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# The weight of advice in older age

[1, 2]Phoebe E. Bailey, [3]Natalie C. Ebner, [1, 2]Ahmed A. Moustafa, [1]Joseph R. Phillips, [1]Tarren Leon, & [1, 2]Gabrielle Weidemann

[1]School of Psychology, Western Sydney University

[2]MARCS Institute for Brain, Behaviour, and Development, Western Sydney University

[3]Department of Psychology, University of Florida

Author Note

Correspondence concerning this article should be addressed to Phoebe E. Bailey, School of Psychology, Western Sydney University, Locked Bag 1797, Penrith NSW 2751, AUSTRALIA, Email: p.bailey@westernsydney.edu.au

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## Abstract

Seeking advice from others may improve decision-making, particularly in older adults when cognitive decline can impair decision-making. This study measured the extent to which older adults rated the value of advice and used that advice in their decisions. Young (aged 18-37 years; *n* = 57) and older (aged 62-84 years; *n* = 56) adults completed a judge-advisor task incorporating advice from an expert and a novice. To capture inter-individual differences in ratings of advice value and advice use (i.e., weight of advice), desire for autonomy, working memory, and fluid intelligence were assessed. Relative to young adults, older adults rated novice advice as being more valuable and were more likely to adjust their estimates based on expert and especially novice advice. Among older adults, poorer working memory and reduced preference for autonomous decision-making were associated with greater ratings of the value of novice advice, while better fluid intelligence was associated with increased ratings of the value of expert advice. Overall, older adults give more weight to advice and cognitive decline appears to compromise discrimination of the quality of that advice.

**Keywords**: advice-taking, aging, decision-making, estimation, cognition, autonomy

Social decision-making (e.g., seeking the advice of others) is increasingly promoted as a means to improve decision-making (Hoffmann et al., 2014). This is especially relevant to the decision-making of older adults whose reliance on cognitive resources may be more limited (Löckenhoff, 2018). However, there remains a conspicuous absence of empirical evidence on the effects of advice on decisions as we age (for a review of the advice-taking literature see Bonaccio & Dalal, 2006). In particular, no study has examined whether young and older adults differ in how they value and give weight to advice.

Decisions can be autonomous (i.e., decided individually) or social (e.g., incorporating advice from others) or delegated to others or even avoided entirely. While young adults prefer to be autonomous, older adults are more likely to delegate decision-making to others (Finucane et al., 2002) or to avoid decisions entirely (Chen, Ma, & Pethtel, 2011). Decision-makers who have committed to a decision before receiving advice are less likely to utilize advice than decision-makers who are uncertain and have not already committed to a decision (Sniezek & Buckley, 1995). This suggests that, relative to young adults, older adults may give more weight to the advice of others (i.e., incorporate advice into their decision-making). While one study showed that age does not influence the self-reported tendency to use advice from others to support decisions (Delaney, Strough, Parker, & Bruine de Bruin, 2015), the extent to which older adults are actually more likely to value and act on advice in their decision-making has never been directly assessed.

Taking advice involves cognitive processes such as initial valuation of the advice followed by the process of combining advice with individual judgement (Meshi, Biele, Korn, & Heekeren, 2012). Research involving young adults consistently shows that individuals adjust their independent estimates more towards (i.e., give more weight to) advice from experts than novices (e.g., Meshi et al., 2012; Sniezek & Buckley, 1995; Wang & Du, 2018). It is suggested that people value expert advice more than novice advice, and this valuation

process takes place even before a decision is made and the outcome known. Indeed, Meshi et al. (2012) found that before receiving expert advice, young adults displayed activity in the ventral striatum, which is involved in the processing of value through reward anticipation (Knutson, Fong, Adams, Varner, & Hommer, 2001).

