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Tipaldi, Petra ; Natter, Martin

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RESEARCH ARTICLE

Older adults' decisions on smart home systems: Better put an age tag on it!

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Abstract

Addressing the demands of our aging society, technologies such as smart home systems enhance older adults' independence and enable them to live longer at home. Yet, older adults tend to avoid, delegate, or defer decisions, and smart home systems are rarely used by individuals over the age of 65. Drawing on research on choice overload and age labels, we investigate across four studies how the presentation of smart home systems can influence the decision-making process of older adults ages 65+ by mitigating choice complexity and, consequently, choice avoidance. We argue that age-framing of complex systems makes the choice options easier to process for older adults than does price-framing, the current market standard. We find that age-framing positively affects the rate of choice, and we identify reduced choice complexity as the underlying process. Our research further demonstrates that family members, as important co-deciders, evaluate decisions made on age-framed alternatives more positively, thus making it easier for older adults to justify their decisions. We thus contribute to research on the decision-making of older adults in general and on age labels in particular, and we identify important practical implications for providers of high investment products for older adults.

KEYWORDS
age-related labels, aging society, choice overload, decision making of older adults, smart home systems

1 | INTRODUCTION

Healthy aging is a global priority (Klusmann et al., 2021), as the aging of the general population poses several challenges to societies and individuals worldwide (see, e.g., United Nations, 2019). On a societal level, the rapid growth of older age groups puts pressure on social and healthcare systems, adversely impacts the potential support ratio, and strains the labor market (United Nations, 2019). At the same time, the workforce in the care sector is shrinking, and access to informal care is decreasing, resulting in a call for alternative care options for the future (Mather et al., 2015; Oderanti & Li, 2018). On an individual level, the current pandemic has demonstrated the challenge of and urgency for older adults' independence. Due to changes associated with aging (physical, sensory, and cognitive), older adults more frequently suffer from disabilities and are at greater risk of injuries, for example, those arising from falls (WHO, 2021).

Technology firms have recently taken note of these challenges and have integrated various technologies such as sensors and trackers into smart home systems. Smart home solutions can allow older adults to live more safely and independently, making it possible

for them to remain longer in their own homes (Gilly et al., 2012; Morris et al., 2013). Monitoring devices, for example, can track inhabitants' well-being and keep an apartment or home secure, helping to compensate for forgetfulness or dementia (Yousaf et al., 2020). Wearable devices such as emergency watches can track their wearers' exact whereabouts and issue a call for help in times of distress.

Although living at home seems to be preferred by older adults over other solutions (Statista, 2011; Techniker Krankenkasse, 2021), only 7% of people aged 55+ years own a smart home device (Statista, 2021). Indeed, in 2015 fewer than 30,000 homes in all of Western Europe used solutions for older adults (Branca et al., 2016).

In the current study, we investigate the decision-making process as a possible source of this discrepancy. The decision of whether to purchase a smart home system confronts older adults with a complex choice involving significant financial investment and having important implications for their personal health. The current market practice is to present smart home systems with labels such as "Economic" or "Premium." Drawing on research into the decision-making of older adults in terms of choice overload and stress (e.g., Moschis, 2007a, 2012, 2021), we argue that such price-framing increases choice complexity and thus leads to decision avoidance. Considering as well research on age labels (e.g., Weijters & Geuens, 2006), we propose that age-framing (vs. price-framing) reduces decision-making complexity and thus the rate of decision avoidance by older adults. In addition, we investigate how framing affects younger relatives' evaluation of decisions made by their older relatives. By considering all stakeholders in this way, we achieve a more holistic view of the purchase decision.

By way of a brief overview, across four studies we investigate how presenting choice alternatives as solutions for the user's age (age-framing) versus focusing on the value and function of the product or service (price-framing) can positively influence the choice by older adults to purchase a smart home system. First, we investigate reduced choice complexity as the underlying process for this proposed effect (Study 1). Then, we replicate our findings with (unpaid) older adults on social media (Study 2). In addition, we investigate how increased age (Study 1) and the provision of low-priced options (Study 3) serve as boundary conditions on the effects of age-framing. Finally, given that family members have a personal stake in these purchase decisions, we investigate how framing affects a family member's judgment of an older adult's decision (Study 4).

Our results indicate that for older adults, age-framing reduces choice complexity in terms of decision diligence (Study 1) and time needed to make the decision (Studies 2 and 3), even when alternatives are taken into consideration (Study 3). As a boundary condition, we find that advanced age offsets the effect of simpler decision-making due to the increase with age of a pronounced status quo bias (Study 1). Furthermore, we find that the positive effect of age-framing disappears if the target group does not (proportionally) include the youngest age group labeled (Study 3). Turning finally to the consideration of family members as stakeholders, we find that when evaluating a decision already made by an older relative,

age-framed decisions are viewed more favorably, therefore making it easier for the older adult to justify their decision (Study 4).

To our knowledge, we are the first to experimentally investigate how the age-framed (vs. price-framed) presentation of high-tech systems simplifies the purchase decision-making of older adults. Our contribution is threefold: First, we contribute to the research on decision-making of older adults in general and extend the scarce but important research on age-related labeling. Second, as "older individuals are not islands" (Kapp, 1991; p. 622), we contribute to existing research on age labels by investigating the perception of co-deciders, namely, younger relatives of the older adults making purchase decisions. And third, we contribute to research on choice overload by showing how target-group-relevant framing can help reduce the difficulty of choice for older adults within an important societal context.

The remainder of this paper is structured as follows. We first provide an overview of the relevant research on older adult decision making and choice overload, followed by an overview of the research on age labels. After outlining our hypotheses, we then present the methodology and results of the four experiments that make up the present study. We conclude with a general discussion of our findings, including both relevant theoretical contributions and important practical insights.

1.1 | Theoretical background

The decision to purchase a smart home system is affected by the wide range of offers available, the various stakeholders involved in the decision-making process, the limited financial resources available, limitations on the awareness of older adults' needs, and the technical complexity of the system. These factors increase choice complexity, choice task difficulty, and preference uncertainty—all drivers of choice overload (Chernev et al., 2015). This choice complexity stands at odds with older adults' limited processing capacity, as cognitive processing deteriorates with age (Hashtroudi et al., 1994). This, in turn, leads to more errors and less efficient decisions (e.g., Thoma & Wechsler, 2021), especially when older adults are confronted with complex decision-making (Carpenter & Yoon, 2011).

In times of stress, older adults rely on secondary coping strategies (Heckhausen, 2002) such as decision avoidance (e.g., Okun, 1976), deferral, and delegation (Moschis, 2007a). Older adults are also less likely to seek more information or to use heuristics, relying on prior experience or leveraging category-based processing (Moschis, 2007a). Especially in health-related contexts, older adults tend to let relatives or professionals make decisions for them (Löckenhoff & Carstensen, 2004; Mather, 2006).

For this study, we drew upon existing age-labels research to identify heuristics that can reduce choice complexity (Table 1). Age labels are linguistic "elements […] that reference an older age (e.g., elderly models, 'senior citizen' labels, or explicit age specifications as 'over 50')" (Tepper, 1994; p. 503). In an early work, Tepper (1994) experimentally tested senior discounts against "special" discounts. She

TABLE 1 Research on age-labels

	Theoretical perspective	Context	Method	Findings
Tepper (1994)	Labeling theory	Senior discounts	Depth interviews, experiment	Senior discounts invoke negative feelings of self-devaluation or stigmatization for older adults (50–65 years), but not for 65 years or older
Weijters and Geuens (2006)	Alternative-stage model	No product, age-related labels ("senior," "50+," "retired," "third age," "elderly")	Interviews, Quantitative survey	Associations towards "senior," "50+," "retired," are positive, towards "elderly," "third age" negative.
Moschis and Mathur (2006)	Self-concept: subjective age	General interest/usage of dietary meals, self-diagnostic medical equipment, hair- and face-care products for seniors, and discounts	Longitudinal surveys, depth interviews	The aging person's evaluation and acceptance of old age-targeted marketing stimuli is positively associated with one's subjective age.
Moschis et al. (1993)	Socialization model	Special sections in magazines and newspapers, products for senior needs, senior discount	Survey	Older people are "socialized" to accept age-based marketing stimuli directed at them. Age does not predict the older person's acceptance of age-based marketing stimuli.
Wolf et al. (2014)	Social identity theory	Senior transport tickets, education courses for seniors, senior excursions, special sports courses; senior discounts (entertainment, museums, restaurants)	Telephone interviews	Identifying as retiree and changing postretirement consumption patterns increases positive response to age-based marketing stimuli. Cognitive age moderates this relationship negatively, differences across the types of stimuli considered.
This article	Choice overload and stress perspective	Smart home for elderly, complex decision making on high-investment product involving several stakeholders	Four experiments with older adults and family members	Age-framed (vs. price-framed) smart home options increase choice probability for older adults, due to a reduced choice complexity. Younger relatives evaluate age-framed (vs. price-framed) decisions more positively, making it easier for older adults to justify the decision.

found age labels to evoke negative feelings due to self-devaluation and stigmatization. However, this effect was limited to individuals aged 50 to 65 years and did not occur for adults over 65 years of age.

