

Who Provides Feedback to Older Drivers When Driving Ability Tails Off:
The Role of Age Stereotypes

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Abstract

Research has shown that older drivers often apply effective self-regulatory strategies to cope with decreasing abilities. However, self-serving biases might prevent older drivers from identifying the full scope of critical behaviors, making it difficult for them to determine when they should stop driving. To overcome such self-serving biases, feedback from passengers such as relatives or friends is crucial. Because feedback in critical driving situations is likely to elicit negative emotions and is not easy to provide, we studied factors that might facilitate or impede the presentation of feedback in such situations. In particular, we hypothesized that positive age stereotypes would foster the belief that feedback can lead to behavioral change and would thus increase the likelihood that feedback would be provided. We asked 221 individuals between 40 and 60 years of age in a survey whether they had observed a decline in the driving abilities of an older person and whether they had approached this person to talk to her or him about the decline. 110 participants indicated that they had observed such a decline and filled out a questionnaire designed to test our hypotheses. 65 participants indicated that they had provided feedback, 45 participants stated that they had avoided this. Additionally, both groups were asked about their reasons for giving or avoiding feedback. The results support the role of positive age stereotypes as a determinant of effectiveness beliefs and the giving of feedback in the observed situation. In addition, the results indicate that the effects of effectiveness beliefs on feedback behavior are mediated by the intention to provide feedback and thoughts about implementation strategies.

Keywords: driving abilities, older drivers, feedback, age stereotypes

1. Introduction

The distribution of age in Western societies has continuously changed in recent decades toward a relatively larger proportion of older people (Eurostat, 2010; World Health Organization, 2015). With this increase in the proportion of the elderly, the number of older drivers has increased, too, and forecasts predict a further increase within the next decade (Infas, 2017). In addition to these demographic changes, the number of older drivers is further affected by the circumstance that currently more older drivers possess a driver's license and use their vehicles more frequently than in the past (Hakamies-Blomqvist, Wiklund, & Henriksson, 2005). While the process of ageing and the decline of cognitive abilities differs a lot between individuals (Hedden & Gabrieli, 2004), studies on older drivers (e.g., Ben-Bassat & Shinar, 2015; Devlin & McGillivray, 2016; Guo et al., 2017; Horswill, Falconer, Pachana, Wetton, & Hill, 2015) as well as studies on the frailty in older adults (Ostir, Ottenbacher, & Markides) often focus on individuals over 65 years which is in many countries the normal retirement age (Economic Policy Committee, 2009).

Taking these demographic changes into account, it is important to note that drivers over 65 years of age represent a high-risk group in road traffic (Hu, Trumble, Foley, Eberhard, & Wallace, 1998; Marottoli, Cooney, Wagner, Doucette, & Tinetti, 1994; McGwin, Sims, Pulley, & Roseman, 2000). Hence, it is important to study approaches to improve safe driving in this age group (Ball et al., 1998; Baldock, Mathias, McLean, & Berndt, 2006; Charlton et al., 2006; Marottoli & Richardson, 1998; Raitanen, Törmäkangas, Mollenkopf, & Marcellini, 2003; Stalvey & Owsley, 2003).

Researchers have shown that older drivers often identify decreases in their driving abilities and respond with self-regulatory strategies such as using driver assistance systems, avoiding driving at night or when visibility is poor (Baldock et al., 2006; Davidse, Hagenzieker, van Wolffelaar, & Brouwer, 2009; Jones, Cho, Abendschoen-Milani, & Gielen, 2011; Molnar et al., 2015; Raitanen et al., 2003; Sullivan, Smith, Horswill, & Lurie-Beck,

2011). However, self-serving biases might prevent older drivers from considering the full scope of problematic behaviors or from identifying the point at which they should stop driving (Freund, Colgrove, Burke, & McLeod, 2005). Hence, feedback from relatives, friends, or social contacts who observe the driving behavior of the respective people might be valuable (Ackerman et al., 2011; Levasseur et al., 2016; Mårdh, 2016). While previous research has already identified feedback as important (Anstey, Wood, Lord, & Walker, 2005; Linstrom-Forneri, Tuokko, Garrett, & Molnar, 2010), to our knowledge, researchers have not examined the factors that facilitate or prevent people from giving feedback to older drivers when critical incidents have occurred. Indeed, it is conceivable that it is not an easy task to provide critical feedback because such feedback often elicits negative emotions (Belschack & Hartog, 2009).

