Post Publication Review

Review

The recently published paper by Vichitvanichphong, Talaei-Khoei, Kerr, Ghapanchi, and Scott-Parker (2016), is interesting because their findings are contrary to previous research which reported that playing video games skills did not transfer to driving. Their review of the literature showed that functional declines related to driving ability in many cases result in accidents that could be avoided if particular video games were used to test the abilities of elderly drivers.

One thing that was not clear from their findings was the effect of training. Vichitvanichphong et al cite literature to show that training can have positive effects on game play and driving ability, and also that functional declines can be counted. But they do not appear to investigate whether the close association between video game skills and driving ability mean that functional declines can be countered in older drivers. Recent work in functional declines, not related to driving, have shown that improvements can be achieved, even for the very old (Bernoth et al., 2016). Furthermore, training in computing skills has been shown to have positive effects in quality of life outcome for community-dwelling older adults, many of whom are still driving (Burmeister, Bernoth, Dietsch, & Cleary, 2016). Although we understand the reasons for choosing to research the young-old, our interest in this review particularly concerns the oldest-old, which is the focus of our research (Eustace & Burmeister, 2013; Harvie, Burmeister, & Eustace, 2014, 2016). It might be interesting to perform the same research on the older age group, as this generation are less familiar with technology. Many of your "early elderly" (young-old) participants would not be fazed by the introduction of the Xbox, while the older generation, many of whom are still quite good drivers, may perform differently with the unfamiliar technology.

Furthermore, it would also be good to see more recent data, rather than the dated references to 2012 and the 2010 claim that "older drivers are overrepresented in crash statistics". Recent ABS data suggests instead that males in the 20-24 age group and males in the 85+ age group which are in fact over-represented. Drivers aged 65-74 seem to be relatively safe with quite low crash   statistics (http://www.abs.gov.au/ausstats/abs@.nsf/0/1CD2B1952AFC5E7ACA257298000F2E76?O penDocument).

The functional declines, particularly the cognitive ones, will be most prominent in the oldest drivers and hence doing similar, further research with that age group would seem worthwhile. In other areas a great deal of literature has been published on the cognitive declines affecting such people, including in relation to technology use (Pakrasi, Burmeister, McCallum, Coppola, & Loeb, 2015; Teipel et al., 2016). However, that requires addressing their needs more directly, including privacy (more important to the oldest-old), accessibility (as Vichitvanichphong et al point out, hearing and vision loss increase with increasing age) and greater professionalism will be required in working with such older people (Bowern, Burmeister, Gotterbarn, & Weckert, 2006; Burmeister, Islam, Dayhew, & Crichton, 2015; Burmeister & Weckert, 2003; Carlson, Farrelly, Frazer, & Borthwick, 2015; Cockcroft, 2006).

In conclusion, the aim of reducing driving related misadventure for older drivers is laudable. It is encouraging to know that video game use represents a low risk means to discovering potential driving difficulties. The research conducted by Vichitvanichphong et al suggests that interventions to overcome/address functional declines and to increase training in driving could mean that older drivers can safely navigate the road for longer, with appropriate help, if through game play the problems of increasing age are discovered early enough.

Gillian Harvie
Project Officer,
Information Technology Services,
Courts Administration Authority,
Adelaide, SA

Dr Kenneth Eustace,
Adjunct Senior Lecturer,
School of Computing and Mathematics,
Charles Sturt University,
Wagga Wagga, NSW.

Author Response

We are pleased to provide a response to the post-publication review of Harvie and Eustace regarding our recent publication, *Good Old Gamers, Good Drivers: results from a correlational experiment among older drivers*. Harvie and Eustace note that our research is particularly interesting as some of the findings, viz a viz that video game skills transfer to real world driving, are contrary to earlier findings in which video game skills did not transfer to real world driving. Harvie and Eustace note that the effect of training, as reported, was unclear however.

In relation to the statement about older drivers being overrepresented in crash statistics. We suggest that while it is not uncommon for delays to be experienced in the publication of complete crash fatality data (particularly as the definition for road crash fatality in Australia pertains to death within 30 days as a result of injuries sustained in a road traffic crash), peer-reviewed publication of research can and frequently does happen via a long and winding path. Such circumstances are evidenced by our publication of some older statistics regarding older driver crash rates, as noted by Harvie and Eustace. To provide some context regarding the involvement of older drivers in car crashes, it is noteworthy that drivers aged 60-74 years comprise 14.5%, and drivers aged >74 years comprise 4.2%, of the licensed population in Queensland in 2015 (DTMR, 2015). In Queensland in 2015 (the latest figures currently available), senior adult road users aged 60-74 years comprised 10.7% of road crash fatalities, and senior adult road users aged >74 years comprised 14.4% of road crash fatalities. In this same period, senior adults road users aged 60-74 years were involved in 14.8% of road crash fatalities, and senior adults road users aged >74 years were involved in 12.8% of road crash fatalities. Regarding hospitalised casualties, in Queensland in 2013 (the latest figures currently available), senior adult road users aged 60-74 years comprised 10.7% of hospitalised casualties, with 17.0% of all hospitalised casualties across the state in Queensland in 2013 arising from crashes involving a senior adult road user aged 60-74 years. During this same period, 4.4% of hospitalised casualties were senior adult road users aged >74 years, and 5.9% of hospitalised casualties arose from a road traffic crash involving a senior adult road user aged >74 years (DTMR, 2016). While it is apparent that the 'older old' are at greater risk of road traffic crash fatality and injury, it is noteworthy that regulation of driving exposure has been found amongst older drivers such that they drive shorter distances and durations, avoiding driving times of increased risk such as peak hour and at night (e.g.,King & Scott-Parker, in press; Meng & Siren, 2012). Accordingly, the true crash fatality and injury risk of senior adult road users may be a simple underestimation at best, and a catastrophic underestimation at worst.