Dual-process models of aging and decision-making suggest that age-related declines in working memory (see Bopp & Verhaeghen, 2018 for a meta-analysis) and fluid intelligence (Samanez-Larkin & Knutson, 2015) lead older people to rely less on deliberation and more on automatic processes when making decisions (Peters, Hess, Västfjäll, & Auman, 2007). Advice decreases the complexity of a decision (Bonaccio & Dalal, 2006), suggesting that older adults may rely on advice in order to preserve limited cognitive resources. Unknown at this point is the role of specific cognitive resources in the valuation and weighting of advice. However, cognitive decline in older age may contribute to greater propensity to rely on advice regardless of advice quality (e.g., novice vs. expert advice), and failure to discriminate between reliable and unreliable sources of advice. This interpretation would align with existing evidence for an age-related decline in discrimination of other sources of information such as trustworthy versus untrustworthy partners (e.g., Bailey et al., 2016; Castle, Eisenberger, Seeman, Moons, & Boggero, 2012; Webb, Hine, & Bailey, 2016). Given less of a preference for autonomous decision-making among older relative to young adults (Chen et al., 2011; Finucane et al., 2002), reduced discrimination of novice versus expert advice is unlikely to be driven by older adults taking less advice from experts. Instead, older adults are likely to demonstrate a disproportionate increase in the weighting of novice, and thus possibly poorer quality, advice.

The overall aim of the current study was to determine whether young and older adults differ in the way they rate the value of advice and give weight to that advice in their decision-making. We chose a decision making scenario that emulates a real world situation where

individuals might realistically seek advice from different sources and adjust their opinion, estimating rental prices in a non-resident city (Meshi et al., 2012). We predicted that, relative to young adults, older adults would rate the value of advice higher and give more weight to the advice of others, and that this age-related difference would be larger for advice coming from novices relative to experts. It was also expected that reduced desire for autonomy in decision-making would be associated with increased advice-taking, particularly among older adults. Lastly, we predicted that age-related cognitive decline would be associated with increased advice-taking and reduced discrimination of expert versus novice advice.

## Method

### *Participants*

Fifty-seven young (*M* age = 19.8 years, *SD* = 3.13; range = 18-37; 31 female) and 56 older (*M* age = 71.7 years, *SD* = 5.60; range = 62-84; 29 female) adults participated in the study. Based on a large effect of age group on delegation of decision-making (Finucane et al., 2002) and a small effect of age group on choice deferral (Chen et al., 2011), we based our power analysis on a medium effect of age group on advice-taking ($f$ = .27). Using *G*Power* (Erdfelder, Faul, & Buchner, 1996) to calculate sample size *a priori*, a 2 (Age Group) x 2 (Advisor) design required 110 participants to achieve 80% power and $\alpha = .05$. All participants gave written informed consent, and the research was approved by the Western Sydney University Human Research Ethics Committee (H12559). The study was not pre-registered. The data are accessible at the Open Science Framework (https://osf.io/632fk/).

Older adults were recruited from the community and were reimbursed $20 per hour, apart from one who was an undergraduate student participating for course credit. All young adults were undergraduate students. Each older adult scored above the 21 out of 30 cut-off on the Mini-Addenbrooke's Cognitive Assessment-III (Hsieh et al., 2015), a screening tool for dementia. To further ensure our sample was generally emotionally and physically healthy we

measured depression and subjective health. As shown in Table 1, the two age groups did not differ in self-reported health, as assessed via a single item asking "Please rate your current health" on a scale from 1 (Poor) to 7 (Excellent). However, as is typical in studies of age-related differences in generally healthy individuals, young adults reported more years of education relative to older adults, and greater depression, as assessed by the depression subscale of the DASS-21 (Lovibond & Lovibond, 1995). All participants reported being free from current psychological or neurological impairment.

### *Materials and Procedure*

***Weight of advice*.** We adapted Meshi et al.'s (2012) judge-advisor-system paradigm, which was in turn adapted from Sniezek and Buckley's (1995) original version. Participants estimated the weekly rental price for 72 Melbourne apartments. A block of thirty-six expert advisor trials and a block of 36 novice advisor trials were counterbalanced across participants. Melbourne was selected because participants were residents of Sydney and therefore unlikely to have extensive knowledge of the Melbourne rental market. After giving an initial estimate, each participant encountered one of two situations: 1) the estimate of a Melbourne real estate agent (an expert), or (2) the estimate of someone with no experience of the Melbourne rental market (a novice). After receiving advice, participants made a second estimate (see Figure 1). Unknown to the participant, all advice, regardless of condition, was the actual rental price of the apartment taken from a real estate listing. The only difference between conditions was the instruction that the advice was coming from an expert versus a novice. Feedback about accuracy of each rental price was not provided so that participants could not learn about the prices or assess the credibility of advice during the experiment. The *Weight of Advice* was calculated as [(final estimate - initial estimate) / (advice – initial estimate)], whereby completely ignoring advice yielded a score of zero, while completely relying on advice yielded a score of one. We also calculated the opinion difference on each