In the present study, we asked individuals whether they had observed a decline in the driving abilities of an older person and whether they had approached the person to talk about the decline and to give feedback. Most important, we examined the factors that we had assumed would facilitate or impede people from giving feedback. In particular, we hypothesized that positive age stereotypes would foster the belief that feedback can lead to behavioral change and increase thoughts about possible implementations. Thus, through this route, the intention and the likelihood of providing feedback should increase.

In the following section, we discuss potential challenges for older drivers in more detail and illustrate the relevance of feedback from others in order to respond to the arising challenges and a decline in driving abilities in a timely manner. Furthermore, we derive a theoretical model with positive age stereotypes as one potential driver of feedback behavior which might facilitate feedback behavior through strengthening beliefs that feedback can lead to change and thus building the base for intentions to provide feedback and concrete thoughts about implementation strategies.

1.1. Background

Mobility by car is an essential characteristic of a high quality of life for older people as well as the expression of a self-determined everyday life (Burkhardt, 1999; Gardezi et al., 2006; Harrison & Ragland, 2002; Hassan, King, & Watt, 2015, Luiu, Tight, & Burrow, 2017; Shergold, Lyons, Hubers, 2015). Hence, the subjective importance of having one's own car increases at older ages when driving a car becomes the most important means of transportation (Burns, 1999; Richter, Schlag, & Weller, 2011; Rosenbloom, 2001; Tacken, 1998). Accordingly, a reduction or complete abandonment of car driving is perceived as a severe loss of quality of life and self-reliance and can even be accompanied by negative effects on health (Fonda, Wallace, & Herzog, 2001; Freeman, Gange, Munoz, & West, 2006; Marottoli et al. 1997; Oxley & Whelan, 2008; Ragland, Satariano, & MacLeod, 2005).

On the one hand, the relevance of driving a car for seniors is high. But on the other hand, beginning at the age of 65, older drivers represent a high-risk group in road traffic, mainly due to physical constraints (Beckmann & Schlag, 2013; Hu et al., 1998; MacLeod, Satariano, & Ragland, 2014; Marottoli et al., 1994; Owsley, Stalvey, Wells, & Sloane, 1999; Sims, McGwin, Allman, Ball, & Owsley, 2000) and declining cognitive abilities (Anstey et al., 2005; Beckmann & Schlag, 2013; Choi, Lohman, & Mezuk, 2014; De Raedt & Ponjaert-Kristoffersen, 2000; Foley, Masaki, & Ross, 2000; Stutts, Stewart, & Martell, 1998) that are particularly relevant for safe driving. Crash statistics show that an individual's probability of having a car crash increases at the age of approximately 65 years (Federal Statistical Office, 2018), and such car crashes are more likely to be attributed to physical or mental deficiencies (e.g., misappropriation or misbehavior in the event of turning, which is closely related to the mentioned impairments) than to misconduct (e.g., speeding; see Hakamies-Blomqvist, 1993; McGwin & Brown, 1999; Preusser, Williams, Ferguson, Ulmer, & Weinstein, 1998; Ryan, Legge, & Rosman 1998).

At the same time, numerous studies have examined how older drivers deal with the aforementioned impairments. These studies have shown that older drivers are often aware of such impairments and manage to compensate for certain deficits by applying appropriate behavior (Baldock et al., 2006; Breker et al., 2003; Charlton et al., 2006; Fofanova & Vollrath, 2011; Meng & Siren, 2015; Molnar & Eby, 2008; Molnar et al., 2013a, 2013b, 2013c). Indeed, many older drivers have strong self-regulatory abilities that enable them to adapt their behavior, manage their functional, cognitive, and physical impairments, and maintain their independence (De Raedt & Ponjaert-Kristoffersen, 2000; Gwyther & Holland, 2012; Molnar et al., 2015). Therefore, it is crucial for older drivers themselves to be involved in any assessments of their driving ability and for them to be supported in dealing with the results. Moreover, owing to self-serving biases, it is likely that older drivers will not naturally perceive the full scope of their limitations (Freund et al., 2005; Horswill, Sullivan, Lurie-Beck, & Smith 2013; Marotolli & Richardson, 1998; Musselwhite & Haddad, 2010; Urlings et al., 2018). This problem might be particularly relevant when older drivers have to decide whether to stop driving. Hence, it is important for older drivers to get feedback from individuals who have regular contact with them and have directly observed their driving abilities.

A recent U.S. survey of over 4,000 drivers over the age of 50 indicated that the likelihood of feedback is relatively low (Coughlin, Mohyde, D'Ambrosio, & Gilbert, 2004). Only 2% of the respondents reported that other individuals had mentioned anything critical about their driving abilities. Although this study provides some initial insights, it was not the goal of the study to identify factors that impede or facilitate feedback in critical situations.