Moschis and Mathur (2006) further found that the evaluation and acceptance of age–targeted marketing stimuli depends on an individual's subjective perception of their own age. In another work, Weijters and Geuens (2006) found that the evaluations of age-labels depend on the specific type of label involved. While the labels "elderly" and "third age" lead to negative associations, "senior," "50+," and "retired" are perceived more positively. Additionally, they found the degree to which an age-label aligned with the individual's self-concept impacted the person's evaluation of the age-label. Similarly, Wolf et al. (2014) found that an older adult's identification with the role of retiree, along with their changed consumption behavior, influenced their response to age-related marketing stimuli. Wolf et al. further found that subjective age moderates the reaction to age-related discounts and age-labeled products. In general, research on age-labels has so far focused on the acceptance of age-labels on daily products for seniors or age-labels associated with senior discounts. A particular question of interest has been how older adults' self-concept influences the evaluation, usage, and acceptance of such products. The existing research suggests that age-labels tend to be evaluated positively, especially by older consumers who identify with the "senior" role. In this present study, by investigating perceptions of age-labels in a high-investment, high-tech context having consequences for several stakeholders, we seek to break new research ground on the effectiveness of age-labels. Building on theories of decision making by older adults and the effects of choice overload, we aim to demonstrate how age-labels simplify the decision-making process for older individuals and strengthen the justification of these decisions for involved family members. By expanding the age-label literature in this way to consider family members' perception of older adults' decisions, we offer a more holistic view of the decision process.

1.2 | Hypotheses

Purchase decisions regarding smart home systems confront older adults with a complex choice that they may not fully understand within an emotionally-loaded context: their future decline and increasing need for support (a predicament they might not yet accept; see, example, Canvin et al., 2018). Unsure about their future needs, the technologies involved, and the overall stressful situation, older adults may be affected by choice overload (Chernev et al., 2015) and be forced to rely on secondary coping strategies (Moschis, 2007a).

Current market practice in the smart home domain emphasizes the value and system functionality of the product (e.g., "premium," "safety system"), an approach that arguably does not provide meaningful guidance (Venkatesh et al., 2012). Based on the available research, we expect that this price-framed presentation is less useful for older decision makers and may actually trigger decision avoidance (Moschis, 2007a). In contrast, we suggest that categorizing choice alternatives with objective age-labels such as "75+" (Weijters & Geuens, 2006) will provide clear

indication of the fit of the product for a particular age group—even in the absence of an explicit recommendation—and will simplify the decision-making process. Categorizing alternatives in this way relates the product in a more personal way to the older adult consumer and places the focus on the target group's needs (Wolf et al., 2014).

Thus, we predict a reduction of decision avoidance where age-labeled packages are offered (in comparison to price-framed labels):

H1: The use of age-framing (vs. price-framing) for smart home systems increases the likelihood among older adults to choose such a system.

The importance of a decision and its perceived complexity creates stress that interferes with information processing (Moschis, 2007b). Optimizing their limited resources, older adults delegate, avoid decisions, and resort to the use of heuristics as secondary compensatory control strategies (Heckhausen, 2002). Drawing on research into the relation between choice overload and age-labels, we argue that presenting complex systems with age-labels simplifies the decision for older adults. Age-framing may lead older adults who are generally susceptible to framing (Yoon & Cole, 2008; Yoon et al., 2007) to choose without the need for painstaking contemplation. That is, while price-framed packages illustrate the trade-off between functionality and price, objective categorization by age group (Weijters & Geuens, 2006) allows older adults to follow the implicit recommendation and use their own age as an easy heuristic to cope with the stressful decision (Moschis, 2007a). Moreover, when an explicit recommendation is provided, being able to verify the fit makes the recommendation more acceptable. Finally, age-labels can elicit positive associations (Weijters & Geuens, 2006), reducing the need for elaboration (Moschis, 2007a).

Thus, overall we expect that age-labels will increase the likelihood of an older adult following (implicit or explicit) recommendations and lead to a reduced choice difficulty (or complexity):

H2a: When an explicit recommendation is present, age-framing (vs. price-framing) increases the likelihood the recommendation will be accepted.

H2b: Absent an explicit recommendation, price-framing (vs. age-framing) increases the likelihood of the low-priced option being chosen.

H3a: Age-framing (vs. price-framing) leads to reduced choice difficulty.

H3b: Due to this reduced choice difficulty, age-framing (vs. price-framing) increases the likelihood of a smart home system being chosen.

We are also interested in how this mediation is affected by older adults' increasing age. On the one hand, due to age-related health restrictions, the need for assistance in daily life generally increases with age (Canvin et al., 2018). Therefore, with increasing age one might expect an increased likelihood that a smart home system would be purchased. On the other hand, older adults tend to delay finalizing decisions (Mather, 2006) or avoid making them altogether (Okun,

1976). Mather (2006) argues that because older adults feel better in the short-term when they defer a decision, they often opt for the "no choice" option. Indeed, increasing age is associated with fewer decisions being made (Streufert et al., 1990) and a lower rate of adoption (Venkatesh et al., 2012), resulting in a pronounced status quo bias (Samuelson & Zeckhauser, 1988).

Drawing on these insights, we assume that with increasing age older adults wish to maintain the status quo and are, therefore, less likely to choose to purchase a smart home system. We assume that this decision avoidance behavior affects the relationship between decision complexity and the choice of a smart home system bundle such that with increasing age individuals become increasingly less likely to choose a bundle for purchase.

H4: The relationship between choice complexity and choice behavior is moderated by the age of the respondent, that is, the effect of reduced choice complexity on the likelihood of choosing a smart home system bundle declines with increasing age.

As noted earlier, a decision of this magnitude and consequence is rarely made in isolation. Older adults often consult others on important decisions or delegate the decision entirely: In health-related contexts elderly tend to have relatives or health professionals make decisions for them (Löckenhoff & Carstensen, 2004; Mather, 2006), and long-term care decisions are typically made together with family members (Gentry et al., 1995).

Making a decision together, however, can create tensions. For example, a family member's interference might threaten the independence of older adults, who may fear being considered no longer the empowered and capable consumers they once were. Younger relatives trying to support the older adult's decision-making may become frustrated if their assistance seems to be undervalued (Barnhart & Peñaloza, 2012). Thus, the need to justify a decision may contribute to choice overload (Chernev et al., 2015). We thus investigate the indirect influence of the younger co-decider that follows from their perception of the older adult's decision and show that age-framed choices simplify the justification of the decision, an effect we predict will be stronger the higher the investment is.

H5: The age-framed (vs. price-framed) decision of older adults is (a) evaluated more positively by younger relatives and (b) decreases the younger relatives' wish to renegotiate.

H6: The effect of age-framing on the younger relative's (a) decision evaluation and (b) wish to renegotiate is stronger for high-value (vs. low-value) smart home system bundles.

Figure 1 visualizes the resulting conceptual framework and hypotheses for the four studies reported below.

2 | OVERVIEW OF THE FOUR EMPIRICAL STUDIES

Using both panel and social media data, we investigate how presenting age-framed versus price-framed smart home systems affects the choice behaviors of older adults (Studies 1–3) and family member's perception of these choices (Study 4). In Study 1, we investigate the effect of age-related framing (vs. price-framing) on the decisions of older adults (H1) and their willingness to follow an explicit recommendation (H2a). Additionally, we investigate reduced choice complexity as an underlying process (H3) and status quo bias as a boundary condition (H4). Running the experiment on social media (with unpaid older adults), we replicate our findings in Study 2 (H1), using decision time as an indirect measure for choice complexity (H3). Underscoring the role of choice complexity, in Study 3 we investigate the consideration set and an increased selection (including a low-priced option) as boundary condition of the age-framing effect. By introducing more (and cheaper) alternatives without explicit recommendation (H2b), we investigate whether the implicit recommendation of age-framing might have a negative effect on choice. Finally, decisions of this type typically involve family members as important stakeholders, who pose as "judges" of the older adults' decision, further contributing to choice overload (Chernev et al., 2015). In Study 4 we investigate how younger relatives evaluate the decisions of older relatives depending on the framing used (H5 and H6). Table 2 provides an overview of the four experiments.
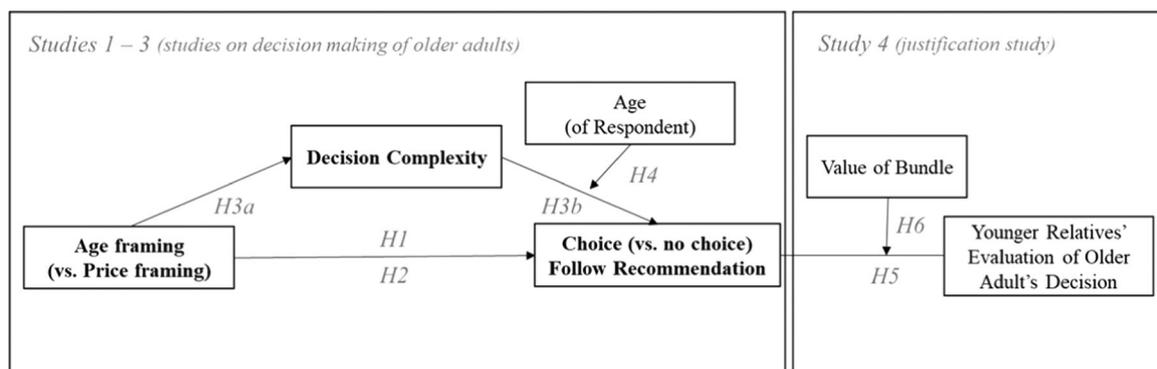
FIGURE 1 Conceptual framework for the four studies.

