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The Development of an Intervention to Improve the Safety of Community Care Nurses while
Driving and a Qualitative Investigation of its Preliminary Effects

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Abstract

This paper details the development of, and perceived role and effectiveness of an innovative intervention designed to ultimately improve the safety of a group of community care (CC) nurses while driving. Recruiting participants from an Australian CC nursing car fleet, qualitative responses from a series of open-ended questions were obtained from drivers ($n = 36$), supervisors ($n = 22$), and managers ($n = 6$). The findings supported the effectiveness of the intervention in reducing self-reported speeding and promoting greater insight into one's behaviour on the road. This research has important practical implications in that it highlights the value of developing an intervention based on a sound theoretical framework and which is aligned with the needs and beliefs of personnel within a particular organisation.

Keywords: safety intervention; community care nurses; work-related driving; speeding; persuasive messages;

The Development of an Intervention to Improve the Safety of Community Care Nurses while Driving and a Qualitative Investigation of its Preliminary Effects

Community-care nurses (CC nurses) play a crucial role in maintaining and improving the health and wellbeing of our communities, a role likely to increase given ageing populations. Efforts to ensure the safety of CC nurses, while they go about their daily activities, are essential. Perhaps not often the first risk to one's safety to be identified, of all of the daily work-related tasks of a CC nurse, driving represents one of the most risky. Evidence obtained in relation to work-related drivers¹ more broadly, suggests that road crashes account for the highest number of occupational accidents (Bureau of Labor Statistics, 2004; Murray et al., 2003; Lynn & Lockwood, 1998). In the United States, seven out of ten fatally injured work-related drivers were killed on public roadways or areas (Bureau of Labor Statistics, 2004). In the United Kingdom, work-related drivers have above average crash frequencies compared with non work-related drivers in personal vehicles (Lynn & Lockwood, 1998; Downs, Keigan, Maycock, & Grayson, 1999). Similar trends have been found within Australian (Newnam, Watson, & Murray, 2002).

Within community service organisations which include the community care sector, anecdotal evidence suggests a key characteristic of staff operations is that they generally place high value on their professional culture of care to the client above workplace vehicle safety. Due to tight operating budgets, and time schedules, work-related driving safety may represent another expense. Further, organisations do not generally possess the experience to undertake preventive work in this area. The aim of the current research is two-fold: first, to describe the development of a work-related driving safety intervention and, second, to present findings in relation to the

¹ Defined, work-related drivers refer to those drivers who drive at least once per week for work-related purposes (Murray et al., 2003). These drivers range from truck drivers, couriers, police and emergency service drivers, to sales people (Collingwood, 1997). Work-related drivers include senior executives provided with salary sacrificed vehicles, and those regarded as pooled vehicle drivers, who are employed to drive fleet cars, vans, or other specialist vehicles (Dimmer & Parker, 1999). As well as CC nurses who traditionally use pool vehicles. It is also important to note that this research project is solely conducted with CC nurses who use light vehicles (i.e., passenger vehicles) as opposed to commercial vehicles (e.g., trucks, motor coaches).

extent to which it functioned to reduce speeding and, ultimately improve the safety of a group of CC nurses. First, the theoretical framework for the design of the intervention will be discussed.

Work-related driving interventions: Background literature

Work-related driving safety interventions have traditionally been focused at the individual or driver level. These interventions have tended to reflect micro-level initiatives, such as driver training (e.g., Christie, 1995; Christie, 2001; Gregersen et al., 1996; Katila, Keskinen, & Hatakka, 1996), and behaviour modification strategies (Geller et al., 1987; Gregersen et al., 1996; Salminen, 2008). In recent years, work-related driving interventions have focused attention on Occupational Health and Safety regimes which has led to a shift toward work-related driving safety management approaches (Haworth et al., 2000; Newnam & Watson, in press). Such approaches implemented at this level include crash data collection and organisational benchmarking, driver selection/ recruitment/ induction programs, and vehicle procurement and vehicle maintenance initiatives (see Haworth et al., 2000; Murray et al., 2003).

Some support has been found for the effectiveness of both individual and management level interventions in improving work-related driving safety outcomes (Darby, Murray, Raeside, 2009; Ludwig & Geller, 2000; Newnam & Watson, 2009). However, a criticism of past intervention approaches is that practitioners and researchers have not recognized the broader organisational context in the development and implementation of interventions. Specifically, the work-related driving area has largely overlooked the possibility that interventions may utilise existing relationships and processes operating within the organisational context and, as such, may function by incorporating safety processes within a number of organisational levels. In particular, one intervention approach that has been overlooked within past research is an intervention that focuses on effective supervisory practices.

Although some research has described the processes operating at the organisational level which are essential for the development of an effective work-related driving safety program (Davey, Freeman, Wishart, & Rowland, 2008; Newnam & Watson, in press), there is no research to articulate how these processes can be enacted at lower levels of the organisational hierarchy within the work-related driving context. Drawing from research conducted in other commercial settings (e.g., construction; Zohar, 2002; Zohar & Luria, 2005), there is potential for an intervention to address this limitation by focusing on the impact of leadership styles on work-related driving safety.

Based on the ABC framework (i.e., Antecedents– Behaviour–Consequences; see Stajkovic & Luthans, 1997), Zohar (2000) developed an intervention on the theoretical assumption that effective supervisory practices can be achieved through performance-based monitoring and timely communication of consequences. Through the process of improving supervisory safety practices by providing feedback on safety-related monitoring and rewarding interactions with subordinates, Zohar found that employees' perceptions of safety within the work-unit and organisational safety records improved. This research suggests that safety outcomes can be achieved through utilising and improving existing relationships within the organisational context.

