Effective Communication of Driving Feedback: Principles and Strategies for Empowering Older Adults

L. McCauley, K. Van Benthem, B. Wallace, C. Herdman, J. Keillor, F. Knoefel, S. Marshall. *Gerontechnology* 25(s)

Purpose Driving is central to autonomy, identity, and daily mobility for many older adults. Although most older adults aim to drive safely for as long as possible, they often lack consistent, objective measures to monitor changes in their driving abilities [1]. Advances in vehicle sensor technology now enable the collection of naturalistic driving data that capture real-world behaviour, including speed, braking, turns, and interactions with the driving environment. When analyzed using advanced algorithms and artificial intelligence, these data can be translated into individualized feedback on driving habits and performance. Providing such feedback directly to drivers has the potential to enhance self-awareness, promote safer behaviours, and support early mobility planning. However, driving safety and driving retirement are deeply personal and emotionally complex topics. Effective communication is therefore essential to ensure that data-driven driving feedback is understood, trusted, and experienced as supportive rather than threatening. This study examined how naturalistic driving feedback can be communicated to older adults in ways that empower safety, confidence, and informed decision-making. **Method** Qualitative focus groups were conducted with 40 participants, including mature drivers (n = 10) and expert stakeholders (n = 30), such as caregivers, physicians, occupational therapists, dementia care coaches, and automotive insurance providers. Discussions explored how older adults perceive and interpret data-driven feedback, which language is perceived as respectful or stigmatizing, and how feedback can be presented to encourage engagement rather than fear or resistance. Expert participants provided perspectives on best practices and challenges in communicating sensitive driving information. The Transtheoretical Model of Behaviour Change[1] was introduced as a framework for staging feedback according to an individual's readiness to reflect on or modify driving habits. Focus group sessions were audio-recorded, transcribed verbatim, and analyzed using reflexive thematic analysis. Coding was iterative and interpretive, with themes developed through repeated engagement with transcripts and discussion among the multidisciplinary research team and stakeholders to ensure relevance. **Results and Discussion** Thematic analysis identified four communication principles across participant groups: empowerment, personalization, privacy, and simplicity. Participants emphasized that feedback should acknowledge the personal meaning of driving while avoiding judgment, diagnostic language, or loss-of-licence framing. These principles translate into concrete design requirements for gerontechnology and driving feedback systems, including strengths-based, first-person messaging to support driver agency; tailored feedback based on individual driving patterns and self-identified goals; transparent data practices that allow user control; and plain-language, low-cognitive-load interfaces using progressive disclosure. Participants responded positively to staged feedback aligned with the Transtheoretical Model, noting that gradual delivery better matches users' readiness for reflection or behaviour change. Participants also independently cited communication approaches consistent with the SPIKES protocol, underscoring its value as a transferable framework for presenting sensitive driving feedback with empathy and contextual framing in digital systems. Together, these findings inform the design of user-centred feedback technologies that translate naturalistic driving data into supportive insights. While limited by its qualitative design and sample composition, this study provides actionable guidance for the development of driving-related gerontechnology.

References

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Affiliation: Advanced Cognitive Engineering Laboratory, Carleton University, Canada
Email: acelabresearch@gmail.com
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