trial (i.e., first estimate – actual price). The average opinion difference across the 36 trials in the judge-advisor task was used to determine whether there were age group differences in knowledge of the rental prices, and as a possible control in our main analyses.

*Familiarization phase*. Prior to data collection, participants completed nine trials without advice to familiarize themselves with the price of the apartments (3 high, 3 medium, and 3 low quality), followed by two practice trials with advice (1 expert, 1 novice). During the initial trials without advice participants were shown the real rental prices as listed on the online real estate listing after providing their estimates. This familiarization phase helped participants to acclimatize to the task as well as to reduce differences in domain knowledge, before the advice taking manipulation was commenced. Apartments in these trials differed from apartments described in the main task. For the initial trials without advice, we calculated the opinion difference (i.e., estimate – actual price) to assess whether there were age group differences in learning apartment prices across the nine familiarization trials, averaged across every three trials to create Time 1, Time 2, and Time 3. Note that these data were missing for 9 young adults due to a technical error.

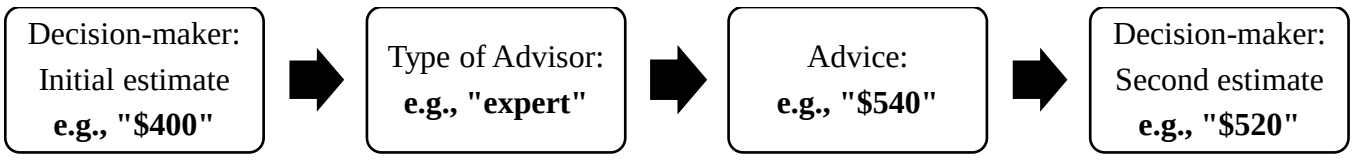


**Figure 1.** Schematic depiction of one trial in the judge-advisor-system paradigm. The participant takes the role of decision-maker (or judge) both before and after receiving advice. In this example, the decision-maker adjusts their estimate towards the expert advice.

*Stimuli.* The details of the Melbourne apartments were taken from an online real estate listing (www.domain.com.au) in March 2019. The attributes presented included number of bedrooms, bathrooms, and car spaces, as well as quality (1 = high, 2 = medium, 3 = low). Two lists of 36 apartments were matched on each of these attributes: average number of

bedrooms (List 1 $M$ = 1.97, List 2 $M$ = 1.86), bathrooms (List 1 $M$ = 1.44, List 2 $M$ = 1.42), car spaces (List 1 $M$ = 0.94, List 2 $M$ = 0.92), price (List 1 $M$ = 597, List 2 $M$ = 600), and quality (List 1 $M$ = 2, List 2 $M$ = 2). The two lists were counterbalanced across participants for the novice and expert advisor blocks.

*Data preparation.* Following Wang and Du (2018), trials were removed if the initial estimate matched the advice (novice advice: young = 2.7%, older = 2.3% of trials, $t(110) = 0.76$, $p = .448$, $d = .14$; expert advice: young = 3.4%, older = 3.3% of trials, $t(110) = 0.08$, $p = .939$ , $d = .01$). This was because such trials cannot establish the degree to which participants used advice. Trials were also removed if participants did not provide a first or second estimate due to either oversight or intentionally declining to respond (novice advice: young = 0.6%, older = 0.3% of trials, $t(110) = 1.38$, $p = .171$, $d = .26$; expert advice: young = 1.2%, older = 0.1% of trials, $t(110) = 2.80$, $p = .006$, $d = .53$).