3 | STUDIES OF DECISION MAKING OF OLDER ADULTS AND PERCEPTION OF FAMILY MEMBERS

3.1 | Study 1

3.1.1 | Experimental design

We randomly assigned participants to one of two conditions: (1) age-framing or (2) price-framing. In the age-framing condition, three smart home system bundles were framed as follows: "for people of up to 70 years of age," "for people of up to 75 years of age," and "for people of over 75 years of age." In the price-framing condition, we described the otherwise identical bundles as "Economy safety package," "Standard safety package," and "Premium safety package."[1]

To investigate the effect of age-framing that goes beyond a direct recommendation, we highlighted one of the bundles in green and added the statement "our recommendation for you" in both conditions. For age-framing, we based our recommendation on the individual's respective age. For price-framing, the respondent's level of financial hardship determined the recommended bundle.[2] After they made their decision, we asked the respondent if in a real purchase situation, they would have made their choice more carefully. With this question we forced all respondents to consciously and deliberatively evaluate their previous decision, so as to identify how differences in the framing led to different handling of the choice complexity (decision diligence [reverse coded]: 1 = "not at all," 7 = "very").

3.1.2 | Procedure and sample

We recruited a total of 143 older adults of at least 65 years of age from two online panels. None of them lived in a retirement home. Due to missing data, we excluded 10 participants, resulting in a sample size of $n = 133$ (33.08% female, $M_{age} = 69.38$, $min_{age} = 65$, $max_{age} = 81$).

Following a description of different smart home modules, participants indicated whether they planned to own a smart home system and their level of financial hardship. Next, we asked the

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[1]We further applied two additional conditions. The first replicated the price-framing condition of a pre-study. For the second we replaced the word "safety" with the word "independence" in the bundle description for price-framing. With this change we wanted to extend current market practices and combine rational appeals of price with the emotional appeal for independence. However, both additional conditions did not yield significant results in the moderated mediation analysis. We assume that the unexpected description of the system might have led to a perceived mismatch of the description with the product type and subsequently to a non-credible presentation of the bundles. We thus focus on the most relevant conditions. All results are available upon request.

[2]Financial hardship was measured by indicating how difficult it would be for them to make an unexpected one-time payment of €4'000 (financial hardship: 1 "not difficult at all" to 7 "very difficult"), corresponding to the value of the highest priced option in the choice task. For respondents indicating very high levels of financial hardship (≥6 on the 7-point Likert-scale) we recommended bundle 1 ("Economic"), for moderate levels of financial hardship (3–5) bundle 2 ("Standard"), and for low levels of financial hardship we recommended bundle 3 ("Premium").

TABLE 2 Overview of the four experiments

	Decision maker	Treatment groups	Recommendation	Choice alternatives	Hypotheses
Study 1	Older adults	age-framing versus price framing	Explicit	"for people up to 70 years old," "for people up to 75 years old," "for people over 75 years old" "Economy safety package," "Standard safety package," "Premium safety package" "None of the shown packages is an option"	H1, H2a, H3a, H3b, H4
Study 2	Older adults	age-framing versus price framing	No	"ideal up to 70 years," "ideal up to 75 years," "ideal over 75 years" "Economy," "Standard," "Premium" "other solution: nursing home, assisted living, …"	H1, H2b, H3a
Study 3	Older adults	age-framing versus price framing	No	"up to 64 years," "65 to 69 years," "70 to 74 years," "75 to 80 years," "ideal over 75 years" "Economy Light," "Economy," "Standard," "Premium," "Premium Plus" "a different solution, e.g., nursing home, assisted living, nursing service …"	H1, H2b, H3a
Study 4	Family members	Framing (age-framing vs. price framing) × value of bundle (low vs. high)	N/A	"ideal for his age" ("for individuals of up to 70 years old," "for individuals between 70 and 75 years old," "for people over 75 years old") "lowest/highest priced safety system" ("Economy," "Standard," "Premium")	H5, H6

respondents to imagine they were about to purchase a smart home system. The respondents could select from three different bundles (Shaddy & Fishbach, 2017) consisting of 5, 7, or 9 system modules and a "no choice" option. (Supporting Information Appendix A presents the modules and Supporting Information Appendix B contains the stimuli.)

We examined the groups for differences to ensure comparability. Neither age, involvement of the respondents, financial hardship, or cognitive abilities (measured via clicks for solving a memory game as proxy) were significantly different between the two groups.

3.1.3 | Analyses and results

Framing significantly influenced the choice behavior. We conducted a logistic regression with framing as the independent variable (age-framing = 1, price-framing = 0) and choice (choice = 1, no choice = 0) as the dependent variable, controlling for the respondent's involvement, age, and financial hardship. Age-framed bundles significantly increased the participants' likelihood of choosing a bundle over making no choice (48.57%, vs. price-framing 36.51%, $\beta_{\text{age-framing}}$ = 0.853, p = 0.036), in support of H1.[3] Before comparing the recommendation acceptance rate, we checked if similar bundles were recommended. A χ^2 test indicated that both groups were comparable ($\chi^2(2)$ = 3.759, p = 0.150). Thus, we proceeded to test whether age-framing increased the older adults' likelihood of accepting the explicit recommendation (H2a). Among the individuals that chose a system, the recommendation's acceptance rate is significantly higher with age-framing ($M_{\text{age-framing}}$ = 67.65%, $M_{\text{price-framing}}$ = 34.78%, $t(46.561)$ = −2.525, p = 0.0150), supporting H2a. We further observed higher revenues with age-framing (€1226.74 vs. €836.44 with price-framing). However, this difference is only marginally significant ($t(130.56)$ = 1.76, p = 0.081).

Next, we examined whether choice difficulty, measured as diligence applied to the decision making, was the underlying mechanism. We found that the level of decision diligence in the price-framing condition was significantly higher than in the age-framing condition ($M_{\text{age-framing}}$ = 4.200; $M_{\text{price-framing}}$ = 5.142; $t(130.99)$ = −2.640, p = 0.009, Figure 2). To test hypotheses H3a, H3b, and H4, we conducted a second-stage moderated mediation analysis using 10,000 bootstrap samples (Hayes, 2015; PROCESS Model 14). We controlled for the degree to which older adults are worried about accidents in their home, their level of involvement, and their financial hardship in the choice model. As older adults tend to consult others on important decisions, we controlled for the degree to which the individual relies on others in making important decisions (decision support: 1 = "not at all," 7 = "very") in both models.

Figure 3 depicts the tested framework, including results. As expected, age-framing led to lower diligence (due to lower

complexity) applied to the decision (a = −0.877, p = 0.011, supporting H3a). Increasing decision diligence (due to higher complexity), in turn, led individuals to refrain from choosing a smart home system (b_1 = −8.074, p = 0.002), supporting H3b. Thus, decisions that are perceived as more complex (price-framing) cause the decision maker to invest more diligence, which in turn results in decision avoidance (no-choice). The direct effect of age-framing on choice is not significant (c' = 0.692, p = 0.149), consistent with a full mediation.

To test the influence of status quo bias as a boundary condition, we investigated age as a second-stage moderator. The interaction between the respondent's age and decision diligence (b_3 = −0.116, p = .002) and the index of moderated mediation (Index = −0.102, 95% confidence interval = −0.246 to −0.021) are both significant. Thus, for relatively young older adults, low decision diligence increased the likelihood of choosing a smart home system. However, this effect disappeared for the average older adult and even turned negative for relatively older adults in our sample. Thus, in support of H4, increasing age reduced the tendency of a simplified decision process to translate into increased choice behavior.

This first study supports the claim that older adults exposed to age-framing (vs. price-framing) are more likely to choose a smart home system bundle (H1). Moreover, our results showed that reduced choice difficulty, reflected in decision diligence, characterizes the underlying process (H3a and H3b). Respondents were less diligent in their decision when presented with age-framed bundles than with price-framed bundles. We argue that age-framing leads individuals to select a smart home system without painstaking contemplation of the trade-offs between functionality and price. Our analysis reveals that this mediation is moderated by the respondent's age. We found that for relatively younger subjects the effect of age-framing via decision diligence translated into an increased choice probability. For the older share of our respondents (>73 years), however, we found that the indirect effect on decisions became negative (H4). This impact of the status quo bias is depicted in Figure 4.