The current intervention: Background literature and its development

As such, based on Zohar's leadership intervention, the current research developed a safety intervention which was designed specifically for the work-related driving context and, more specifically, for application within a group of CC nurses who drove for work purposes. To the extent that perceptions of safety are transmitted across several levels within the organisational hierarchy and that, supervisors, fleet managers, and drivers all play a role in influencing work-related driving crashes (Newnam, Griffin, & Mason, 2008), the proposed intervention holds

particular promise. Given that past research has found that supervisors play a pivotal role in influencing safety outcomes in the work-related driving context, arguably, an intervention designed to improve supervisory safety practices could be effective in ultimately improving driving behaviour.

The current intervention required changes to, and extension on, Zohar and colleagues' previous methodology. In Zohar and Zohar and Luria's research, no attention was given to the content of the safety interactions between supervisors and their subordinates. Specifically, only cumulative frequencies of reported episodes between supervisors and subordinates were reported with no reference to the content of these discussions. Given the large number of varied on-road driving behaviours (e.g., inattention, tiredness while driving, rule violation, speeding), it would have been difficult to replicate this intervention in the work-related driving setting in the absence of specific content information. As such, in the current research, attention was given to challenging a particular road safety-related behaviour, namely, an intervention designed to challenge drivers' attitudes toward speeding. The focus on speeding behaviour was justified because work-related drivers have been found to report higher average and preferred driving speeds, and receiving more speeding offences, compared with individuals who drive for personal purposes (Stradling, Meadows, & Beatty, 1999). Work-related drivers have been found to report higher involvement in passive crashes (e.g., hit by another person) and thrill seeking, higher average and preferred driving speeds, and receiving more speeding offences, compared with individuals who drive for personal purposes (Stradling, Meadows, & Beatty, 1999).

The intervention was conducted over a three month period and, representing a key component of the intervention, a series of three anti-speeding, safety messages was developed (i.e., one message was to be delivered per month over the duration of the intervention). Developed specifically for use with CC nurses, these messages aimed to challenge some of the

key salient beliefs that the nurses associated with speeding. Considering the intervention had the potential to effect other levels within the organisational hierarchy (i.e., supervisors, senior-level management), the messages were also designed to indirectly motivate safety behaviour and safety-related discussions within the broader organisation. The development of the messages was based on a number of stages of consultation and comment.

First, key motivations, beliefs, and personal and situational factors associated with speeding behaviour were to be investigated. Thus, a review of recent literature was undertaken (e.g., Fleiter, Lennon, & Watson, 2007, 2010; Fleiter, Watson, Lennon, & Lewis, 2006; Forward, 2009; Fuller et al., 2009). In addition, interviews were conducted with 11 CC nurses from the participating organisation and who were not included in the subsequent intervention phase. This qualitative exploration phase was an important component of the intervention development given that it identified a range of relevant themes that could potentially be targeted within the messages; for instance, a theme that emerged from the interviews was that nurses frequently drove over the speed limit to arrive at their clients' houses at the required time. This issue suggests that nurses perceived client service as their primary job task, while their own safety and the safety of others on the road were considered secondary. Subsequent discussions with nurses also indicated that speeding was the most prevalent aberrant behaviour in their organisation. Other findings revealed that work-related driving safety was perceived as receiving low priority from management. This finding was highlighted by the fact that none of the 11 nurses reported having regular conversations with their supervisor regarding work-related driving safety issues.

In the second stage, and based on findings from the previous stage, the content of the three anti-speeding, safety messages was written. In particular, the messages were designed to challenge the common beliefs that: (i) everybody speeds, (ii) speeding saves and/or makes up time (and, thus, in challenging this belief, one of the perceived key rewards associated with

speeding, saving time, was challenged), and (iii) ‘safe’ speeding is okay. Table 1 provides a brief description of each message. Each message involved the threat of being fined for speeding. The use of such threat-based approaches, which highlight the negative consequences of engaging in speeding, was due to the nature of the sample of nurses in this intervention and, specifically the fact that they were predominantly female. Previous evidence has indicated that threat-based, negative emotion-based approaches are more persuasive for females than other emotion-based appeals (Lewis, Watson, & Tay, 2007; Lewis, Watson, & White, 2008; see also Goldenbeld, Twisk, & Houwing, 2008). Moreover, such approaches are more likely to be effective when accompanied by the provision of strategies that an individual can enact to avoid the threat from occurring (Lewis, Watson, & White, 2010). All of the messages therefore made reference to the strategies of monitoring one’s speed and slowing down. Moreover, to further increase perceptions of personal relevance, all of the messages featured, as the main character/s, a woman dressed in a nurse’s uniform and aged in her mid to late 40’s.

Table one about here

Next, following the initial writing of the content of the safety messages, all members of the project team discussed and scrutinised the messages for how well it appeared to challenge the particular salient belief it had been designed to challenge. Following this stage of team consultation, all messages were pilot tested with a series of focus groups with individuals, from external organisations, who drove (or had at some stage driven) for work purposes. Within the focus groups, group members were provided with a written outline of the particular message being tested. The outline detailed the context as well as the script of the characters featuring in the message. The focus groups were guided by a series of semi-structured questions that aimed to

elicit the drivers' views about several aspects of the message, such as the relevance of the message, and the message's likely effectiveness in terms of influencing their own as well as other work-related drivers' behaviour. Furthermore, where more than one message had been developed to target a specific belief, discussion was held about which message was perceived as being the more relevant and influential. Based on the comments received in the focus groups and, where necessary, the messages were refined to incorporate suggestions.