Trials were removed where a second estimate was less than $100, including $0 responses, or greater than $4,000, suggesting human error (novice advice: young = 0.2%, older = 2.8%, $t(110) = 3.09$, $p = .003$, $d = .58$; expert advice: young = 0.2%, older = 3.0% of trials, $t(110) = 2.64$, $p = .009$, $d = .50$). These types of potential typographical errors were larger among older relative to young adults in both advice conditions. These trials also resulted in weights of advice greater than 1.3 or less than -1.3. Following Meshi et al. (2012) and Schultze et al. (2017), any remaining weights of this magnitude (> 1.3 or < -1.3) were removed from the analysis (novice advice: young = 2.6%, older = 4.8% of trials, $t(110) = 1.66$, $p = .101$, $d = .31$; expert advice: young = 3.2%, older = 4.5% of trials, $t(110) = 1.06$, $p = .293$, $d = .20$). This was because these trials incorrectly suggest that participants were highly influenced by advice. For example, consider a case where there was an initial estimate of $500 and advice of $600. Then consider two possible responses. In the first example, a second estimate of $610 would result in a weighting of 1.1. In the second example, a second

estimate of $710 would result in a weighting of 2.1. A weighting of 2.1 would incorrectly indicate increased advice-taking relative to a weighting of 1.1.

***Rated value of advice.*** As in Meshi et al. (2012), at the end of each block, participants responded to the question, "How valuable was the advice you received from the expert/novice?" on a 5-point scale from 1 (not valuable) to 5 (very valuable).

***Autonomy.*** One question assessed desire for autonomous decision-making: "Please rate your preference for making decisions on your own versus with help from others" on a scale from 1 (with help from others) to 7 (on my own). This question was administered after completing the judge-advisor tasks.

***Cognition.*** *Fluid intelligence* was assessed using two sets of 12 progressive matrices taken from Schniter and Shields (2014), who validated the stimuli for use with a wide age range. These two sets replicate the manipulations identified in Raven's C and D sets of the Standard Progressive Matrices (Raven, Court, and Raven, 1998). *Short-term memory* was measured using the Forward Digit Span from the Revised Wechsler Adult Intelligence Scale (WAIS-R; Wechsler, 1981*Working memory* was measured with the Backward Digit Span from the WAIS-R. Young adults completed the fluid intelligence and memory assessments in a counterbalanced order in between each judge-advisor condition (expert vs. novice). Given the extra time older adults took to complete each of these tasks, most older adults completed only the digit span in between each judge-advisor blocks, and the matrices at the end of each testing session. This also ensured that if older adults exceeded the maximum testing time, we would have their complete judge-advisor task data. Most older adults also completed an additional task at the end of the testing session, but before the matrices, as part of a separate study not reported here.

***Outlier data.*** Outlier scores more than 3 *SD* from the age group mean were adjusted to the mean +/- 3 *SD*. Among young adults, this resulted in one adjustment each for novice

weight of advice, rated value of expert advice, average judge-advisor opinion difference, and fluid intelligence. There were no adjustments among older adults. Note that no findings changed as a result of these adjustments.

## Results

### *Background, autonomy, and cognitive measures*

As shown in Table 1, older adults reported a greater preference for autonomy in decision-making relative to young adults. There was also an age-related decline in fluid intelligence, but not short-term memory or working memory.

Table 1. Descriptive statistics and age group differences for background, autonomy, and cognitive measures.

| | Young adults | | Older adults | | Age group differences | | | Effect size |
|---|---|---|---|---|---|---|---|---|
| | *M* | *SD* | *M* | *SD* | *t* | *p* | *df* | *d* |
| Education | 13.6 | 1.24 | 12.0 | 2.92 | 3.75 | < .001 | 110 | 0.72 |
| Health | 5.5 | 1.04 | 5.5 | 0.91 | 0.43 | .666 | 111 | 0.08 |
| Depression | 4.8 | 4.16 | 2.2 | 2.79 | 3.91 | < .001 | 108 | 0.75 |
| Autonomy | 4.0 | 1.44 | 5.6 | 1.50 | 5.79 | < .001 | 110 | 1.10 |
| Short-term memory | 9.6 | 2.22 | 10.1 | 2.19 | 1.19 | .239 | 111 | 0.22 |
| Working memory | 6.5 | 2.21 | 6.2 | 2.06 | 0.82 | .413 | 111 | 0.15 |
| Fluid intelligence | 20.4 | 2.80 | 16.9 | 4.91 | 4.70 | < .001 | 109 | 0.89 |

*Note*. One older adult did not provide years of education. Two young adults and one older adult did not complete the depression scale (DASS-21). One young adult did not respond to the autonomy question, and one person in each age group did not complete the fluid intelligence test.