In this first experiment, we investigated the effect of age-framing on choice behavior and decision diligence when an explicit recommendation was provided. We found that age-framing not only increases the likelihood that older adults will choose a smart home system but also the likelihood they will follow a given recommendation (H2a). In practice, however, explicit recommendations are rare. The goal of Study 2 was, therefore, threefold: (i) Replicate our findings in the real world, (ii) investigate the framing effect without an explicit recommendation, to increase external validity, and (iii) gain more insights into the effect of framing on choice difficulty.

3.2 | Study 2

3.2.1 | Experimental design

We ran our two conditions (age- and price-framing) as advertisements on Facebook, targeting individuals 65+ years of age in

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[3]We additionally controlled for down-aging and how comfortable participants were talking about their age (Wolf et al., 2014). These controls were not significant, did not change the results, and did not improve the fit of our model.
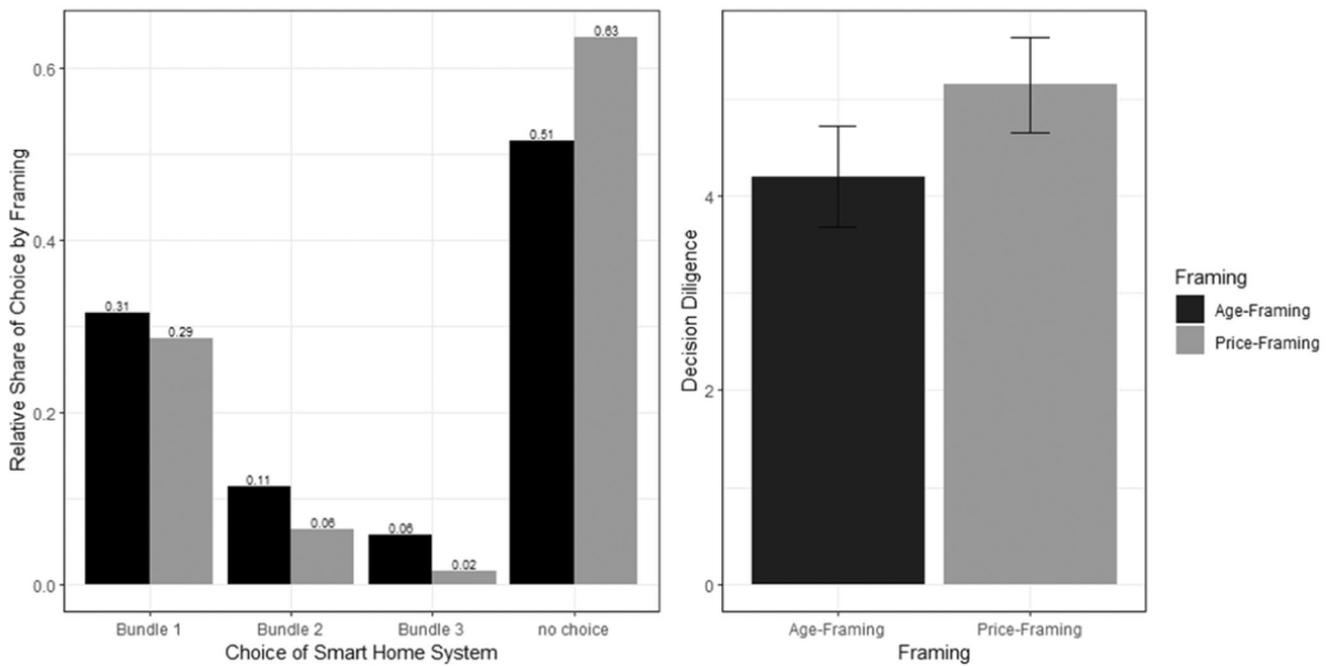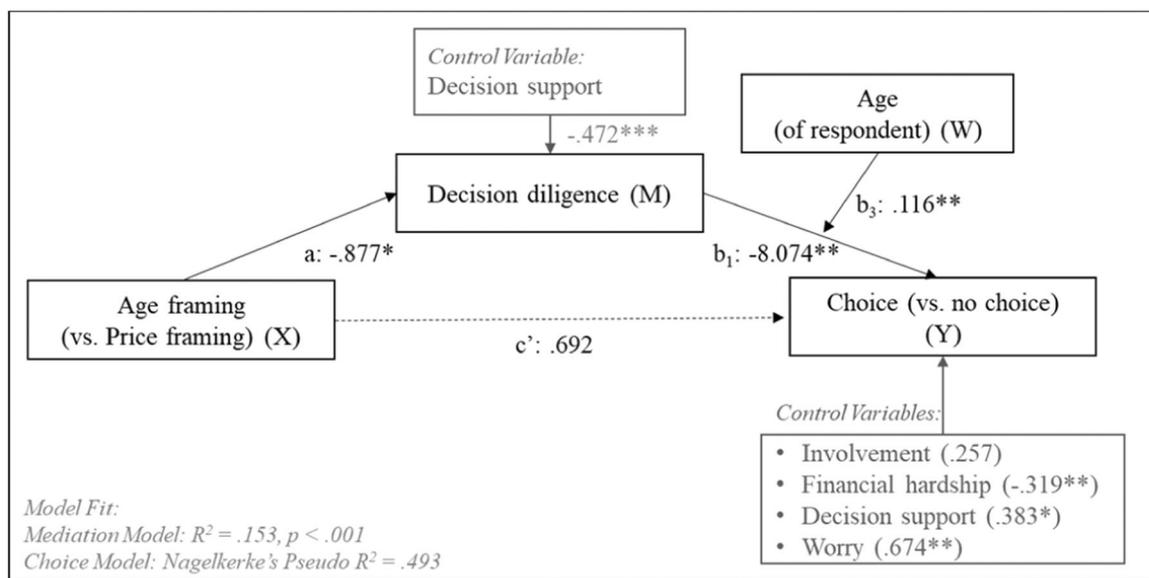
**FIGURE 2** Study 1: Smart home system choice and decision diligence by framing.


FIGURE 3 Study 1: Results from second-stage moderated mediation for the effect of framing on older adults' choice behavior.

Germany. Both advertisements sought individuals' attention with the question "Did you are already think about tomorrow? Would you like to stay in your own four walls for as long as possible?" Independent of their choice ("yes" or "no"), we asked "Which solution do you see in your future?" with three images of smart home bundles, consisting of 5, 7, or 9 system modules and a no choice option ("different solution: nursing home, assisted living"). In the age-framing conditions these three bundles were framed as "ideal up to 70 years of age," "ideal up
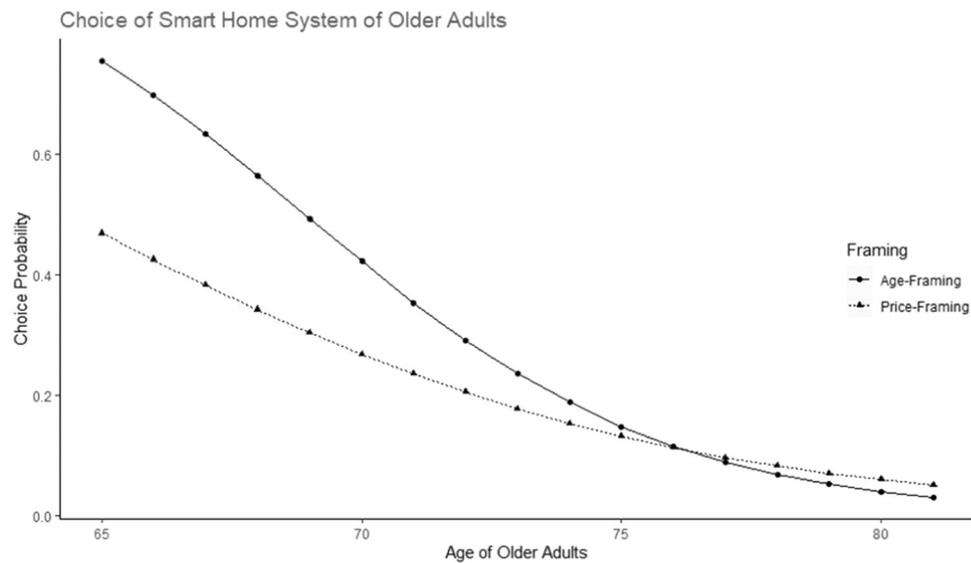
FIGURE 4 Study 1: Older adult's choice probability by age and framing.
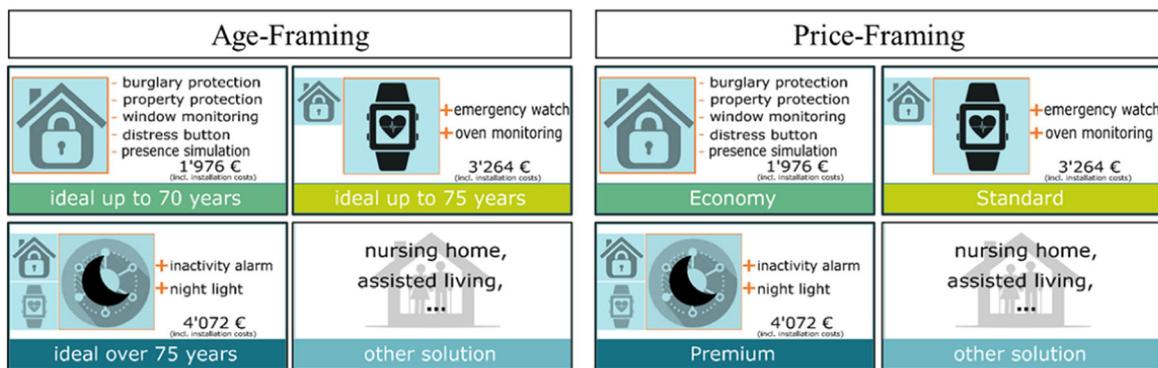
FIGURE 5 Experimental stimuli of the two conditions in the social media study.

to 75 years of age," and "ideal over 75 years of age." In the price-framing condition the otherwise identical bundles were framed "Economic," "Standard," and "Premium" (Figure 5). This decision was followed by a question to evaluate decision difficulty. (Supporting Information Appendix C presents the stimuli and measures).