Finally, the messages were voiced and audio-recorded. To ensure the quality of the final product, the recordings were voiced by journalism students in the final year of their university degree and within a recording studio. Essentially, the final messages for use in the intervention were akin to a radio-based road safety message. The choice to present audio-recorded messages was informed by evidence from advertising research (e.g., Elliott, 1987). This research suggests that audio-based messages provide one of the most valid ways of testing the effectiveness of a message's content or theme given that this medium minimizes the effects of confounding factors, such as the quality and relevance of images that may influence effectiveness judgments of the content of audio-visual messages (Elliott, 1987).

Each of the messages has so far been discussed as separate entities, however, the messages were carefully aligned within a larger anti-speeding campaign. While each of the messages was designed to address a specific belief associated with speeding, at the conclusion of each of the messages the tag-line, "Slow down, monitor your speed, people are depending on you" was featured. This tag-line was devised intentionally to capture two key aspects; (i) respect for the nature of work that CC nurses do and the fact that so many people depend on them; and (ii) reiterating some of the concrete strategies drivers can use to avoid speeding (i.e., slowing down and monitoring one's speed). In addition, in terms of promoting the campaign through other mediums, the marketing department of the intervention organisation also assisted with the

development of posters which featured the campaign's tag-line. These posters were displayed in the organisations' head office and in each service centre.

Thus far, the paper has detailed the processes or stages undertaken to inform the development of the safety messages to be used in the intervention. The subsequent sections of the paper will, therefore, report on the preliminary, in-depth results of CC nurses' responses to the safety intervention and the extent to which they report it having had an influence on their on-road speeding. Furthermore, a unique aspect of this study is that data will be accessed from several sources within the organisational hierarchy. Specifically, in addition to gaining feedback from drivers (i.e., the CC nurses), feedback from the drivers' supervisors as well as their centre managers will be provided. Through utilizing a triangulation of sources, the current study provides an in-depth, comprehensive understanding of the effectiveness of the intervention.

Figure 1 presents a diagram of the processes relating to the intervention development, implementation and feedback. Given that this intervention approach has not been explored in the work-related driving context previously, qualitative data analysis was considered the best means of gaining an in-depth understanding of the role and effectiveness of the intervention.

Figure one about here

Methods

Participants

The participating community-oriented nursing population is regarded as the largest CC nursing car fleet in a state of Australia. Six service centers participated in the intervention. Within these service centers, three levels of organisational data from drivers and their

supervisors, and the centre managers were obtained. In regards to the driver sample, 36 nurses completed the open-ended responses, representing a response rate of 42% of participants who completed the study's post-intervention survey. The majority of the participants who responded to the open-ended questions were female (92%), with an average age of 52 years ($SD = 9.37$ Range = 27 to 64 years). The average time the remunerated participants held a drivers' license was 31 years ($SD = 9.44$; Range = 9 to 49 years), while they drove an average of 272 km/week ($SD = 142$; Range = 45 to 560 km/week).

Twenty-six supervisors completed the post-interventions survey and 22 of these individuals responded to a series of open-ended questions at the conclusion of a survey, representing an 85% response rate for the qualitative analysis. All the participants who responded to the survey were female, with an average age of 47 years ($SD = 9.19$ Range = 31 to 62 years). The average tenure in the agency was 10 years ($SD = 5.58$ Range = 1 to 21 years), with an average tenure within the current work role of 2 years ($SD = 9.37$ Range = 3months to 8 years).

Six service managers completed the post-interventions survey and all of these individuals responded to a series of open-ended questions at the conclusion of a survey. Five of the service managers were female and one was male, with an average age of 49 years ($SD = 7.51$ Range = 39 to 59 years). The average tenure in the agency was 14 years ($SD = 8$ Range = 3 to 25 years), with an average tenure as a service manager within the centre of 4 years ($SD = 3.8$ Range = 11months to 10 years).

The delivery of the intervention

One month after completing pre-intervention surveys to gain baseline data from drivers, supervisors and service managers, the intervention phase of the safety intervention began. The intervention phase was conducted over a three month period during which safety sessions were conducted with supervisors. At these monthly safety sessions, a research team member played

one of the three safety messages to the supervisors. In addition to providing comment on the safety messages, the supervisors were asked to deliver the safety messages to their workgroup drivers. Also, they were encouraged to regularly engage in safety discussions with their drivers and, in particular, engage in discussions relating to reducing driving speeds. Each supervisor was given a CD containing the audio-based message, as opposed to giving each driver a CD, as one of the key aims of the intervention was to encourage supervisor-driver engagement.

To gain an indication of the number of interactions between supervisors and drivers, and to ascertain whether the supervisors delivered the safety messages to the drivers, the research team engaged in fortnightly discussions with the majority, if not all, the drivers within each supervisory workgroup. In these discussions, drivers were asked several questions relating to the total number of discussions, number of safety discussions, and the number of production-related discussions (e.g., not-related to safety) they had engaged in with their supervisor in the previous two weeks. Subsequent to these discussions, fortnightly feedback was given to each supervisor. The fortnightly feedback sessions to supervisors consisted of individual discussions on the total number of safety and production-related discussions between supervisors and drivers over the past two weeks, with particular emphasis given to encouraging supervisors to increase the number of safety discussions between themselves and drivers for the next two weeks. The aim of the feedback to supervisors was to increase the frequency of safety interactions with their drivers over the intervention's duration (i.e., consistent with ABC framework utilised by Zohar, 2002).