### *Familiarization phase*

A Time (1, 2, 3) x Age Group (Young, Older) Analysis of Covariance (ANCOVA) on opinion difference, controlling for age-related differences in education, depression,

autonomy, and fluid intelligence, showed that there were main effects of Time, $F(2, 182) = 32.01$, $p < .001$, $\eta_p^2 = .26$, and Age Group, $F(1, 91) = 8.05$, $p = .006$, $\eta_p^2 = .08$. As shown in Figure 2, the opinion difference was smaller for older adults than young adults, averaged across time. This indicates that older adults provided more accurate estimates of the apartment prices. Averaged across age group, the average opinion difference became smaller from Time 1 to Time 2 ($p < .001$) and remained the same from Time 2 to Time 3 ($p = .779$). This indicates that participants' estimates were more accurate after Time 1, suggesting rapid learning. There was no Time x Age Group interaction, $F(2, 182) = 0.11$, $p = .893$, $\eta_p^2 < .01$.

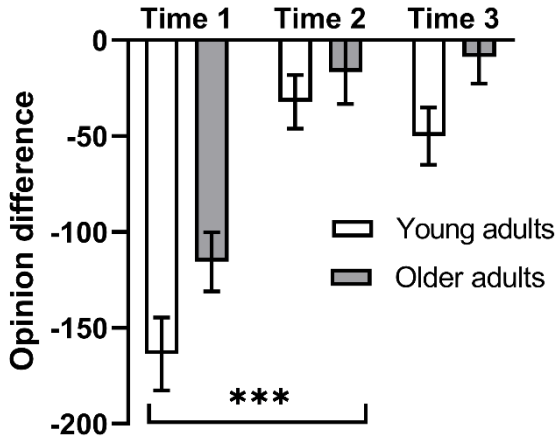


Figure 2. Opinion difference in the familiarization phase as a function of age group and time.

***Weight of Advice***

The average opinion difference across the 36 trials in the judge-advisor task was smaller for older ($M = 5.93$, $SD = 46.67$) than young ($M = -18.43$, $SD = 45.60$) adults ($p = .006$). A 2 (Age Group: young, older) x 2 (Advisor: novice, expert) mixed design ANCOVA was conducted on weight of advice, controlling for age-related differences in education, depression, autonomy, fluid intelligence, and the judge-advisor task average opinion difference. A main effect of Advisor, $F(1, 99) = 127.08$, $p < .001$, $\eta_p^2 = .56$, revealed more weight being given to expert than novice advice. A main effect of Age Group, $F(1, 99) = 12.70$, $p = .001$, $\eta_p^2 = .11$, indicated that, relative to young adults, older adults gave more

weight to advice. These main effects were qualified by an Age Group x Advisor interaction, $F(1, 99) = 5.68$, $p = .019$, $\eta_p^2 = .05$. Tests of simple effects show that relative to young adults, older adults gave more weight to both novice, $F(1, 99) = 18.66$, $p < .001$, and expert, $F(1, 99) = 3.92$, $p = .051$ advice. This effect, however, was stronger for the novice relative to the expert condition ($\eta_p^2 = .16$ and $\eta_p^2 = .04$, respectively, Cohen (1992) defines $\eta^2_p = .01$ as a small, .06 as a medium, and .14 as a large effect; see Figure 3A).