3.2.2 | Procedure and sample

We limited the target audience to the age group 65+ years in Germany, potentially reaching an audience of 36.1 M on Facebook. We stopped the advertisement after reaching at least 100 complete answers per condition. The data was collected anonymously and unpaid via a market research provider, relying on the individuals' willingness to share their opinion. There was a substantial drop-out rate for answers between the initial question ($n = 2446$) and the second ($n = 219$, 8.95%), with a final sample of 202 complete responses (61% female) following the third and last questions. However, there was no significant difference in drop-out rates

between the two conditions ($M_{\text{age-framing}} = 9.65\%$, $M_{\text{price-framing}} = 8.33\%$; $t(2377.3) = 1.139$, $p = 0.255$).

3.2.3 | Analyses and results

Of all respondents answering the first question, 76.21% indicated "yes," suggesting that they were in the market for smart home products. Testing our hypothesis that age-framing increased choice vs. no choice, we conducted a Welch t-test. In support of H1, we found that while in the age-framing condition, 75.00% chose a smart home system (vs. no choice) only 61.68% did so in the price-framing condition ($t(211.52) = 2.127$, $p = 0.035$). Next, we investigated whether price-framing led to the selection of the lower-value bundle when no explicit recommendation was given, while age-framing was expected to drive individuals to self-select the appropriate bundle, which for some of them was the high-value bundle. We indeed found a different pattern ($\chi^2(2) = 26.309$, $p < 0.001$, Figure 6). Of those who chose a bundle, 53.03% in the price-framing condition versus only
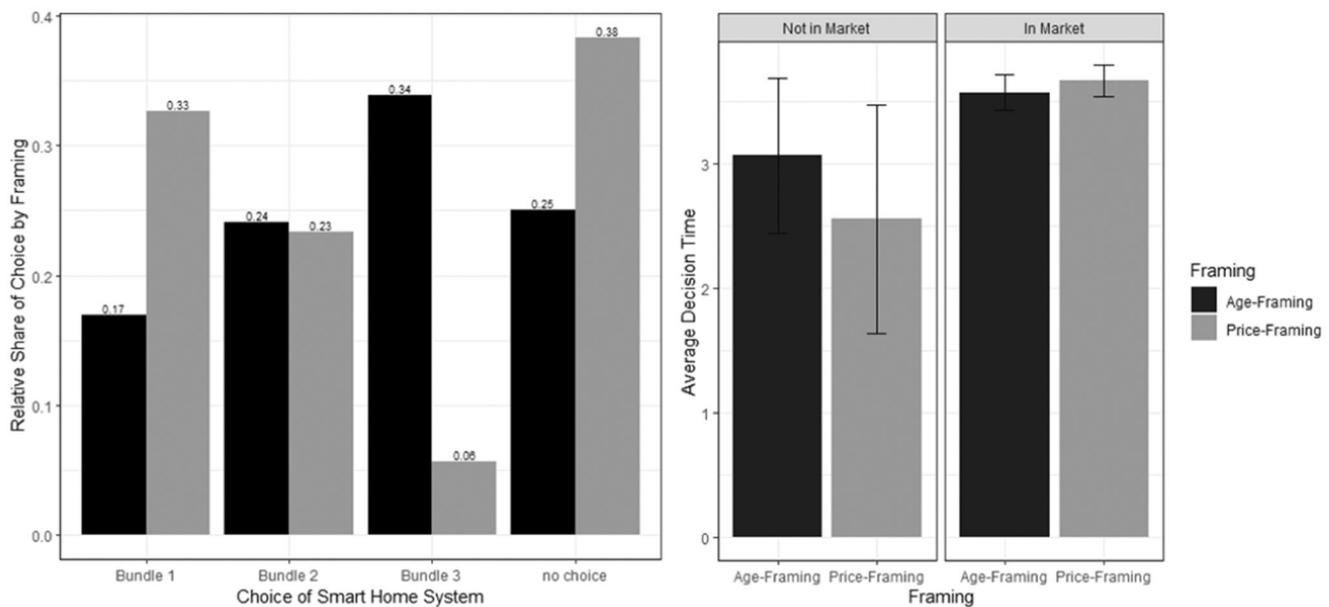
FIGURE 6 Study 2: Smart home system choice and decision time by framing.

22.62% in the age-framing condition chose the low-value bundle (t (126.28) = −3.946, $p < 0.001$), supporting H2b. This also resulted in significantly higher revenues in the age-framing compared to the price-framing condition from those who chose a bundle ($M_{age-framing}$ = €2502.12, $M_{price-framing}$ = €1634.36; t(215.64) = 4.218, $p < 0.001$).

To investigate whether the underlying reason for these results was a simplification of the decision, we analyzed choice difficulty as a direct measure and time taken as an indirect one. We did not find significant differences in the self-reported choice difficulty ($M_{age-framing}$ = 2.32, $M_{price-framing}$ = 2.46, t(199.87) = −0.725, $p =$ 0.470). We further interpreted the time taken to make the choice as a behavioral measure of choice difficulty, in line with Schneider et al. (2020). Excluding outliers ±2 SD outside the average answer time for the choice question ($n = 7$), we found some support for H2a. Individuals that were in the market (i.e., answered "yes" to the initial question) exhibited a significantly shorter answer time in the age-framing than in the price-framing condition ($M_{age-framing}$ = 35.92, $M_{price-framing}$ = 45.46, t(73.77) = −2.05, $p = 0.044$, Figure 6). However, individuals not yet in the market were not affected by the framing ($M_{age-framing}$ = 45.00, $M_{price-framing}$ = 44.97, t (47.66) = 0.005, $p = 0.996$), thus partially supporting H2a.

Thus, by querying older adults on social media, Study 2 replicated in the real world Study 1's finding that age-framing leads to a higher rate of choice (H1). In the absence of an explicit recommendation, age-framing provides an implicit recommendation as to which bundle is most appropriate, while price-framing favors the lower price (H2b). We further found some support that decision making is easier with age-framing. For individuals who have already thought about their later life, choices based on age-framed input involve shorter decision times (H3a). However, the results from when participants were asked

explicitly about their choice difficulty failed to support our hypothesis. We believe this was due to the social media format, where the presentation of the systems' technical details was limited and failed to reflect decision difficulty. Thus, in Study 3 we increased the complexity of the choice by increasing the number of options from which to choose (Besedeš et al., 2012). Additionally, as alternative measure of choice difficulty, we investigate the number of choice alternatives they considered before making their decision.