Data and data analysis

The qualitative data on which this paper are based were derived from participant responses provided, in written form, to a series of open-ended questions at the conclusion of the post-intervention survey. The first section of the survey consisted of scale items designed to measure drivers' perceptions of safety and safety outcomes, such as past crashes and loss of

demerit points. The scale items were intended to examine a change in driving behaviour, perceptions of safety, crashes and loss of demerit points from baseline. Other than being provided with lines on which participant responses to each of the questions could be made, no restrictions were in place, thus, permitting participants to share any aspects about (and to whatever extent) their view/s about the intervention. The open-ended questions enquired about aspects of the intervention that had been liked and disliked, aspects that should be changed, as well as thoughts and responses to the messages. This open-ended, qualitative approach was considered to be the manner by which to obtain a much richer insight into the potential role and effectiveness of the intervention. In particular, it would enable aspects to be uncovered that may have been advantageous or disadvantageous to the success of the intervention and that would otherwise have been unmeasured if only the closed-ended, quantitative-type response approach had been utilised (see Sandelowski, 2004).

The data was analysed using thematic analysis. The analysis proceeded question by question, and in the order of the following participant groups, drivers' responses first followed next by supervisors and finally managers. The order of analysis, in terms of the participant groups, was largely arbitrary, although given that the drivers constituted the largest group in number, the decision was made to begin the search for concepts in the largest body of data. Therefore, the analysis commenced with the data provided by the drivers.

The identification of themes commenced with a broad search for possible concepts whereby each new idea (or meaningful unit) was coded. In subsequent reviews of the data, through a process of constant comparison, concepts were more closely scrutinised for similarities and differences with other coded concepts. This approach enabled new and emerging themes to be identified. Each of the identified themes is discussed together with supporting evidence in the form of direct responses provided by the participants. To preserve anonymity, data are presented

by identifying only whether the participant was a driver (i.e., D), supervisor (i.e., S), or a manager (i.e., M). Presenting data according to these participant groups also aligns with a research objective, namely, to examine the extent to which similarities and differences existed across the participant groups (and thus organisational levels).

Findings

What was liked about the intervention

Awareness and insight gaining. Overall, the most commonly cited positive outcome associated with the intervention was increased awareness of speeding, driving, and safety.

“Focusing on safety in the care and on the road. Driving safely” (D)

“Increased awareness to driver safety and speed” (D)

“Very positive. Increased safety awareness...” (S)

“Making people aware of the need to continually drive safety” (S)

“Raised awareness...” (M)

Encouragingly, a substantial amount of evidence was also found of the intervention having provided individuals with a greater awareness and insight into one’s own driving speed and related issues such as monitoring one’s speed and being more observant of speed signage.

“Made us very aware that even speeding a little can have a large impact on ourselves and the community (clients) if we are involved in a crash” (D)

“Made you think about speeding and its effects” (S)

“Made me aware of speed signage” (D)

“Made me more aware of my own driving and staying within the speed limit” (S)

“It has made me more aware of the speed dial” (D)

“It had made me more aware of watching my speed and driving at the correct speed even if running late” (S)

Influence on one's behaviour. Extending on the preceding theme, were reports of the intervention having had positive effects not only on one's awareness but, also on one's on-road behaviour:

“I have slowed down and that is always good” (D)

“Helped concentrate on speed limit to make sure I wasn't speeding” (D)

Following on from the last comment, one driver suggested that the intervention may have had a negative effect on their safety as although it had, as intended, encouraged drivers to monitor their speed more, this particular driver suggested, it may have had negative implications:

“Tended to continuously look at speedo, with the results that I put my focus on it and less focus on what was going on around me” (D)

To the extent that monitoring one's speed (via watching one's speedo) is not an extra and/or optional activity, this driver's comment implies that getting out of the habit of looking at one's speedometer may be challenging to rectify and, thus, it is an activity that should be promoted as a usual and expected activity on the part of all drivers.

In addition, the insight participants reported gaining was not limited only to the behaviour of focus in the intervention, speeding, but to driving more generally. Thus, the findings highlight the potentially broader road safety benefits that the intervention may encourage. For instance:

“It made me take a close look at myself” (D)

“Made you stop, be more aware of your safety” (D)

“Makes us [as supervisors] also more aware as well” (S)

“Made me constantly aware of my driving” (S)

While the theme of awareness raising was evident in responses provided from participants in all three of the personnel groups investigated, the majority of comments were made by drivers and supervisors although a couple of the managers did make comment in relation to this issue. For instance, one manager reported, “[the intervention] gave an opportunity to improve driving”

and “[the intervention] raised awareness [and] gave permission and credibility to addressing the issues for us”. This latter comment highlights that this manager saw the intervention as helping managers with their work which, implied here, is encouraging drivers to drive more safely. Encouragingly, this finding does suggest that there was acknowledgment of the intervention’s role and importance by managerial level personnel within the organisation.

Improving organisational communication. Managers, supervisors, and drivers all provided comments relating to the benefits that the intervention offered in relation to opening communication channels between personnel at different levels within an organisation, thus, highlighting another positive effect of the intervention.