Providing negative feedback is unpleasant and thus often leads to reluctance and hesitation on the part of the person giving the feedback (Betz, Jones, Petroff, & Schwartz, 2013; Tesser & Rosen, 1975; Yariv, 2006) and defensive responses on the part of the person receiving it (Brett & Atwater, 2001; Ilies, De Pater, & Judge, 2007; Kluger, Lewishon, &

Aiello, 1994). Furthermore, it might put pressure on relationships (Argyris, 1991; Larson, 1984, 1986; Tesser & Rosen, 1972). This holds true when individuals approach elderly drivers to point out their problematic driving behavior (Coughlin et al., 2004). Indeed, it is likely that individuals even hold negative personal norms that prevent them from giving feedback in such situations. Personal norms represent a person's belief about the extent to which relevant others want her or him to show or not to show a certain behavior (Cialdini, Kallgren, & Reno, 1991; Schwartz, 1977). Individuals might hold the belief that everybody is responsible for their own driving behavior and that it is offensive to mention to a person that her or his driving behavior is problematic. Research has shown the powerful role norms play in shaping behavior (Eriksson, Garvill, & Nordlund, 2006; Harland, Staats, & Wilke, 1999; Hopper & Nielsen, 1991; Nikitas, Avineri, & Parkhurst, 2018; Nordlund & Garvill, 2003; Stern, 2000). Therefore, we hypothesized that negative personal norms would make it less likely for individuals who had observed a critical driving situation to form the intention to provide feedback.

Whereas negative personal norms might have a negative effect on the intention to provide feedback, the belief that feedback can be effective might elicit the intention to give feedback. According to the theory of planned behavior (Ajzen, 1991), beliefs about the consequences of behavior are important drivers of behavior beyond norms. Effectiveness beliefs, as they are understood in the current research, are related to the concept of self-efficacy (Bandura, 1977). The self-efficacy construct refers to a person's belief that she or he is able to successfully achieve a desired outcome (Bandura, 1977). The powerful role of self-efficacy on one's motivation, self-regulation, and achievement has been demonstrated in various domains such as education (e.g., Pajares, 1996; Schunk, 1991), health (e.g., McAuley & Blissmer, 2000; Strecher, McEvoy DeVellis, Becker, & Rosenstock, 1986), business (Stajkovic & Luthans, 1998; Zhao, Seibert, & Hills, 2005) and driving (Carmel, Rechavi, &

Ben-Moshe, 2014; Gwyther & Holland, 2012; Jouk et al., 2014; Moták, Gabaude, Bougeant, & Huet, 2014).

In line with the typical reasoning in the theory of planned behavior (Ajzen, 1991), we hypothesized that the belief that feedback can be effective would increase the likelihood to form the intention to give feedback and also to think concretely about how to do it (e.g., to provide alternatives to driving). Research has shown that such concrete thoughts about implementation strategies increase the likelihood of action in line with goal intentions (Gollwitzer, 1999; Gollwither & Sheeran, 2006). Hence, we propose that the belief that feedback will be effective should increase the likelihood that behavior will be mediated by the formation of goal intention and thoughts about concrete implementation strategies.

Beliefs about the effectiveness of feedback might be at least partly grounded in people's personal experiences. However, we assume that age stereotypes have an important impact on these beliefs, as well. Stereotypes of aging are mental representations that characterize individual or social conceptions and expectations about the elderly, aging, and old age (Horton, Baker, & Deakin, 2007; Kornadt & Rothermund, 2011; Ory, Hoffman, Hawkins, Sanner, & Mockenhaupt, 2003). Stereotypes in general possess an important regulative function for our coexistence as they help us align our behavior with new stimuli by helping us simplify our environment (Macrae & Bodenhausen, 2000). Age stereotypes can be positive or negative and also vary between contexts (e.g., Casper, Rothermund, & Wentura, 2011; Diekman & Hirnisey, 2007; Kite, Stockdale, Whitley, & Johnson, 2005). For example, common positive stereotypes about older people include the beliefs that they are wise, generous, experienced, loyal, friendly, and reliable (Hummert, Garstka, Shaner, & Strahm, 1994; Swift, Abrams, & Marques, 2013).