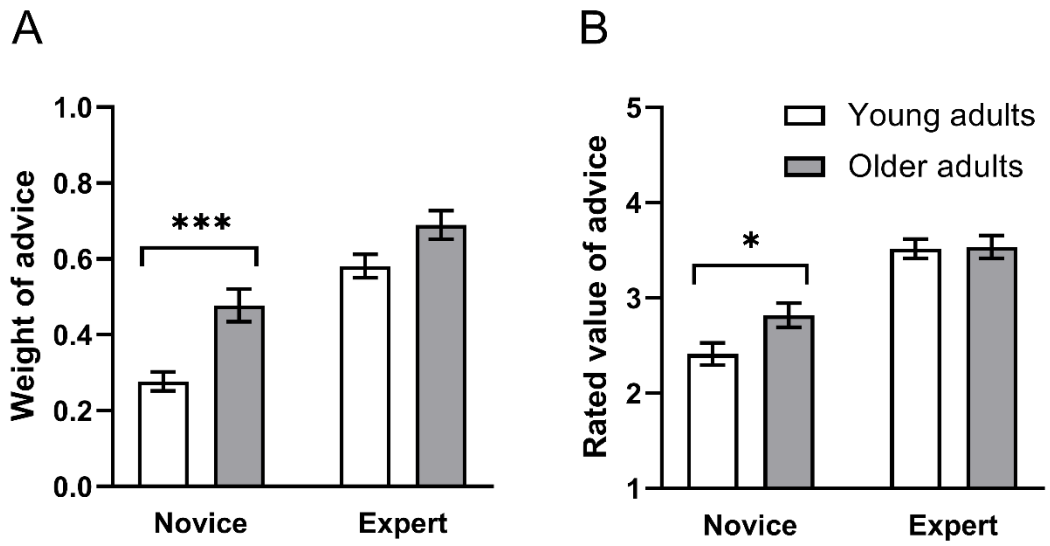


Figure 3. Weight (A) and value (B) of novice and expert advice as a function of age group (young, older). Weight of advice ranges from 0 (ignoring advice) to 1 (completely relying on advice). Value of advice ranges from 1 (not valuable) to 5 (very valuable). Error bars indicate standard errors.

***Rated Value of Advice***

A 2 (Age Group: young, older) x 2 (Advisor: novice, expert) mixed design ANCOVA was conducted on rated value of advice, controlling for age-related differences in education, depression, autonomy, fluid intelligence, and average opinion difference. There was a main effect of Advisor, $F(1, 98) = 78.04$, $p < .001$, $\eta_p^2 = .44$, but not Age Group, $F(1, 98) = 2.53$, $p = .115$, $\eta_p^2 = .03$. Participants in general placed more value on expert than novice advice. The main effect, however, was qualified by an Age Group x Advisor interaction, $F(1, 98) = 5.34$, $p = .023$, $\eta_p^2 = .05$. Tests of simple effects showed that the two age groups did not differ in

the extent to which they valued expert advice, $F(1, 98) = 0.02$, $p = .889$, $\eta_p^2 < .001$, but older adults found novice advice more valuable than did young adults, $F(1, 98) = 6.57$, $p = .012$, $\eta_p^2 = .06$ (see Figure 3B). One older adult did not provide a rating for value of advice in the novice condition.

***Correlations with rated value of advice and weight of advice***

Among both young and older adults, the rated value of expert and novice advice was positively correlated with the weight given to that type of advice (see Table 2). Weight of advice was not correlated with educational level, depression, autonomy, or cognitive measures in either age group ($p > .05$). Among older adults, rated value of novice advice, however, was negatively correlated with desire for autonomy, and with working memory, while rated value of expert advice was positively correlated with fluid intelligence. No other significant relationships existed ($p > .05$).

Table 2. Intercorrelations among the variables for young (above diagonal) and older (below diagonal) adults.