“I got closer to [name of organisation] workers because of this paperwork...” (D)

“It has improved my awareness of speeding and has made our office supervisors aware or more aware of giving us tight schedules. Thank you” (D)

“The opportunity to discuss issues that often do not get discussed (due to workload/importance/priority)” (S)

“More contact with staff” (S)

“Identifying the supervisors and who they would be responsible for in the program. I believe that this has enabled some of the unregulated workers to form better communicative relationships with their supervisors and had promoted unity within the service” (M)

Only one driver made a negative comment relating to this issue of organisational communication and, in particular, the organisation not having a great safety culture:

“...No safety is on agenda for meetings. Have had one [organisation name] education session in three years” (D)

Liking of advertising materials and CDs. Evident within comments made by drivers, supervisors, and managers were the positive views of the materials and, in particular, the audio message CDs that had been developed and provided as part of the intervention (note: more

detailed feedback on the particular messages is provided in a subsequent section given that specific feedback was sought about the different messages):

“The CD messages were impacting” (D)

“The CDs were motivating to staff” (S)

“Safety posters and strategies” (M)

“The CDs and any other tools we received to help us get the message across” (M)

What was not liked about the intervention

As noted previously, participants were asked what they did not like about the intervention. Most commonly, drivers’, supervisors’, and managers’ responses related to the length of time and additional paperwork that the intervention required. Drivers tended to make broad comments about the intervention being “time consuming”. However, in comparison, the supervisors and managers tended to be more specific about the aspects of the intervention that they regarded as time consuming. The responses, in part, appear to reflect the different motivations and roles of personnel at different levels of the organisation.

“A bit time consuming, but feel it to be a most worthy cause” (D)

“Time spent on completing forms in own time” (S)

“The amount of time required by the supervisors to contact the staff in their groups. Some supervisors did this very well as they were committed to the project. However, it did take an inordinate amount of time” (M)

“We are always short on time and no matter how badly we want to do this and take part, external factors/pressures interfere with getting the message across. Everyone (workers and supervisors) are always so busy” (M)

As well as the comments about the time-consuming nature of the intervention, there were a number of comments from drivers, supervisors, and managers about the intervention representing “an extra thing to do” (D), “constantly asking staff to hand in forms” (S), and

“length of staff questionnaire – prevented/put off some staff completing this and participating in strategy/intervention project” (M).

An additional problem identified was personnel remembering to do what was required for the intervention during their busy days. This issue was mentioned by supervisors only, thus, highlighting the need for future interventions to perhaps incorporate greater use of some type of reminder prompts (e.g., email or text messaging).

“Remembering to spread safety message when really busy” (S)

“Having to remember to mention it when talking to staff members” (S)

In terms of changes to the intervention, a number of comments, primarily from drivers, were about the need to reduce the intervention’s duration, the number of surveys (i.e., paperwork), as well as the number of questions in the survey. Despite supervisors and managers having also made comment about the time consuming nature of the intervention and the extra work that it involved, only one supervisor suggested reducing the length of the survey (“[I would change] the length of the initial questionnaire...” (S))². The reason why this suggestion was not more commonly reported by supervisors and managers is unclear. It could be that supervisors and managers were aware of the time consuming nature of the intervention but, were unable to see a way to achieve the objectives with shorter and/or less materials. This suggestion is speculative and further research would be needed to determine whether or not supervisors and managers views of the intervention could be enhanced if the related materials could be streamlined.

Concerns about organisational support of, and longevity of, such initiatives. Drivers particularly, with the exception of one manager, expressed concern that the initiative may not last

² A second supervisor noted that, “[It] seemed to last a long time” but, did not suggest a need to change the materials nor did they elaborate as to whether they were referring to a particular survey, the overall length of the intervention, or perhaps both of these aspects.

once the project trial was over. Thus, the concern related not to a dislike of the intervention per se but, not liking that the intervention would not be able to be continued. For instance:

“Once trial period over, won’t be given safety reminders by supervisor regularly” (D)

“... No work discussion on driver safety as a rule” (D)

“I consider this only a start. Something needs to be done to continue now that we have it in motion. Driver safety should be an important consideration for [name of organisation] and much more emphasis should be placed on drivers/workers about driving safety right back on orientation day” (M)

And, extending on this comment was the hope that the current intervention trial would promote more permanent arrangements in this area:

“Provide resources for permanent embedding safety interventions. Provide training resources. I hope that the research provides 1) resources 2) influences policy 3) provide training resources” (M)

One driver suggested that even within the duration of the current trial of the intervention, supervisors may have lost interest, “At first our supervisors were proactive then they lost interest”. Again, such findings highlight that maintaining the interest of supervisors and managers is just as important as maintaining the interest of the drivers themselves.

Suggested changes and additions to the intervention

As noted previously, participants were also asked about any changes that they could recommend to the current intervention. Largely, the suggestions related to the issues of reducing the time duration, as well as the amount of paperwork, associated with the intervention. These issues have been discussed previously. In addition to these issues, however, was the suggestion that the intervention should be extended to include a focus on other driving-related behaviours and not only speeding.

“More focus on other driving behaviours (i.e., mobile phone use, fatigue, basic road rules” (D)

“More diverse question is not just speed but multi-tasking” (D)

In addition, beyond recommending changes to the intervention, participants (supervisors) also provided comments in relation to possible additions to the current intervention. These suggestions highlighted the supervisors' support of the need for such interventions and the need to provide incentives to encourage drivers to complete the intervention and to engage in the desired safe behaviours.

“More incentives for staff to complete survey (e.g., a monthly draw at the centre, coffee voucher, lucky dip surprises” (S)

“...Provide reward (meaningful reward) for positive behaviour/improved behaviours” (S)

Thoughts about the intervention messages

As mentioned previously, a key component of the intervention was a series of anti-speeding messages (with one message provided each month during the 3 months of the intervention). These messages were developed specifically for the intervention (and the particular organisation) and were designed to challenge popular beliefs underpinning speeding. In particular, Messages 1, 2, and 3 targeted the beliefs that: (i) everybody speeds, (ii) speeding makes up time on the road, and (iii) speeding is okay if it is “safe speeding”, respectively.