Negative age stereotypes often refer to diminishing abilities regarding physical or cognitive performance (Fiske, Cuddy, Glick, & Xu, 2002; Lamont, Swift, & Abrams, 2015). Moreover, younger members of society often see individuals at very old ages as a burden on

their families (Hummert et al., 1994; Swift et al., 2013; Swift, Abrams, Lamont, & Drury, 2017). A context in which old age seems to be viewed in predominantly negative ways is traffic. Individuals often perceive older drivers as being slow, unsafe, shy, nervous, and excessively cautious (Davies & Patel, 2005; Joanisse, Gagnon, & Voloaca, 2012; Parker, Macdonald, Sutcliffe, & Rabbitt, 2001). Also, individuals assess older and younger drivers differently when car crashes occur. For example, Carver and de la Garza (1984) found that participants tended to overestimate the influence of stereotypical characteristics and that they disregarded contextual factors when they assessed the guilt of an older driver in a described car crashes.

Age stereotypes or negative attitudes toward the elderly can lead to discrimination and negative consequences for the elderly. Older people might experience disadvantages and discrimination in employment (Chiu, Chan, Snape, & Redman, 2001; Duncan & Loretto, 2004; Posthuma & Campion, 2009), medical treatment (Bowling, 2007), and even within the family environment (Ramsey-Klawnsnik, 2004). But it is important to mention that research has also shown positive effects of positive age stereotypes on the well-being and behavior of the elderly in a number of studies. For example, elderly people with a positive view of age pursue more physical activities (Levy & Myers, 2004; Wurm, Tesch-Römer, & Tomasik, 2007; Wurm, Tomasik, & Tesch-Römer, 2010) and are more likely to seek new activities (Carstensen & Hartel, 2006; Levy, Slade, Kunkel, & Kasl, 2002; Levy & Myers, 2004). Levy (1996) even showed that the unconscious activation of implicit positive age stereotypes improved the memory of older people and their self-efficacy.

Not only do positive age stereotypes affect the behavior of older people who hold such stereotypes, but they also influence the ideas and expectations of the people who interact with older people (Casper et al., 2011; Heckhausen, Dixon, & Baltes, 1989; Hummert, 1990; Kornadt & Rothermund, 2011). Therefore, we hypothesized that individuals with positive age stereotypes would hold more positive beliefs about the effects of feedback regarding driving

behavior compared with those with less positive age stereotypes or those with negative age stereotypes. Moreover, in line with the reasoning presented above, we propose that effectiveness beliefs increase the likelihood that people will have the intention to provide feedback, encourage thoughts about how to provide feedback, and finally, support feedback behavior. Hence, we hypothesized that positive age stereotypes would affect feedback behavior and that this effect would be mediated by beliefs about the effectiveness of feedback, the formation of intentions to provide feedback, and thoughts about the implementation.

We tested our hypotheses in a study in which we asked participants, first, whether they had observed a critical driving behavior in an older person, and if yes, whether they had approached the older person to talk about the behavior. For all participants who had observed a critical behavior, we measured their age stereotypes, effectiveness beliefs, intentions to provide feedback, implementation strategies, and demographics. The proposed model is depicted in Figure 1.

2. Material and methods

2.1. Participants

We recruited 221 participants for a survey via a German online panel. Because the determinants of feedback behavior could only be studied in participants who had observed problematic driving behavior, we first asked participants whether they had ever noticed that the driving abilities of an elderly person (e.g., a relative or a friend) had become weaker. 110 (49.8%) of the participants indicated that they had noticed a decline in the driving abilities of an elderly person. All of these 110 participants answered a questionnaire that included questions about feedback, negative personal norms, age stereotypes, effectiveness beliefs, intentions, implementation strategies, and demographics.

The participants who completed the final questionnaire were between 40 and 60 years old ($M = 52.1$ years; $SD = 5.22$). A total of 50 participants (45.5%) were women, and 60

(54.5%) were men. Forty-five (40.9%) of the participants lived in villages with a population of less than 20,000. Twenty-eight (25.5%) lived in a small town (20,000 to 100,000 residents), and the remaining 37 (33.6%) lived in a large city (over 100,000 residents). A total of 104 (94.5%) of the participants had a driver's license, and 98 (89.1%) of them were active car drivers.

2.2. Measures

As a measure of *feedback behavior*, we asked participants whether they had spoken to an elderly person about declining driving abilities (1 = *no*; 2 = *yes*). Moreover, we presented open-ended questions that asked who the elderly driver was, what the reason for and the content of the conversation was, and why they spoke to the elderly driver or why they avoided doing so.