3.3 | Study 3

3.3.1 | Experimental design

For Study 3 we adapted Study 1 in three ways. First, we removed the explicit recommendations in both conditions. Second, we dropped the "ideal for" in the age-framing condition. Lastly, to increase complexity, we introduced two new bundles: (1) a lower value bundle, comprising only three features (presence simulation, burglary, and property protection), to increase the attractiveness of price-framing, and (2) a higher value bundle, with two additional features (care service and remote access). There were thus a total of five different bundles. We labeled the low-value bundle (for €1550) "up to 64 years" and "Economy light" in the age- and price-framing conditions, respectively. The high-value bundle (for €4504) was labeled "for over 80 years" and "Premium Plus," respectively. In the age-framing condition, we adapted slightly the previous labels for the sake of clarity: "65–69 years," "70–74 years," and "75–79 years." Furthermore, we measured the consideration set after the decision as an alternative measure of choice complexity. (Supporting Information Appendix D contains the stimuli and measurements).
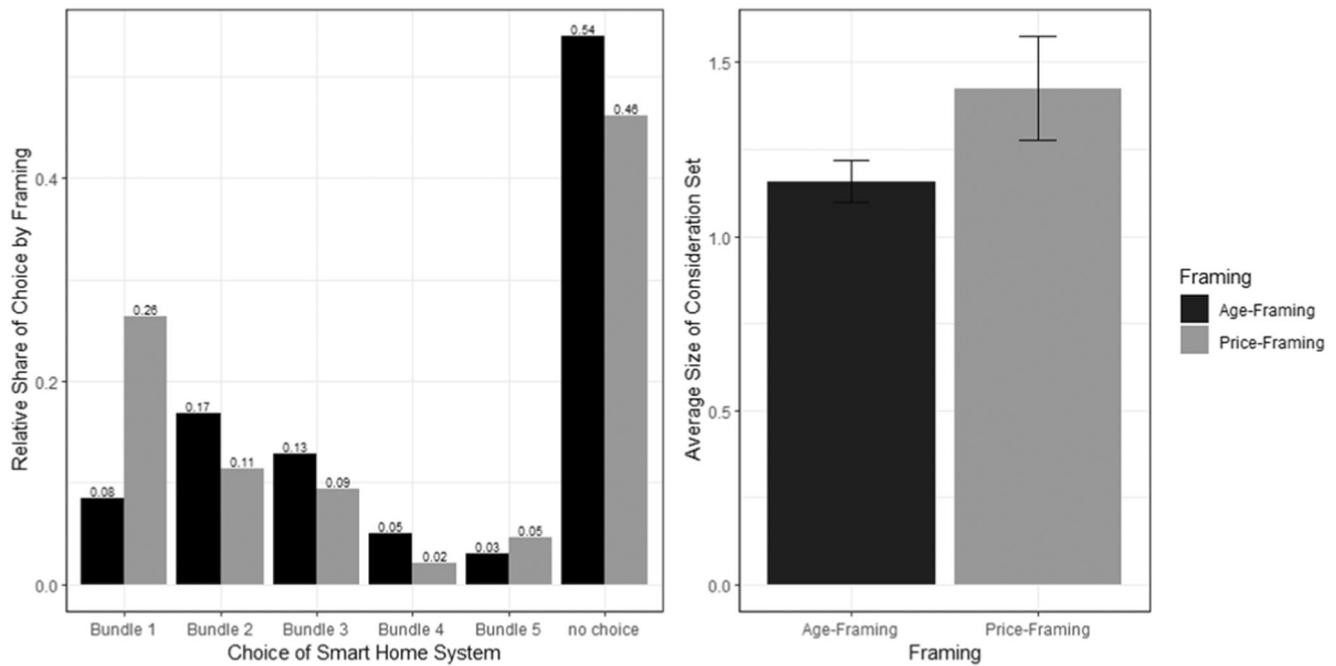
FIGURE 7 Study 3: Smart home system choice and size of consideration set by framing.

3.3.2 | Procedure and sample

Using a German online panel, we recruited a total of 415 older adults 65+ years of age, excluding any living in assisted living facilities or retirement homes. After removing 20 individuals who took longer than two SD from the average answer time on the choice task, we were left with a final sample size of 395 individuals (37.47% female, M_{age} = 69.90, min_{age} = 65, max_{age} = 86). We introduced the choice task by asking the participants to imagine they were facing a real purchase decision and to make a selection that fits their needs. On the next screen we presented five age- or price-framed smart home system bundles along with a 'no choice' option ("alternative solution (nursing home, assisted living, … etc.)"). After they made their choice, we asked them to indicate their consideration set by showing the original choice alternatives (name and symbol), similar to the procedure in Goodman et al. (2013).

3.3.3 | Analyses and results

Only 57.75% of the respondents were in the market for smart home products. To test our hypothesis that age-framing would increase choice versus no choice, we conducted a Welch t-test. Given that 46.04% in the age-framing and 53.87% in the price-framing condition chose a smart home system (vs. no choice, $t(392.17)$ = 1.560, p = 0.120), we did not find support for H1.

Next, we conducted a χ^2 test and found that among those who chose a smart home system, the type of framing led to a significantly different choice pattern ($\chi^2(4)$ = 23.657, p < .001), similar to Study 2. As shown in Figure 7, of those who chose a smart home system, 56.99% in

the age-framing condition followed the implicit age recommendation, whereas 49.04% in the price-framing condition chose the lowest valued bundle (vs. only 18.28% in the age-framing group ($t(191.15)$ = −4.833, p < 0.001, note that in the age-framing condition this lowest valued bundle was described as unsuitable for them), supporting H2b. Among those who chose a bundle, age-framing again led to significantly higher revenues ($M_{age-framing}$ = €2646.69, $M_{price-framing}$ = €2289.40, $t(193.83)$ = 2.537, p = 0.012).

To investigate whether age-framing simplifies the decision, we analyzed consideration set size and the time taken to answer the choice question.[4] In support of H3a, we found that age-framing led to a significantly smaller consideration set: Participants in the age-framing condition considered on average only 1.16 alternatives before making a decision, versus 1.42 alternatives in the price-framing condition ($t(254.58)$ = −3.253, p = .001). This result also holds when individuals who decided against a smart home system are excluded ($M_{age-framing}$ = 1.23, $M_{price-framing}$ = 1.58, $t(147.69)$ = −2.99, p = 0.003). Treating decision time as an indirect measure of choice difficulty yielded similar results; however, the difference is only marginally significant ($M_{age-framing}$ = 20.54, $M_{price-framing}$ = 22.17, $t(378.88)$ = −1.822, p = 0.069). Note that age-framing led to a faster decision process only for individuals who selected a smart home system ($M_{age-framing}$ = 21.30, $M_{price-framing}$ = 24.31, $t(194.04)$ = −2.20, p = 0.029).

In this third study we investigated the boundary conditions of age-framing. We increased choice complexity by increasing the number of options and by eliminating any explicit recommendation.

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[4]The explicitly stated choice difficulty, with 4-items as in Goodman et al. (2013), did not significantly differ ($M_{age-framing}$ = 2.16, $M_{price-framing}$ = 2.20, $t(392.14)$ = −0.410, p = 0.682).

The hypothesized effects on choice difficulty emerged as predicted; however, unlike previous studies, the share of older adults choosing a smart home system did not significantly differ between conditions. Interestingly, introducing a cheaper alternative had a strong effect within the price-framing condition: Using the low price as a heuristic, a large share of older adults chose the cheapest option. This was not the case, however, in the age-framing condition, where the cheapest option was implied to be unsuitable for the targeted participants (i.e., all participants were at least 65 years old, in contrast to the label "up to 64 years"). Thus, the implicit recommendation of age-framing sent a strong signal that (given the higher age of the participants) the cheapest option was not suitable. Price-framing, on the other hand, indicated that the cheapest bundle was a viable option. Thus, given the trade-off considerations between functionality and price, many chose the cheapest option in the price-framing condition. It appears, then, assuming that bundles are chosen appropriately for the various age groups, age-framing can prevent deciders from choosing (cheap) bundles with too little functionality, although at the cost of fewer sales.

So far, we have investigated older adults as users of the system in isolation. However, family members are highly involved in decision making that concerns older adults' well-being (Kapp, 1991). Therefore, in the following study we investigate the effect of age-framing on younger adults' perception of their older relatives' purchase decisions.

3.4 | Study 4: Justification study

Family members tend to be highly involved in decisions regarding their older relatives—especially those that impact the latter's well-being. Such decisions can pose substantial financial, emotional, and even physical strain on family members (Kapp, 1991). Furthermore, older adults often seek support in decision making (McCullough et al., 1993). Indeed, 44% of the participants in Study 1 said they would select a smart home system together with a family member, while 18% would go as far as sharing the cost.

High investment decisions often need to be justified by others. However, intervening in decisions is delicate, as older adults tend to value their independence (Canvin et al., 2018). Moreover, they may frustrate their younger relatives by rejecting the offered support (Barnhart & Peñaloza, 2012). In our fourth study, therefore, we explored how framing can lead to differences in justifiability of the purchase decision towards family members who function as important stakeholders.

3.4.1 | Experimental design, procedure, and sample

For this study, we used a 2 (framing: age-framing vs. price-framing) ×2 (value of bundle: high vs. low) between-subject design. Via an online panel we recruited 240 participants between 40 and 65 years of age, all of whom had an older relative of 65+ years living

alone at home. We randomly assigned the participants to one of four conditions (Supporting Information Appendix E shows the stimuli) and asked them for an evaluation of their older relative's purchase decision.

3.4.2 | Analyses and results

Age-framing led to significantly more positive evaluations of the older relative's decision ($\beta_{age\text{-}framing}$ = 0.409, p = 0.044) than did price-framing with a low-value bundle, thus supporting H5a.[5] Also, in regard to the younger adult's wish to intervene in the decision making, age-framing led to a lower intention to dissuade the older adult ($\beta_{age\text{-}framing}$ = −0.546, p = 0.004, compared with the reference category), supporting H5b.

Moreover, we tested whether the effect of age-framing was stronger for high-value smart home system bundles and found that this was indeed the case ($\beta_{age\text{-}framing\_x\_high\_value}$ = 0.941, p = 0.021), thus supporting H6a. Similarly, age-framing led to lower intentions by family members to dissuade the older adults, especially when the high-value bundle was chosen ($\beta_{age\text{-}framing\_x\_high\_value}$ = −0.757, p = 0.048), supporting H6b. Figure 8 shows the predicted evaluation of the decision.