The majority of drivers and supervisors were very supportive of the messages, referring to them as “effective”, “good”, and “excellent”, “appropriate”, and “easy to relate to”. Of note, none of the managers involved in the study provided responses to the questions relating to the effectiveness of the messages. While the absence of responses may reflect that not all managers may have been able to hear all (or any of) the audio-messages, even if this explanation is the case, it does highlight that there may have been need to encourage and to incorporate strategies to ensure greater involvement from managers.

Consistent with one of the main issues reported with what was liked about the intervention, raising awareness, the issue of raising awareness was again noted here in relation to

positive outcomes associated with the messages. As such, it would appear that, as anticipated, the messages have played a crucial role in influencing beliefs as well as drivers' intentions on the road following participation in this intervention.

“It made you think about your behaviour on the road and speeding is not going to help anyone. I'll be more careful on the road” (D)

“More conscious of speed” (D)

Supervisors also noted that the messages had been targeted on the important issues and believed that the messages had had a positive effect on drivers:

“My workers did listen and they showed in their responses it was very relevant to their situations” (S)

“They were all informative and were to the point about the main problems” (S)

“I think it had made a difference to the staff and driving” (S)

Further, one supervisor also noted that the messages had had an impact on their own personal awareness and behaviour also, “Personally, I have increased my awareness of driving and watching ahead and behind of other road users” (S).

Finally, two supervisors reported that they believed the messages were effective but, placed caveats on their statements; one supervisor noted that they thought the messages were effective but believed such effects were more likely to be short term only. A second supervisor believed that the messages were effective only when accompanied by additional promotional materials such as, the posters. A driver also expressed a similar sentiment that the posters at work were what had prevented them from forgetting the messages (“Forgot them except when followed up with the posters at work” (D)). Collectively, these statements suggest that the effects of the messages are more likely to be enhanced and longer lasting if designed as a key component within a broader campaign.

It is interesting to consider these comments in relation to forgetting about the messages and/or intervention reported earlier. In particular, the extent to which drivers and supervisors could recall details of the specific messages as well as the campaign is encouraging, thus, suggesting that the rate of forgetting may not have been as extensive as reported. For instance, drivers and supervisors' comments revealed recall of the campaign's overall message and even the exact wording utilised within the campaign slogan:

“Slow down monitor your speed, people are depending on you” (S)

“People depend on you...” (D)

“Drive safely people are depending on you...” (D)

While the majority of drivers and supervisors reported favourable comments about the likely effectiveness of the intervention, some negative comments were reported. The comments highlighted possible problems with promotion of the intervention and potentially limited communication between organisational levels. Specifically, some drivers reported having not heard and/or being provided with all of the messages:

“Given CD only once so unable to remember all messages – sorry” (D)

“Only heard 2 [of the messages]” (D)

“Have only seen one CD. More driver safety should be taught and training” (D)

Such findings, together with the fact that no managers provided comments in relation to the messages, suggests that future implementation of this (or similar) interventions may need to provide incentives to managers to ensure they are keen to promote the intervention to their staff.

Discussion

This aim of this paper were two-fold; first, to provide detail regarding the development of a driver safety intervention for increasing the safety of a group of CC nurses while driving; and second, to provide preliminary, in-depth investigation regarding the intervention's perceived role

and effectiveness. Through a qualitative investigation based on responses from drivers, supervisors, and managers, the current research has shown support for the nature of the intervention itself and, as such, the work and approach undertaken to inform its development, as well as its outcomes across multiple levels of the organisational hierarchy. These findings are significant as, traditionally, past safety initiatives have been aimed exclusively at either the driver or management level. The current research addresses an important gap in the extant literature by detailing both the development of, as well as providing preliminary investigation about the role and effectiveness of, an intervention which incorporates these multiple hierarchical levels in the work-related driving context. The support for the intervention also highlights the value of (i) developing an intervention based on a sound theoretical framework and (ii) the need to adopt a considered, consultative, and largely explorative (qualitative) approach when developing a key component of the intervention (i.e., the messages). Such an approach ensures that the intervention aligns with the specific needs, and targets the beliefs, of personnel within a particular organisation. Overall, a number of themes and subthemes emerged relating to the role and effectiveness of the intervention. The discussion begins with detailing themes found which highlighted some of the key outcomes associated with the intervention and its positive effects.

In terms of the outcomes of the intervention, the results highlighted the effectiveness of this intervention in reducing speeding, and raising awareness of speeding and other on-road behaviours. Both drivers and supervisors commented that the intervention had provided insight into their own driving behaviour, especially in regards to monitoring their own speed and being observant of speed signage. Most importantly, some drivers reported a reduction in their driving speed as a result of participating in the intervention. It was also encouraging to find that some drivers reported that safety had been generalised to other on-road behaviour and not just speeding. The generalisation effect has been found in other work-related driving research where

the intervention was designed to increase seat-belt use and the researchers found an increase in turn-signal use (Ludwig & Geller, 1991). Such findings therefore suggest that while the intervention was focused on the behaviour of speeding, in time, in raising awareness of other risky on-road behaviours, such interventions may ultimately assist with placing the issue of road safety more on organisational agendas and discussed more among organisational levels.

Following on from this notion, the current intervention was found to function, as intended, to improve communication between multiple levels of the organisational hierarchy. In particular, as a result of participating in the intervention, drivers and supervisors reported having formed closer relationships with the organisation and other personnel more specifically as well as having experienced an increase in contact with other staff. These results are very encouraging, especially since past research has found that the quality of the supervisor-subordinate relationship plays a pivotal role in achieving positive safety outcomes (e.g., Hoffman, Morgan & Gerras, 2003; Zohar, 2002).