We measured *age stereotypes* with four items adapted from Kornadt and Rothermund (2012): "Older people are calm and prudent when dealing with problems"; "It is easy for older people to maintain friends and acquaintances"; "Older people find the right solution for important life issues"; "Older people can deal with everything well on their own." Participants answered the items on a 6-point scale (1 = *do not agree at all*; 6 = *fully agree*). We averaged the items into a single scale (Cronbach's alpha = .72). High values indicate positive age stereotypes.

We used three items to measure the belief that feedback will be effective (*effectiveness beliefs*): "If I give feedback to another person about her or his driving behavior, the person can improve her or his driving behavior / the person can better assess her or his driving ability / the person will be open to implementing my advice." Participants answered the items on a 6-point scale (1 = *do not agree at all*; 6 = *fully agree*). We averaged the items into a single scale (Cronbach's alpha = .83). High values indicate that participants believe that feedback will be effective.

We measured *negative personal norms* with seven items: “I find it difficult to give feedback to another person about her or his driving behavior because everyone should decide for herself or himself how long she or he will be an active driver / because this topic is very personal / because most people are convinced that they can assess their driving ability well / because I do not like to get involved.”; “If I give feedback to another person about her or his driving behavior, the person might feel misjudged / the person might be hurt”; “If I advise another person to use her or his car significantly less, I would be afraid of the person’s reaction.” We averaged the items into a single scale (Cronbach’s $\alpha = .79$). High values indicate that participants hold negative personal norms about giving feedback on driving behavior.

We measured the *intention to provide feedback* with five items: “I would speak to another person about her or his driving ability if I were concerned about the well-being of the person / if I realized that this person repeatedly makes mistakes while driving / if I had the impression that the person’s ability to drive is limited / if the person had caused a car crash / if I had the impression that the person should not drive because of her or his medical conditions.” We averaged the items into a single scale (Cronbach’s $\alpha = .85$). High values indicate that participants would form intentions to approach an older driver if they observed critical driving behavior or critical physical conditions.

We assessed whether participants had ideas about *implementation strategies* with three items: “If I speak to another person about her or his driving ability, I will make suggestions about alternatives to driving / I will try to give the best possible picture of getting older / I will point out the serious consequences of an car crash.” We averaged the items into a single scale (Cronbach’s $\alpha = .79$). High values indicate that participants form intentions about how to provide feedback.

3. Results

3.1. Characteristics of the older driver with declining driving abilities

One-hundred-ten of 221 participants reported that they had observed declining driving abilities of an older driver (49.8%). The older driver with declining abilities was most often the participants' father ($n = 33$), friend ($n = 21$), or mother ($n = 12$). The average age of the driver was 73.1 years ($SD = 7.1$).

3.2. Occurrence, determinants and topics of feedback

Sixty-five participants of 110 participants who had observed declining driving abilities provided feedback (59%). As the main reason for giving feedback, 27 participants mentioned that they had observed a traffic hazard when riding as a passenger (e.g., driving errors), 18 participants mentioned concerns about the safety of the person or other passengers in the car (e.g., their own children), 11 participants mentioned a general fear that something dangerous might happen, and 7 participants mentioned perceived physical or cognitive limitations. Two participants did not report any specific reason.

As regards the topic of the conversation, participants indicated that they had spoken with the elderly driver about uncertainty in driving (14 participants), physical limitations (9 participants), the possibility that the older person would stop driving (9 participants), the ability to concentrate (8 participants), responsiveness (8 participants), driving speed (5 participants), changes in the driving style in general (5 participants), driving errors (3 participants), and taking part in a performance-based driving evaluation (1 participant). Three participants did not report a specific topic.

The reasons that were mentioned for avoiding feedback were, in particular, the expectation that the elderly driver would react negatively (9 participants), worry about the response to the feedback (8 participants), no need for feedback because of self-regulation by the elderly driver (8 participants) or no perceived responsibility (7 participants). Six

participants mentioned that they did not have the opportunity to provide feedback. Seven participants did not indicate a specific reason for avoiding feedback.

3.3. Path Analysis of the Hypothesized Model

The descriptive statistics for the applied measures are presented in Table 1 and correlations between the measures are depicted in Table 2. To test the hypothesized model, we used path analysis with maximum likelihood estimation. The proposed path analysis was tested in Stata 15.0 (StataCorp., 2017). The path coefficients are depicted in Figure 2. An overview of the relevant direct and indirect effects is presented in Table 3. The estimation of the hypothesized path model resulted in a good fit, $\chi^2(9) = 8.16$, $p > .32$, RMSEA = .039, CFI = .981, TLI = .963, and SRMR = .051.

