that 25% of road accidents are caused by distractions; and furthermore, of those, passenger conversation may constitute up to 20% of such incidents.

Second, perhaps the demographics of the participants may have mediated any potential improvements in Situational Awareness. The 'experienced' drivers were still relatively young. Thus, regardless of a passenger's attempts to modulate conversation, the drivers may have been statistically more inclined towards risky driving behaviours, as a result of their relative youth. Klauer et al.'s (2014) findings support such assertions regarding the characteristics of adolescent drivers. Considering that the population of this study were around the age group of 18-25, it would have important to look at gender differences. This is could be potential limitation of the study, as it does not address the effect of gender on situational awareness and verbalisation rates. It would be intriguing to repeat the study by pairing male-male driver and passenger and female –female driver and passenger and vice-versa. Although the presence of male-passengers has been associated with more distracted situational awareness, understanding the difference in verbalisation rates between the two genders would be important especially amongst the youth (Simon-Mortons, 2005).

Another possible factor that would better explain the interaction between passengers and drivers would be their relationship. For example; Lansdown and Stephans (2013) have indicated that drivers that are romantically involved with their passengers often engage in contentious

conversations, which could deteriorate driving performance compared to no passenger being present. Drivers and passengers in this study were however paired randomly; this is justified as the conversations held in the study were neutral. However, the study lacks ecological validity as real road situations, usually have drivers and passengers that share some kind of relationship.

Furthermore, definitions of safe driving may be different between inexperienced and experienced drivers. While youth and inexperience are not necessarily coupled, they frequently are. Young drivers (with two to three years' experience) may perhaps focus on manoeuvring or lane-changing information, but not higher-level strategic task factors (Gugerty and Tirre, 2000; Bedard and Meyer, 2004). It would be interesting to repeat the study with a broader range of driver experience.

The modification of Gugerty et al.'s (2004) verbal task could have affected the driver's attention in this study. The lack of naturalistic conversation was an empirical compromise for experimental control. This limitation has also been levelled at the originating study (Gugerty et al., 2004). An alternative approach was adopted by Drews et al. (2008) who adopted 'close call' stories in order to contrive more natural conversation between drivers and passengers. To illustrate, conversations of this type involves passengers asking questions about the emotional or unforgettable experiences of the driver. The methodology could not be incorporated into the study reported here, as it aimed to measure the impact of response generation rather than conversational content. Verbal Response Time was adapted to measure conversations quantitatively which, it is accepted, may have led to highly controlled conversations and thus limiting the ecological validity of the study. However, other researchers have adopted the same approach to measure conversation modulation previously (for example, Crundal et al., 2008).

Another contributing factor, that could possibly increase the validity of conversation modulation would be incorporating the complexity of the driving scenario(Drews et al, 2008; Crundall et al, 2005). In Crundall's (2005) study, different driving tasks were created based on different road types i.e. urban roads, rural roads and suburban roads. In terms of conversation modulation, there was a significant difference observed across all three scenarios. However, participants were allowed to drive cars in the study, thus making complexity of the scenes more valid. This adaptation needs to be repeated in studies using low-fidelity driving simulators to understand

how drivers and passengers display sensitivity to the conversation according to the demand of the road.

One would hope that a shared awareness of roadway conditions could improve the driver's performance. Drew et al.'s (2008) study found that during conversation, passengers intuitively mediated conversation with respect to the driving context, for example, highlighting nearby hazards to assist the driver in avoiding potential hazards. Becic et al. (2010) further state that conversations are modulated by the 'shared awareness' between driver and passenger, although it may have negative effects. For example, by impairing conversations, as a consequence of the demands of the driving task. In contrast, improved Situation Awareness for passengers seems to potentially benefit drivers. Gasper et al. (2015) explored this phenomenon. Their study hypothesised that video phones might be more effective than mobile phones to promote shared awareness. Passengers that were shown a subset of critical information from the driving scene (through a video phone) were found to be less distracting to drivers than passengers receiving information via a mobile phone. Findings from this study suggest that a shared awareness is promoted via conversational modulation, primarily by experienced drivers; and offers a novel opportunity to mitigate possible negative effects of in-car conversation (e.g., Lansdown et al., 2013; Orsi et al., 2014; Ouimet et al., 2015; Gasper et al., 2015). This paper presents data that young passengers (aged 19 to 22) with some experience of driving, show a shared awareness with the driver.

Conclusions

Distracted driving has emerged as a major contributor to road traffic accidents. Consequently, it is important to consider how practical strategies may be implemented to make the driving task safer. This study investigated whether verbal interactions between drivers and passengers, may offer the potential for improved Situational Awareness. A shared awareness of the driving scenario and appropriate conversational modulation, suggest a positive influence of passengers in the vehicle. Verbal Response Times were longer, suggesting improved conversational modulation amongst experienced participants compared to novices. Passengers were found to

modulate their conversations even though they are not directly involved in driving. However, so far the positive effect of passengers on drivers is significant, provided passengers are drivers. Further, Verbal Response Times were found to be predictive of improved Situational Awareness, suggesting a useful management of cognitive resources by both the drivers and passengers.

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