4 | GENERAL DISCUSSION

In this four-experiment study, we have investigated the effects that age-framed versus price-framed presentations of smart home systems have on the purchase decisions of older adults as well as on the perceptions of their co-deciders. One central finding of the first two studies is that age-framing of system bundles increases the probability that older adults will choose to purchase a system. This result was explained as being largely due to a reduction in choice complexity that arises from age-framing: Using different measures of choice complexity, we demonstrated in the first three studies that age-framing is easier to process for older adults and provides them with more readily accessible heuristics for making the purchase decision. Even in the absence of an explicit recommendation, age-framing allows decision makers to allocate themselves into the appropriate category and choose an appropriate system.

The third study demonstrated that when a cheaper option was added, price-framing attracted older adults to select this option, whereas age-framing led the subjects to conclude that this option was unsuitable for them (i.e., as this option was matched to a younger age group, "up to 64 years"). One implication of this finding is that age-framing reduces choice avoidance better than price-framing only if the target group includes (proportionally) all age groups

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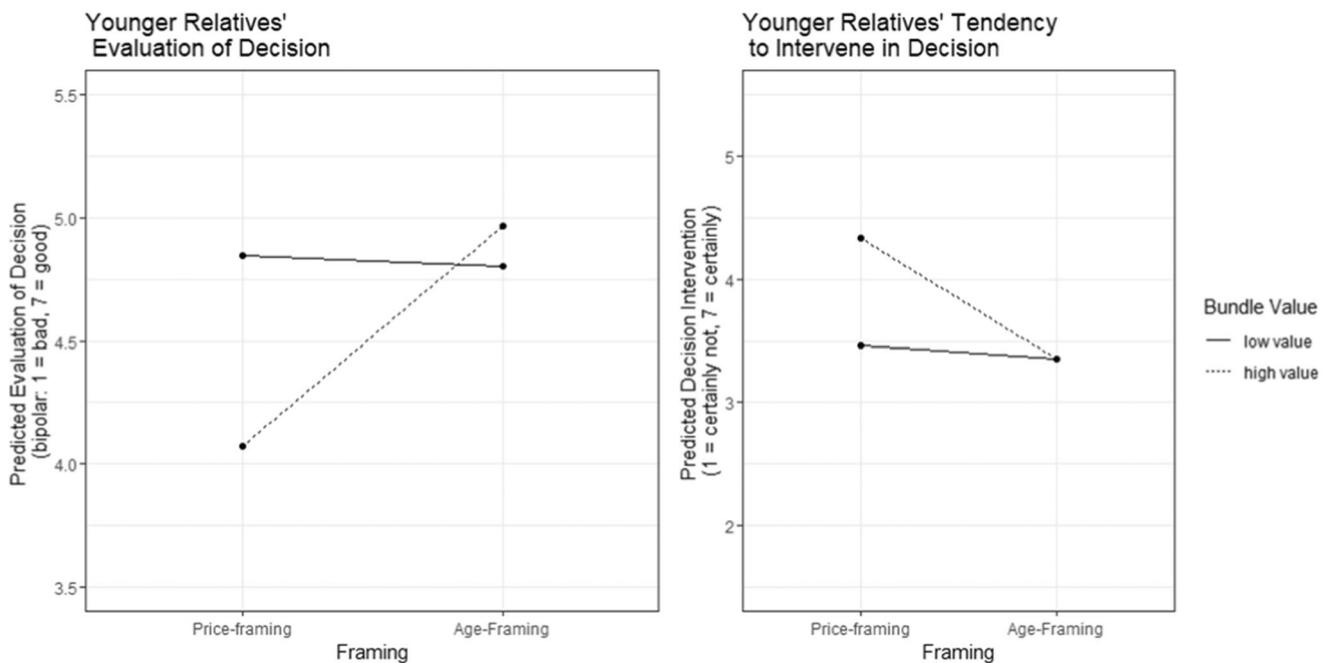
FIGURE 8 Study 4: Predicted evaluation of decision by younger relatives. Control variables have been held constant at their mean. Framing and value of the bundle variables are mean-centered.

encompassed by the age-labels. If not, price-framing may in some instances become advantageous. Our investigation of boundary conditions in the third study also revealed that the effect of age-framing on choice behavior is dependent on the older adult's age; that is, with increasing age, an easier decision-making does not necessarily translate into a higher likelihood to make a choice. We attribute this decreased willingness to make a choice to an increased level of status quo bias among older adults.

Shifting the focus to important co-deciders with an emotional, financial, or physical stake in the decision, in the fourth study we found that age-framing (vs. price-framing) decreases a younger family member's intention to intervene and leads to a more positive evaluation of the older adult's purchase decision. Thus, age-framing increases the justifiability of the decision and indirectly reduces decision task difficulty for older adults.

4.1 | Theoretical contributions

Our experiments make three key contributions to the literature. First, we contribute to research on decision making of older adults in general and extend the scarce but important research about age-labels. Using panel and social media data, we experimentally test the effectiveness of age-labeling versus the market practice (i.e., price-framing) of a high-investment healthcare product for the elderly. The majority of age-labels research to date has focused on labels' effectiveness in the context of inexpensive products and services or discounts. The key findings have been that some age-labels are more positive than others (Weijters & Geuens, 2006) and that the

acceptance and evaluation of age-labels is influenced by the older adults' socialization (Moschis et al., 1993), self-concept (Moschis & Mathur, 2006), and the degree to which they identify with their (older) age (Wolf et al., 2014). In this study we have adopted the perspective of a smart home provider and compared age-labels against the current market practice, demonstrating how age-labels reduce decision complexity for older adults. Our study thus contributes to the literature on age-labels by showing how age-framing (vs. price-framing) can give rise to a distinct coping strategy in older adults' decision making. We additionally demonstrated that this effect is reduced when status quo bias is pronounced and when low-priced options are introduced without recommendations.

Second, we break new ground by investigating the perception that younger co-deciders have of age-label-influenced decisions. Given that "older individuals are not islands" (Kapp, 1991; p. 622), our fourth study demonstrates that younger relatives evaluate their older adults' decision made on age-framed alternatives more positively than when the choice alternatives are price-framed.

Third, we contribute to research on choice overload by showing that target-group-relevant framing can help reduce choice difficulty for older people in a societally important context. Using indirect and behavioral measures for choice complexity, we have demonstrated how different framing results in different coping strategies for older adults. Price-framing presents older adults with a high choice set complexity and decision task difficulty, often leading them to cope by abandoning the decision entirely. Age-framing, in contrast, offers older adults a heuristic and thus increases the choice with less painful contemplation. However, we also showed that this simplification of choice can be limited by a status quo bias that increases with age and

prevents the heuristic effect from translating directly into a higher choice probability.

4.2 | Practical implications

Our findings allow us to draw practical conclusions regarding the decision-making of older adults on smart home systems and on complex health systems in general. Most importantly, our research shows that reducing choice complexity and enabling older adults to use decision heuristics can mitigate choice avoidance, and that the description of a product or service alone can lead to less painstaking contemplation and, in turn, higher revenues. Our results thus underscore the importance of presenting a system in age-related terms, not simply in terms of its functionalities.

Older adults are highly sensitive to cues describing choice options. When providing an explicit recommendation, but particularly, when a tailored recommendation is not possible (e.g., nonresponsive media outlets), age-framing appears to be an effective way to minimize older adults' decision avoidance and prevent them from simply opting for the cheapest alternative. Age-framing also seems to mitigate older people defensive attitude toward decisions regarding complex systems, although their willingness to act is constrained by a status quo bias that increases with age. Age-framing is thus especially effective in shaping the choice behaviors of older adults who are younger than age 67. One way that sellers can draw on these insights when considering ways to target older adults is to approach older adults earlier on and then potentially make use of an up-selling strategy later.

Our study underscores the practical importance of considering potential co-deciders as well. Beyond its direct influence on older adults' decision making, age-framing increases the acceptance of their decisions by family members. This finding demonstrates the importance of considering indirect influences when designing the presentation of products.

Our results also bear important policy implications. Simulating older adults' choice probabilities, we have demonstrated how financial support and increased awareness can increase the rate of smart home adoption by older adults. (Supporting Information Web Appendix W1 provides a detailed discussion of this point.).

4.3 | Limitations and future research directions

The research presented here is not without limitations. For one, our results relied on online experiments and social media data, not on actual purchases, although it should be noted that the high share of "no choice" across all our studies is reflective of the current market. Another limitation is that the online panels in our sample consisted of relatively young older individuals and respondents who were fairly adept with new technologies. However, it could be argued that the framing effects discernible among this younger segment of older individuals are likely to be even stronger for older adults in general.

In line with market practice, for Studies 2 and 3 we took the perspective of a seller unable to target specific segments. However, previous research (Moschis & Mathur, 2006; Wolf et al., 2014) leads us to expect that the effects of age-framing might vary depending on older adults' self-concept. Drawing on Wolf et al. (2014), future research could investigate whether observable proxies such as senior club membership, usage of senior products, or change in consumption patterns predict the marketability of age-framed (vs. price-framed) high-tech systems.

Finally, our study involved just one particular type of age-labeling. Previous research has demonstrated, however, that age-labels are not evaluated equally (Weijters & Geuens, 2006). Future research could investigate how inferences made about high-tech systems might vary with the use of alternative age-labels.