As expected, the more positive the age stereotypes were, the higher were participants' beliefs that feedback would be effective ($\beta = 0.28$, $p = .002$). Moreover, the higher their effectiveness beliefs, the more likely participants were to form intentions to provide feedback ($\beta = 0.21$, $p < .003$) and have concrete implementation strategies in mind ($\beta = 0.17$, $p = .039$). In addition, implementation strategies increased the likelihood that actual feedback was given ($\beta = 0.28$, $p = .008$). The direct path from the intention to provide feedback was not significant ($\beta = 0.10$, $p = .328$). However, the indirect path from intention to provide feedback mediated by implementation strategies was significant (for the indirect effects see Table 3).

In contrast to participants' expectations, the path from negative personal norms to intentions was not significant and close to zero ($\beta = 0.006$, $p = .945$). Thus, negative personal norms were less important than expected.

4. Discussion

The driving abilities of drivers in old age often decline considerably and make it necessary for them to adapt their driving behavior (Baldock et al., 2006; Breker et al., 2003; Charlton et al., 2006; Fofanova & Vollrath, 2011; Meng & Siren, 2015; Molnar & Eby, 2008; Molnar et al., 2013a, 2013b, 2013c). Research has shown that older drivers often apply effective self-regulatory strategies to cope with the decreases in their abilities (De Raedt & Ponjaert-Kristoffersen, 2000; Gwyther & Holland, 2012; Molnar et al., 2015). However, self-serving biases might prevent older drivers from identifying the full scope of critical behaviors and determining when to stop driving. To overcome such self-serving biases, feedback from passengers such as relatives or friends is crucial (Anstey et al., 2005; Linstrom-Forneri et al., 2010). Because feedback in critical driving situations is likely to elicit negative emotions and is not easy to provide, we studied factors that might facilitate or prohibit feedback in such situations. In particular, we hypothesized that positive age stereotypes would foster the belief that feedback can lead to behavioral change and would increase passengers' likelihood of providing feedback. The results support the role of positive age stereotypes as determinants of effectiveness beliefs and also indicate that the effects of effectiveness beliefs on feedback behavior are mediated by intentions to provide feedback and thoughts about implementation strategies.

Previous research on age stereotypes has shown that positive age stereotypes elicit positive expectations in the elderly and increase their motivation to pursue goal-directed behavior that is beneficial for them (Carstensen & Hartel, 2006; Levy & Myers, 2004; Wurm et al., 2007; Wurm et al., 2010). Also, research has shown that age stereotypes are related to the expectations of other individuals and their behavior (Heckhausen et al., 1989; Hummert, 1990; Kornadt & Rothermund, 2011). In line with this research, we found in the present study that positive age stereotypes were positively related to the belief that feedback on driving behavior can be beneficial and effective when individuals observe declining driving abilities.

Thus, even though the present study was based on a cross-sectional design and correlational analyses, it provides further support for the idea that positive age stereotypes are powerful drivers of expectations and associated behavior.

We found that holding positive age stereotypes can help nonexpert interaction partners (e.g., relatives or friends) believe that it can be productive to provide feedback to elderly drivers, a finding that is interesting and promising. Indeed, researchers have repeatedly shown that negative age stereotypes are malleable (Hess et al., 2003; Levy, 1996; Stein, Blanchard-Fields, & Hertzog, 2002). Levy et al. (2014), for example, tested different methods to strengthen positive age stereotypes and found significant improvements of the age stereotypes across 8 weeks. Also, it is clear that age stereotypes are not generally negative and that positive components of age stereotypes such as wisdom and foresight can be emphasized. Future studies might explore whether interventions that emphasize a positive view of older age groups can also help to increase beliefs in the effectiveness of giving feedback to the elderly and will help more people approach elderly drivers to find good solutions for dealing with their declining abilities.

A promising finding of the present research is that many participants mentioned that they had spoken with an elderly person about her or his declining driving abilities or related behavior. In a previous study in the US (Coughlin et al., 2004), elderly drivers were asked directly whether they had received such feedback. The authors found that only very low proportions of elderly drivers had received such feedback. In this previous study, however, a broader sample of elderly drivers had been interviewed, so the sample was not limited to drivers with declining driving abilities. Nevertheless, it is likely that the percentage we observed in the current study was biased by social desirability to some extent.