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| Young adult *n* | 57 | 57 | 57 | 57 | 57 | 55 | 56 | 56 | 57 | 57 |
| Older adult *n* | 56 | 56 | 55 | 56 | 55 | 55 | 56 | 55 | 56 | 56 |
| 1. Novice weight of advice | - | .46** | .30* | .10 | -.06 | -.03 | -.00 | -.08 | -.07 | -.21 |
| 2. Expert weight of advice | .58** | - | -.03 | .37** | .16 | .01 | -.06 | -.01 | -.06 | .03 |
| 3. Rated value of novice advice | .39** | .03 | - | .18 | -.19 | -.18 | -.12 | -.20 | -.02 | -.17 |
| 4. Rated value of expert advice | .00 | .35** | .22 | - | .12 | .02 | -.02 | -.12 | .11 | .10 |
| 5. Education | -.12 | -.09 | .02 | -.24 | - | -.04 | .18 | .06 | .07 | .10 |
| 6. Depression | -.14 | -.14 | .19 | -.07 | .05 | - | -.27* | .16 | -.03 | .03 |
| 7. Autonomy | -.14 | .21 | -.28* | .16 | -.35** | -.05 | - | -.04 | -.04 | -.12 |
| 8. Fluid intelligence | -.26 | .13 | -.20 | .31* | .27* | -.10 | .18 | - | .30* | .35** |
| 9. Short-term memory | -.16 | -.09 | -.29* | .02 | .12 | -.19 | -.03 | .34* | - | .38** |
| 10. Working memory | -.19 | .07 | -.41** | .13 | .21 | -.24 | .17 | .30* | .56** | - |

*Note*. * $p < .05$, ** $p < .01$. Correlations that are significant at $\alpha = .05$ should be interpreted with caution due to multiple comparison.

## Discussion

The aim of the current study was to determine the degree to which older adults value and incorporate advice from others into their decision-making. As predicted, relative to young adults, older adults adjusted their estimates closer to the advised estimates (i.e., gave more weight to advice), and this age group difference was more pronounced for novice relative to expert advice. The increased weighting of advice among older adults was evident despite older adults demonstrating better underlying knowledge of the actual prices (i.e., a smaller opinion difference), relative to young adults. In partial support of hypotheses, older relative to young adults rated the value of advice as higher, but only in the novice advisor condition. The prediction that reduced desire for autonomy in decision-making would be associated with increased advice-taking was only supported among the older adult group, and only in relation to the rated value of novice advice. However, this effect was indeed expected to be stronger among older relative to young adults. There was also some support for the hypothesis that age-related cognitive decline would contribute to increased advice-taking and reduced discernment of expert relative to novice advice. Among older adults, poorer working memory was associated with greater rated value of novice advice, while better fluid intelligence was associated with increased rated value of expert advice. However, measures of autonomy and cognition were not directly associated with the subsequent weight given to advice, as assessed by the use of advice to alter estimates.

Consistent with the present findings, previous research has shown that young adults utilize expert advice to a greater extent than novice advice due to greater valuation of expert relative to novice advice (Meshi et al., 2012). The present results extend this work by showing that like young adults, older adults rated the value of expert advice higher than the advice of novices. However, the current data also suggest that young compared to older adults give relatively less weight to both expert and novice advice, but particularly the advice

of novices. This is consistent with research investigating age-related differences in trust, which shows that older compared to young adults discriminate less between reliable (trustworthy) versus less reliable (untrustworthy) sources of information (e.g., Bailey et al., 2015; Castle et al., 2012; Webb et al., 2016). It has been suggested in these previous studies that the age-related positivity effect (see Reed, Chan, & Mikels, 2014) leads to a particular reduction in attention to unreliable information. Novices are known to be less reliable than experts (Bonaccio & Dalal, 2006), and as such, older adults may be more likely than young adults to over-look this characteristic of the advisor. This effect could also be related to an accumulation of life experience that contributes to older adults better understanding that advice-taking generally improves decision-making (Bonaccio & Dalal, 2006). Given that all advice in the current study was accurate, and older adults demonstrated better knowledge of the rental market than young adults, older adults may have relied on intuition when accepting novice advice.

In addition to generating novel findings regarding differential effects of novice versus expert advice on decision-making in aging, the present study is the first to assess the influence of specific cognitive capacities on advice-taking. According to dual process models of aging and decision-making, older adults rely less on deliberative processing (Peters et al., 2007), which may explain their difficulty in appropriately weighting advice as a function of credibility of the source of that advice. Indeed, among older adults, poorer working memory was associated with greater rated value of novice advice, while poorer fluid intelligence was associated with rating the value of expert advice less.