CONFLICT OF INTEREST
The authors declare no conflict of interest.

DATA AVAILABILITY STATEMENT
The experimental stimuli are available in Supplementary material (online Appendix). Data cannot be shared due to nondisclosure agreements.

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REFERENCES
Barnhart, M., & Peñaloza, L. (2012). Who are you calling old? Negotiating old age identity in the elderly consumption ensemble. *Journal of Consumer Research*, 39(6), 1133–1153.
Besedeš, T., Deck, C., Sarangi, S., & Shor, M. (2012). Age effects and heuristics in decision making. *Review of Economics and Statistics*, 94(2), 580–595.
Branca, J., Ablondi, B., & Mercer, D. (2016). Strategy analytics: Smart home elderly monitoring opportunity is set to grow more than 600 percent by 2020. *Strategy Analytics*, June 8. https://www.strategyanalytics.com/strategy-analytics/news/strategy-analytics-press-releases/2016/06/08/strategy-analytics-smart-home-elderly-monitoring-opportunity-is-set-to-grow-more-than-600-by-2020
Canvin, K., MacLeod, C., Windle, G., & Sacker, A. (2018). Seeking assistance in later life: how do older people evaluate their need for assistance? *Age and Ageing*, 47(3), 466–473.
Carpenter, S. M., & Yoon, C. (2011). Aging and consumer decision making. *Annals of the New York Academy of Sciences*, 1235(1), E1–E12.

Chernev, A., Böckenholt, U., & Goodman, J. (2015). Choice overload: A conceptual review and meta-analysis. *Journal of Consumer Psychology*, *25*(2), 333–358.

Gentry, J. W., Kennedy, P. F., & Macintosh, G. (1995). Marketing implications of the expected role of physicians in family decisions concerning the institutionalization of the elderly. *Psychology and Marketing*, *12*(7), 647–662.

Gilly, M. C., Celsi, M. W., & Schau, H. J. (2012). It don't come easy: Overcoming obstacles to technology use within a resistant consumer group. *Journal of Consumer Affairs*, *46*(1), 62–89.

Goodman, J. K., Broniarczyk, S. M., Griffin, J. G., & McAlister, L. (2013). Help or hinder? When recommendation signage expands considera-tion sets and heightens decision difficulty. *Journal of Consumer Psychology*, *23*(2), 165–174.

Hashtroudi, S., Johnson, M. K., Vnek, N., & Ferguson, S. A. (1994). Aging and the effects of affective and factual focus on source monitoring and recall. *Psychology and Aging*, *9*(1), 160–170.

Hayes, A. F. (2015). An index and test of linear moderated mediation. *Multivariate Behavioral Research*, *50*(1), 1–22.

Heckhausen, J. (2002). 10 Developmental regulation of life-course transitions: A control theory approach: Paths to successful develop-ment: Personality in the life course. *Contemporary Sociology*, *32*(2), 257–270.

Kapp, M. B. (1991). Health care decision making by the elderly: I get by with a little help from my family. *The Gerontologist*, *31*(5), 619–623.

Klusmann, V., Gow, A. J., Robert, P., & Oettingen, G. (2021). Using theories of behavior change to develop interventions for healthy aging. *The Journals of Gerontology: Series B*, *76*(Suppl_2), 191–205.

Löckenhoff, C. E., & Carstensen, L. L. (2004). Socioemotional selectivity theory, aging, and health: The increasingly delicate balance between regulating emotions and making tough choices. *Journal of Personality*, *72*(6), 1395–1424.

Mather, M., Jacobsen, L. A., & Pollard, K. M. (2015). *Aging in the United States*. Population Reference Bureau. *Population Bulletin*, *70*(2), 1–18. https://assets.prb.org/pdf16/aging-us-population-bulletin.pdf

Mather, M. (2006). A review of decision-making processes: Weighing the risks and benefits of aging. In L. Carstensen, & C. Hartel (Eds.), *When I'm 64* (pp. 145–173). National Academies Press.

McCullough, L. B., Wilson, N. L., Teasdale, T. A., Kolpakchi, A. L., & Skelly, J. R. (1993). Mapping personal, familial, and professional values in long-term care decisions. *The Gerontologist*, *33*(3), 324–332.

Morris, M. E., Adair, B., Miller, K., Ozanne, E., Hampson, R., Pearce, A. J., Santamaria, N., Viegas, L., Long, M., & Said, C. M. (2013). Smarthome technologies to assist older people to live well at home. *Journal of Aging Science*, *1*(1), 1–9.

Moschis, G. P. (2007a). Life course perspectives on consumer behavior. *Journal of the Academy of Marketing Science*, *35*(2), 295–397.

Moschis, G. P. (2007b). Stress and consumer behavior. *Journal of the Academy of Marketing Science*, *35*(3), 430–444.

Moschis, G. P. (2012). Consumer behavior in later life: Current knowledge, issues, and new directions for research. *Psychology and Marketing*, *29*(2), 57–75.

Moschis, G. P. (2021). The life course paradigm and consumer behavior: Research frontiers and future directions. *Psychology & Marketing*, *38*(11), 2034–2050.

Moschis, G. P., & Mathur, A. (2006). Older consumer responses to marketing stimuli: The power of subjective age. *Journal of Advertising Research*, *46*(3), 339–346.

Moschis, G. P., Mathur, A., & Smith, R. B. (1993). Older consumers' orientations toward age-based marketing stimuli. *Journal of the Academy of Marketing Science*, *21*(3), 195–205.

Oderanti, F. O., & Li, F. (2018). Commercialization of eHealth innovations in the market of the UK healthcare sector: A framework for a sustainable business model. *Psychology and Marketing*, *35*(2), 120–137.

Okun, M. A. (1976). Adult age and cautiousness in decision. *Human Development*, *19*(4), 220–233.

Samuelson, W., & Zeckhauser, R. (1988). Status quo bias in decision making. *Journal of Risk and Uncertainty*, *1*(1), 7–59.

Schneider, I. K., Stapels, J., Koole, S. L., & Schwarz, N. (2020). Too close to call: Spatial distance between options influences choice difficulty. *Journal of Experimental Social Psychology*, *87*, 103939.

Shaddy, F., & Fishbach, A. (2017). Seller beware: How bundling affects valuation. *Journal of Marketing Research*, *54*(5), 737–751.

Statista. (2011). Wohnformen - Wünsche der Generation 50 plus. https://de.statista.com/statistik/daten/studie/170431/umfrage/gewuenschte-wohnformen-der-generation-50-plus-mit-70-jahren/

Statista. (2021). *Smart home: Worldwide. Users by age*. https://www.statista.com/outlook/279/100/smart-home/worldwide#market-age

Streufert, S., Pogash, R., Piasecki, M., & Post, G. M. (1990). Age and management team performance. *Psychology and Aging*, *5*(4), 551–559.

Techniker Krankenkasse (2021). TK-Meinungspuls Gesundheit 2021. https://www.tk.de/resource/blob/2105222/5122ff972fe2eddd8f4ae1e73500bf62/booklet-tk-meinungspuls-2021-data.pdf

Tepper, K. (1994). The role of labeling processes in elderly consumers' responses to age segmentation cues. *Journal of Consumer Research*, *20*(4), 503–519.

Thoma, D., & Wechsler, J. (2021). Older and more personal: Stronger links between brand-name recall and brand-related autobiographical memo-ries in older consumers. *Psychology and Marketing*, *38*(9), 1384–1392.

United Nations. (2019). *World Population Prospects 2019*. Department of Economic and Social Affairs, Population Division. https://population.un.org/wpp/Publications/Files/WPP2019_Highlights.pdf

Venkatesh, V., Thong, J. Y., & Xu, X. (2012). Consumer acceptance and use of information technology: Extending the unified theory of accep-tance and use of technology. *Management Information Systems Quarterly*, *36*(1), 157–178.

Weijters, B., & Geuens, M. (2006). Evaluation of age-related labels by senior citizens. *Psychology and Marketing*, *23*(9), 783–798.

WHO. (2021). *Falls* [Fact sheet]. https://www.who.int/news-room/fact-sheets/detail/falls

Wolf, F., Sandner, P., & Welpe, I. M. (2014). Why do responses to age-based marketing stimuli differ? The influence of retirees' group identification and changing consumption patterns. *Psychology and Marketing*, *31*(10), 914–931.

Yoon, C., & Cole, C. A. (2008). Aging and consumer behavior. In C. P. Haugtvedt, P. M. Herr, & F. R. Dardes (Eds.), *Handbook of Consumer Psychology* (pp. 247–270). Routledge.

Yoon, C., Lee, M. P., & Danziger, S. (2007). The effects of optimal time of day on persuasion processes in older adults. *Psychology and Marketing*, *24*(5), 475–495.

Yousaf, K., Mehmood, Z., Awan, A. I., Saba, T., Alharbey, R., Qadah, T., & Alrige, M. A. (2020). A comprehensive study of mobile-health based assistive technology for the healthcare of dementia and Alzheimer's disease (AD). *Health Care Management Science*, *23*, 287–309.

SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.