Our main assumption was that positive age stereotypes would foster the belief that feedback can lead to behavioral change. Meta analyses have shown that such beliefs of effectiveness (perceived behavioral control and self-efficacy) significantly contribute the

prediction of behavior (Armitage & Conner, 2001; McEachan, Conner, Taylor, & Lawton, 2011). In accordance with this prior research, the present research found that such effectiveness beliefs facilitate intentions to provide feedback. Moreover, the present research suggests that such intentions impact feedback behavior mediated by thoughts about how to implement feedback. Thus, the results are in line with the theory of planned behavior (Ajzen, 1991) which stresses the role of behavioral intentions and models which are based on the idea that concrete plans for their implementation increase the likelihood that intentions lead to behavior (Gollwitzer, 1999). Indeed, we suppose that concrete plans for how to provide feedback might not only facilitate the giving of feedback, but could also be the key to convincing a caring friend or relative to provide feedback after observing that an elderly driver needs to make changes.

When we planned our research, we expected negative personal norms to be a barrier that would be very difficult to overcome. We thought that people who held the belief that driving behavior is a private matter or the belief that other people should not intrude in this private space would be very unlikely to form an intention to provide feedback. Indeed, such negative norms were evident in the present sample with a mean value above the midpoint of the scale. However, we were surprised that negative personal norms were not a significant negative predictor of feedback intentions in our model. Because previous research has found considerable correlations between subjective norms and intentions (Rivis & Sheeran, 2003), the assumption of a path between personal norms and intentions was well reasoned and the result unexpected. However, it is possible that negative personal norms are less relevant for feedback on driving behavior because problematic driving behavior is often observed in a family context where individuals might feel rather the norm that they should be responsible. Indeed, a high number of participants mentioned that the elderly driver they referred to was their own father or mother.

5. Limitations

In the present study, we recruited participants between 40 and 60 years of age, because participants in this age often have parents who are older drivers. The results show that indeed about 50 percent of the participants had observed problematic driving behavior of an older adult. However, also younger participants might observe problematic driving behavior of older adults, even with a lower likelihood. Importantly, the results of the present study cannot be generalized to younger participants. We cannot rule out, for instance, that negative personal norms are more important obstacles according to providing feedback for younger participants than they were for the participants in our study. Younger participants might possess a strong belief not to instruct people who are a lot older than they are. Moreover, it is important to note that the high percentage of problematic driving behaviors of family members in our study might have led to an underestimation of the effect of negative personal norms. It is possible that negative personal norms are important determinants of the intention to provide feedback when problematic driving behavior of drivers outside the family has been observed. Finally, we would like to note that although the usage of an online panel gave us the opportunity to recruit a heterogeneous and demographically broad sample which we could not have recruited without extensive effort otherwise, we have to stress that self-selection might have taken place and that participants who did not perceive the study as interesting probably did not participate. Hence, even if the used online sample includes participants from different demographical and educational backgrounds, it cannot be considered representative. Future studies should examine the drivers of feedback behavior of individuals with large (ideally representative) samples that increase the generalizability of the results and also include an extensive study of feedback to problematic driving behavior of non-family members.

6. Conclusions

To conclude, the present study provides initial evidence that individuals with positive age stereotypes are more likely to believe that feedback behavior can be effective.

Furthermore, the present study suggests that such effectiveness beliefs shape behavior by facilitating the behavioral intentions to provide feedback and to think about what kind of concrete advice to give when providing feedback. Future studies might test whether interventions that stress the positive aspects of age stereotypes increase the likelihood that individuals will provide feedback to elderly drivers to support effective self-regulation and to find alternatives to driving when it is necessary for the elderly person to stop driving. In addition, future research could investigate whether positive age stereotypes also contribute to the elderly drivers' acceptance of feedback on driving behavior and required restrictions.

Finally, a challenging task will be to get more insights into how to tailor feedback to the elderly. Indeed, feedback should take the characteristics of the age group into account (Bieri, Florack, & Scarabis, 2006). Feedback itself could refer to positive age stereotypes, but it is an open question whether it should stress the consequences of failure and necessary prevention or the positive views on the improvement of the quality of life (Florack, Keller, & Palcu, 2013; Leder, Florack, & Keller, 2013, 2015).

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Table 1*Descriptive Statistics for the Applied Scales (n = 110)*

Measure	<i>M</i>	<i>SD</i>	No. of items	α
Age stereotypes	3.20	0.81	4	.72
Effectiveness beliefs	3.29	1.14	3	.83
Negative personal norms	3.84	0.97	7	.79
Intention to provide feedback	5.23	0.85	5	.85
Implementation strategies	4.54	1.12	3	.79
Feedback behavior	1.59	0.49	1	-

Table 2*Bivariate Correlations between All Measures in the Hypothesized Model (n = 110)*

Measure	1.	2.	3.	4.	5.	6.
1. Age stereotypes	1.0					
2. Effectiveness beliefs	.28**	1.0				
3. Negative personal norms	-.14	-.16	1.0			
4. Intention to provide feedback	-.03	.28**	-.04	1.0		
5. Implementation strategies	.00	.30**	.09	.51**	1.0	
6. Feedback behavior	-.02	.16	-.08	.24*	.33**	1.0

* $p < .05$. ** $p < .01$.