We agree that the need to conduct further research is ever present, as reflected by Harvie and Euestace's comments pertaining to the 'oldest old' drivers.

We acknowledge the sensitivity of this research in relation to privacy issues. For example, what happens if the driving test is considered so bad that the older person should not be on the road or what happens if a serious accident occurs during the driving test? In our ethics application, this was covered through insurance policies and the option for the tester to terminate the test at any time if the tester felt unsafe. However, we do accept that more thought has to be put into this very real area of concern. Perhaps the use of more sophisticated driving simulators could

be an answer. Also the provision of counselling in the case of a bad driving experience that could lead to a crisis in confidence for the older driver may be appropriate. This problem is especially concerning for the older old driver.

Thank-you for your statement on the positive contribution this research may bring. It is the intention of the research to help reduce the road toll through introducing safer ways of helping people maintain their driving skills and the associated mobility which affords access to such amenities as healthcare, entertainment, goods and other services. We hope that this research can be expanded upon and can lead to games developers creating new and more entertaining video games to help people in this area.

Donald Kerr
University of the Sunshine Coast
dkerr@usc.edu.au

Bridie Scott-Parker
University of the Sunshine Coast
bscottpa@usc.edu.au

References

Bernoth, M., Burmeister, O. K., Morrison, M., Islam, M. Z., Onslow, F., & Cleary, M. (2016). The impact of a participatory care model on work satisfaction of care workers and the functionality, connectedness and mental health of community-dwelling older people. *Issues in Mental Health Nursing*, 1-7. doi: 10.3109/01612840.2016.1149260

Bowern, M., Burmeister, O. K., Gotterbarn, D., & Weckert, J. (2006). ICT Integrity: Bringing the ACS Code of Ethics up to date. *Australasian Journal of Information Systems*, 13(2), 168-181.

Burmeister, O. K., Bernoth, M., Dietsch, E., & Cleary, M. (2016). Enhancing Connectedness Through Peer Training for Community-Dwelling Older People: A Person Centred Approach. *Issues in Mental Health Nursing*, 1-6. doi: 10.3109/01612840.2016.1142623

Burmeister, O. K., Islam, M. Z., Dayhew, M., & Crichton, M. (2015). Enhancing client welfare through better communication of private mental health data between rural service providers. *Australasian Journal of Information Systems*, 19, 1-14. doi: http://dx.doi.org/10.3127/ajis.v19i0.1206

Burmeister, O. K., & Weckert, J. (2003). Applying the new software engineering code of ethics to usability engineering: A study of 4 cases. *Journal of Information, Communication & Ethics in Society*, 3(3), 119-132.

Carlson, B. L., Farrelly, T., Frazer, R., & Borthwick, F. (2015). Mediating Tragedy: Facebook, Aboriginal Peoples and Suicide. *Australasian Journal of Information Systems*, 19. doi: 10.3127/ajis.v19i0.1174

Cockcroft, S. (2006). Information Privacy: Culture, Legislation and User Attitudes. *Australasian Journal of Information Systems*, 14(1). doi: 10.3127/ajis.v14i1.7

Department of Transport and Main Roads (DTMR). (2016). *Queensland Road Crash Weekly Report. Report No 954. Year to date to Monday, 2 May 2016*. Available at http://www.tmr.qld.gov.au/Safety/Transport-and-road-statistics/Road-safety-statistics.aspx

Department of Transport and Main Roads (DTMR). (2015b). *Current Queensland Driver's Licences, as at 30 June 2015*. Available at http://www.tmr.qld.gov.au/Safety/Transport-and-road-statistics/Licensing-statistics

Eustace, K., & Burmeister, O. (2013, December). Ethics and Governance of ICT-based social engagement in institutional aged care. Paper presented at the *Seventh Australasian Institute of Computer Ethics Conference*, Burwood.

Harvie, G., Burmeister, O. K., & Eustace, K. (2014, November 24-25). Bringing the oldest-old into the digital age: Overcoming challenges of mobility, literacy, and learning. Paper presented at the *13th National Conference of Emerging Researchers in Ageing*, Flinders University, Victoria Square, Adelaide, South Australia.

Harvie, G., Burmeister, O. K., & Eustace, K. (2016). Assistive Technology Devices for the Oldest Old: Maintaining Independence for the Fourth Age. Paper presented at the *12th IFIP TC9 Human Choice and Computers Conference*, Salford, UK.

King, M. J., & Scott-Parker, B. (2016). Older male and female drivers in car-dependent settings: How much do they use other modes, and do they compensate for reduced driving to maintain mobility? *Ageing and Society*, In Press.

Meng, A. and Siren, A. 2012. Older drivers' reasons for reducing the overall amount of their driving and for avoiding selected driving situations. *Journal of Applied Gerontology*, 5.

Pakrasi, S., Burmeister, O. K., McCallum, T. J., Coppola, J. F., & Loeb, G. (2015). Ethical telehealth design for users with dementia. *Gerontechnology*, 13(4), 383-387. doi: 10.4017/gt.2015.13.4.002.00

Teipel, S., Babiloni, C., Hoey, J., Kaye, J., Kirste, T., & Burmeister, O. K. (2016). Information and communication technology solutions for outdoor navigation in dementia. Alzheimer's & Dementia: *The Journal of the Alzheimer's Association*, 1-13. doi: 10.1016/j.jalz.2015.11.003

Vichitvanichphong, S., Talaei-Khoei, A., Kerr, D., Ghapanchi, A. H., & Scott-Parker, B. (2016). Good Old Gamers, Good Drivers: Results from a correlational experiment among older drivers. *Australasian Journal of Information Systems*, 20. doi: 10.3127/ajis.v20i0.1110