In relation to the messages developed and their ability to challenge some specific beliefs relating to speeding, the results revealed much support for the messages having achieved their intended purpose. Both drivers and supervisors reported that the safety messages played a pivotal role in challenging their beliefs about speeding and creating safety awareness within the workplace. Such findings also highlight the value of qualitative methods in the development of the message content in the initial design phases of the intervention. Such qualitative methods informed the selection of beliefs and motivations to challenge and assisted with the development of a more targeted intervention (Sandelowski, 2004). The participants reported that the safety messages had indeed targeted important and relevant issues in relation to their job task demands (i.e., an appreciation of the time pressures confronting nurses and their drive to provide the best care to their patients). The findings support the value of adopting a carefully considered message

development process and, in particular, the value and importance of consulting with those persons for whom the messages are intended to influence in some way. Indeed, evidence from the advertising literature attests that personal involvement and relevance represent key mediators of message effectiveness (see Cauberghe, De Pelsmacker, Janssens, & Dens, 2009; Lewis et al., 2007). Furthermore, it was encouraging to find that participants remembered the tag line associated with the intervention campaign (i.e., “slow down, monitor your speed – people are depending on you”), further suggesting that the message contained information that had been personally relevant and meaningful for some individuals. Overall, given that past research has found speeding to be the leading contributing factor in work-related road crashes (e.g., Haworth et al., 2000; Stradling, 2000), it was positive to find support from the participants for addressing this risky driver-related behaviour.

Although the findings discussed thus far have been positive and/or supportive of the intervention, some limitations of the intervention were also noted by some participants. Generally, there appeared to be some differences between the different personnel in terms of the main weakness (or disadvantages) of the intervention. All participant groups reported limitations associated with the intervention in reference to the length of the intervention and the additional paperwork. The latter comment was not surprising to the research team as it was well acknowledged that a large part of the role of a CC nurse (and their supervisors) was the completion of paperwork. Interventions such as this current one, by nature, are going to require some dedication on the part of all those involved, particularly in those settings where safety in the work vehicle is not given priority. However, if road safety is given greater attention on organisational agendas, less individually intensive interventions may be required, such as group-based programs (see Ludwig & Geller, 2000). In regards to the weaknesses/disadvantages reported by supervisors, remembering to engage in discussions with drivers was often mentioned.

Prior to this intervention, safety was not often discussed within the supervisor-driver relationship. Therefore, this comment reflects a culture where safety is slowly being created. In support of this assumption, one of the managers reported that they considered this intervention as only a start and they hoped to see future safety initiatives in the organisation.

Following on from this issue, a number of drivers reported a concern relating to whether or not the safety discussions would be maintained at the end of the intervention. This outcome highlights favourable views of the intervention, so, it is interesting that drivers did note this issue as a disadvantage of the intervention. Perhaps, and this suggestion is only speculative, drivers were now aware of the positive steps that can be taken within their organisation in the effort to improve safety in the work vehicle and were keen to continue with such efforts. Drivers, however, did express some concern as to whether the focus would be able to be continued once the intervention was completed. A number of supervisors also mentioned that there should have been rewards for their participation and that an incentive would have increased participation and discussion levels. While our hope would be that longer term maintenance of the program may be driven by more intrinsic benefits, it is possible that extrinsic rewards may be useful in the outset.

Strengths and weaknesses

In addition to finding support for the effectiveness of the intervention, this research is innovative in its design and implementation. A key strength of this research is that it is unique in addressing a gap in interventions designed to improve safety outcomes in the work-related driving context. As discussed previously, past research has focused on either the driver or management level, and limited attention has been given to the supervisory level and the broader organisational context. This research presents the first approach to improving safety communication between multiple levels of the organisational hierarchy within an important work-related driving context for its contribution to community health and wellbeing, that of CC

nurses. This research is also unique because previous intervention development research in this context has largely been atheoretical (see Newnam & Watson, 2009). The current research has presented the development of an intervention based on strong methodological grounds (see Zohar 2002) which are founded in sound educational and psychological principles. Furthermore, through utilising the expertise of the research team, this intervention has incorporated context specific safety messages designed through a well considered and implemented development process featuring, importantly, communication and consultation with those who the messages were intending to reach. As such, this intervention offers a new and innovative approach for addressing work-related driving safety.

Although there are a number of strengths in the intervention development and implementation, limitations need to be acknowledged. In the delivery of the intervention, supervisors were asked to deliver the safety messages to all drivers within their workgroups. Through adopting this approach, there was no way of ensuring that every driver listened to the safety messages. Given that the safety messages were a key part of the intervention, this aspect of the implementation presents a challenging issue. Specifically, one of the key aims of the intervention was to increase the safety interactions between supervisors and drivers and the safety messages were designed to facilitate and motivate future work-related driving discussions. It may have been an increase in quality of the supervisor-driver relationship that had a more positive impact on participant responses, rather than the safety messages themselves. On the other hand, given that the organisation played an instrumental role in developing the safety posters and additional advertising material for the safety campaign, the positive outcomes could be attributed, to some extent, to the establishment of a safety climate within the organisation. Indeed, separating the relative and interactional effects of an advertising intervention from the effects of other concurrently running initiatives (such as, police enforcement activity/initiatives), represents

a challenge that exists for broader mass media road safety campaign evaluation (see Tay, 2004, 2005). Of those studies that have attempted to disentangle such effects, many have been criticised on methodological grounds (see Vingilis & Coultres, 1990 for a review of evaluations of anti-drink driving campaigns). Thus, although it will be difficult to control for the effects of organisational support, future research should endeavour to, via a controlled study, examine the components of the intervention within different organisational settings.