Table 3*Direct, Indirect, and Total Effects (Unstandardized Coefficients) (n = 110)*

<i>Path</i>	<i>Causal Effects</i>		
	<i>DE</i>	<i>IE</i>	<i>TE</i>
Age stereotypes → Effectiveness Beliefs	.39**	–	.39**
Age stereotypes → Intention	–	.08*	.08*
Age stereotypes → Implementation strategies	–	.12*	.12*
Age stereotypes → Feedback behavior	–	.02*	.02*
Effectiveness Beliefs → Intention	.21**	–	.21**
Effectiveness Beliefs → Implementation strategies	.17*	.12**	.29**
Effectiveness Beliefs → Feedback behavior	–	.05*	.05*
Negative personal norms → Intention	.01	–	.01
Negative personal norms → Implementation strategies	–	.00	.00
Negative personal norms → Feedback behavior	–	.00	.00
Intention → Implementation strategies	.60***	–	.60***
Intention → Feedback behavior	.06	.07*	.13*
Implementation strategies → Feedback behavior	.12**	–	.12**

DE = direct effect; IE = indirect effect; TE = total effect. * $p < .05$. ** $p < .01$. *** $p < .001$.

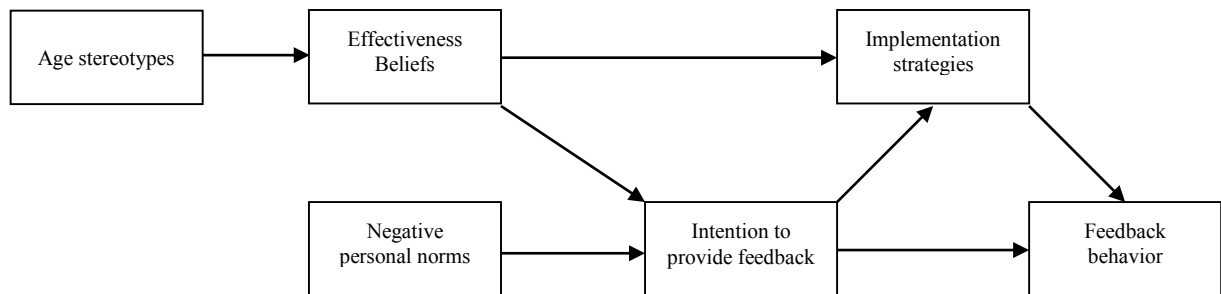


Figure 1. Hypothesized path diagram for the effects of age stereotypes, effectiveness beliefs, negative personal norms, intention to provide feedback, and implementation strategies on feedback behavior ($n = 110$).

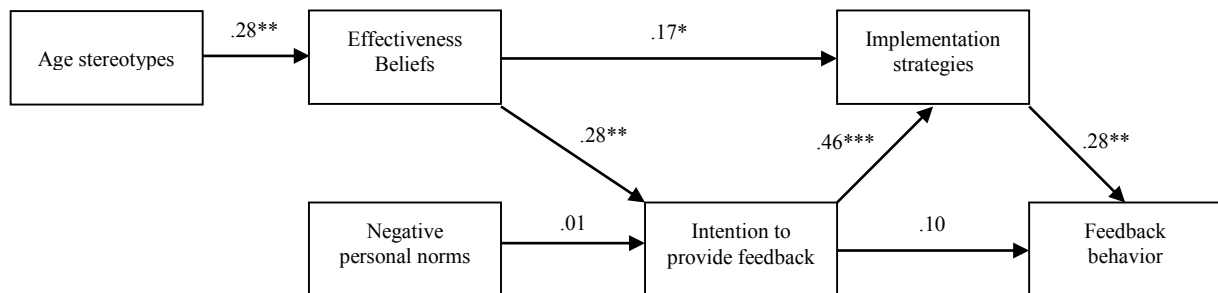


Figure 2. Path diagram for the effects of age stereotypes, effectiveness beliefs, negative personal norms, intention to provide feedback, and implementation strategies on feedback behavior ($n = 110$). Standardized effects are reported. $*p < .05$. $**p < .01$. $***p < .001$.