Among both young and older adults, the weights of advice in the expert and novice advisor conditions were significantly correlated. However, the rated value given to expert advice correlated with the weight given to expert advice but not with the weight given to novice advice, and the rated value given to novice advice correlated with the weight given to

novice advice but not to expert advice. This suggests that although there may be individual differences in the extent to which participants utilize advice, regardless of the source of the advice, the weight of advice is not associated with the rated value of advice in general. Rather, it is the specific rated value of expert advice that is associated with the weight given to expert advice, and the specific rated value of novice advice that is associated with the weight given to novice advice. This observation is consistent with Meshi et al.'s (2012) suggestion that the value of expert versus novice advice is calculated prior to making a decision to use that advice.

A surprising finding was that, relative to young adults, older adults reported a greater desire for autonomy in decision-making. This observation does not align with previous evidence demonstrating age-related reductions in preference for autonomy (Chen et al., 2011; Finucane et al., 2002). It is also inconsistent with results showing that age group does not influence self-reported use of advice (Delaney et al., 2015). However, these three previous studies constitute the entirety of research to date assessing the question of age-related differences in desire for autonomy in decision-making. Further research is needed to replicate and explain the current data showing a greater preference for autonomy among older relative to young adults. The current pattern of findings might be a result of the specific decision-making context, involving evaluation of an aspect of the housing market, and that older adults may have more experience than young adults in this specific life context. Future research should test this possibility with a study that manipulates the decision-making context in which advice-taking is assessed. Nevertheless, an important finding that is partly consistent with our original hypothesis was that among older adults, those who expressed a greater desire for help from others (i.e., less desire for autonomous decision-making) also rated novice advice as being more valuable.

Future research is needed to determine the extent to which increased weighting of novice advice is beneficial versus costly. Poor quality novice advice could impair decision-making, or in some cases leave older adults open to being taken advantage of by unscrupulous individuals. Future research should assess the degree to which preference for seeking advice is a specific risk factor for financial abuse, particularly among older adults. On the other hand, high quality novice advice is likely to improve decision-making in older age. In addition to manipulating the accuracy of advice, future studies should measure the pre and post confidence levels of decision-makers when assessing age-related differences in advice-taking. There is mixed evidence as to whether older adults display more or less confidence in their knowledge relative to young adults (Strough, Bruine de Bruin, & Peters, 2015). Decision-makers who are less confident display greater advice-seeking (Bonaccio & Dalal, 2006), and although older adults demonstrated better knowledge of the rental market in the present study, their confidence in that knowledge may have been low, thus contributing to increased advice-taking.

The extreme age group design of the current study, excluding a middle-aged sample, limits interpretation of non-linear effects of age on advice-taking. Longitudinal research is also needed to disentangle cohort effects from effects of aging. Further limitations that should be addressed in future research include the differing incentives provided to young versus older adults, and a potential age group difference in socioeconomic status. Lab-based studies offer high levels of experimental control, especially in the initial stages of establishing group differences. Objective evaluations of advice-taking in the lab are also less biased than subjective evaluations in the field. Nevertheless, future research is needed to determine the ecological validity and real-life applicability of the current data. The generalizability of the findings to other contexts (e.g., workplace vs family interactions, financial vs healthcare

settings), and in relation to topics where young and older adults have similar levels of expertise, also remains to be established.

The present results are commensurate with the suggestion that advice-seeking is generally an appropriate adjunct for older adults faced with complex decisions about healthcare and other consequential issues (Hoffman et al., 2014). However, they also suggest that older adults may be more vulnerable than young adults to novice advice that may not be as beneficial as expert advice. This appears to be because older adults discriminate less than young adults between different sources (novice vs. expert) of advice, and this may be attributed to the way older adults with reduced preference for autonomy and poorer working memory perceive novice advice to be more valuable. Overall, our study supports the notion that the provision of advice is a useful strategy for improving decision-making in older age. But, older adults' valuation of the source of advice should be a target for intervention to ensure optimal decision-making in aging. These findings are theoretically and practically important, particularly in the context of rapidly aging populations.

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