Practical applications and concluding comments

This paper detailed the development of a work-related driving safety intervention as well as an investigation of its ability to reduce speeding in, and ultimately increase the safety of, a group of CC nurses. Through qualitative investigation of responses from drivers, supervisors, and managers, the current research found support for the effectiveness of the intervention across multiple levels of the organisational hierarchy and, importantly, reductions in self-reported speeding and greater awareness of one's own driving behaviour. Furthermore, the content-specific safety messages, which were considered the key component of the intervention, were reported to play a pivotal role in the success of the intervention. Thus, future interventions would likely enhance their positive effects by ensuring that the development of a safety campaign is aligned to the needs and beliefs of the organisation.

In summary, this research presents the first intervention in the work-related driving context to consider the broader organisational context in its design and development, and that is based on a sound theoretical framework which is specifically targeted and aligned to the needs and beliefs of a particular organisation. Overall, this research presents a new direction for improving safety outcomes in CC nursing groups and potentially the broader work-related driving context.

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Table 1

Brief descriptions of the messages used to challenge salient beliefs in the speeding intervention for community care nurses

Message Number ¹	Brief description of message content ²	Salient belief challenged
1	This message focused on the notion that nurses are not like everybody and, therefore, should not speed like “everybody” because their patients depend on them. The disappointment a nurse felt with herself is described when she was pulled over for speeding and making her run later for her next call which was to her palliative care patient who was in need of their pain medications. The following excerpt highlights the content of the message: “You may think everybody speeds, but you are not like everybody – people are depending on you so it’s vital that you slow down, monitor your speed, and avoid time lost from being pulled over”.	“Everybody speeds”
2	This message details a nurse’s frustration at having received a speeding fine in the mail when she believes that she would have only been speeding to try and make up some time in her busy day. The message discusses Australian research which has shown that speeding does not actually save drivers time. The following excerpt highlights the content of the message: “Life is hectic and workloads are heavy but, speeding should not be the answer – at the very least, it will cost you your money and your points”.	“Speeding makes up/saves you time”
3	The message focused on the notion that nurses are intrinsically caring and concerned for the welfare of others and, as such, speeding, which may endanger others, is never a safe behaviour to engage in. Within the message, a nurse who received a speeding fine is reminded of this notion by a colleague. The following excerpt highlights the content of the message: “Your caring and concern for others should not stop when you close a client’s door: Caring for others is more than just your job, it’s who you are and all that you do including driving safely and not speeding”	“‘Safe’ speeding is okay”

¹The message number also reflects the month in which the message was used within the intervention. ² In all three messages, the main character is described as being a woman dressed in a nurse’s uniform and aged in her mid to late 40’s. Additionally, all three messages concluded with the campaign’s tag-line of, “Slow down, monitor your speed – people are depending on you”.

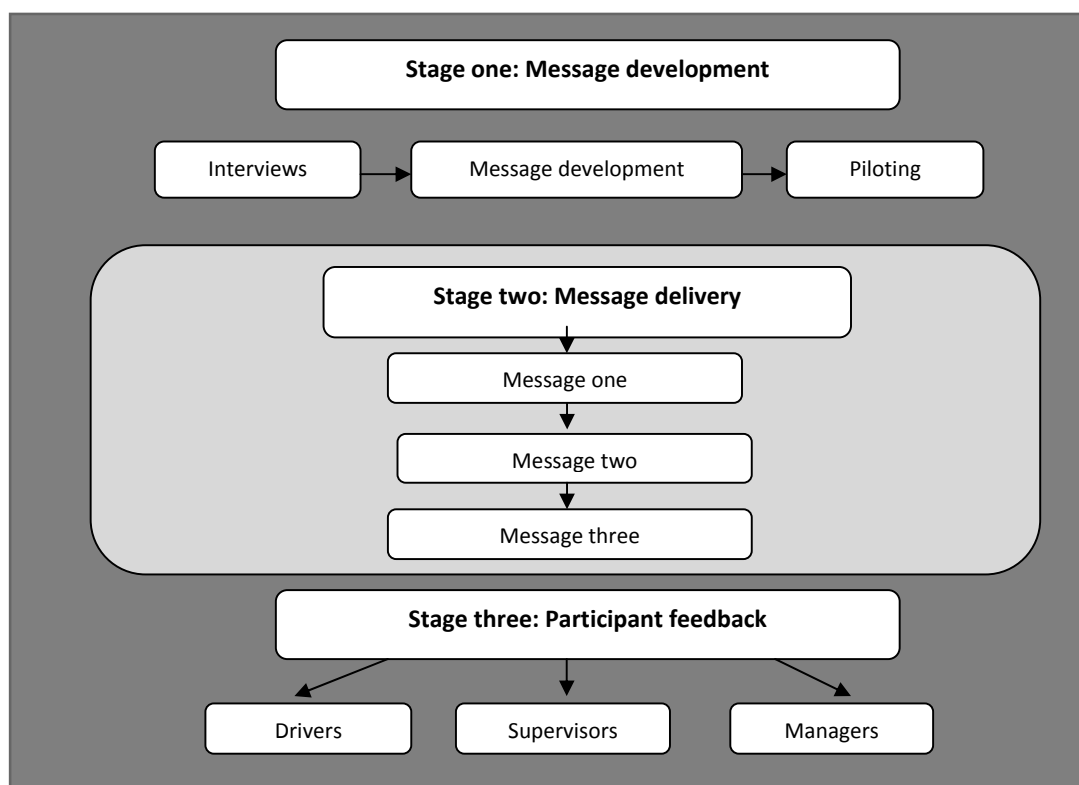


Figure 1: The processes associated with the intervention development, implementation, and feedback.