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Getting older isn't all that bad: Better decisions and coping when facing 'sunk costs'

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Abstract

Because people of all ages face decisions that affect their quality of life, decision-making competence is important across the life span. According to theories of rational decision making, one crucial decision skill involves the ability to discontinue failing commitments despite irrecoverable investments also referred to as 'sunk costs.' We find that older adults are better than younger adults at making decisions to discontinue such failing commitments especially when irrecoverable losses are large, as well as at coping with the associated irrecoverable losses. Our results are relevant to interventions that aim to promote better decision-making competence across the life span.

Keywords

decision making; aging; individual differences; emotional development

Population age is increasing worldwide (Kinsella & Phillips, 2005; European Commission, 2012). People of all ages face important life decisions that affect their health, finances, and well-being. Having good decision-making competence is associated with better life outcomes, even after controlling for socio-economic status and other abilities (Bruine de Bruin, Parker, & Fischhoff, 2007). However, well-documented age-related declines in fluid cognitive ability may threaten the quality of older adults' decisions (Bruine de Bruin, Parker, & Fischhoff, 2012; DeMissier, Mäntylä, Hansson, Bruine de Bruin, & Parker, in press; Finucane & Gullion, 2010), underscoring the need for identifying other, perhaps non-cognitive, pathways to maintaining decision-making competence across the life span. A better understanding of the skills that contribute to making good decisions should help us to design interventions that teach better decision making to people of all ages, thus improving quality of life across the life span.

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Unfortunately, relatively little is known about the relationship between aging and decision-making competence, because most research on the psychology of decision making has been conducted with college students (Peters & Bruine de Bruin, 2012; Strough, Karns, & Schlosnagle, 2011a). The few studies that have included age-diverse samples report inconsistent findings about the relationship between aging and decision-making competence, perhaps due to using different types of decision tasks. Indeed, studies using cognitively demanding decision tasks show age-related declines in performance, but studies using cognitively less demanding decision tasks show either no change or improvements with age (Bruine de Bruin et al., 2012; DeMissier et al., in press; Peters & Bruine de Bruin, 2012). This pattern of results is in line with the emerging view that good decisions do not only involve cognitive abilities but also affective or experiential skills (Reyna, 2004; Stanovich & West, 2008), and with speculations that age-related improvements in affective or experiential skills may counteract age-related cognitive declines in decision making (Hess, Queen, & Ennis, 2012; Peters, Hess, Västfjäll, & Auman, 2007; Peters & Bruine de Bruin, 2012; Strough et al., 2011a). Indeed, recent research shows that affect and emotion are essential for understanding adult age differences in decision making (Löckenhoff, Donoghue, & Dunning, 2011; Mather, et al., 2012; Mikels, Cheung, Cone, & Gilovich, 2012).

Here, we focus on the recent finding that older adults perform better than younger adults on decision tasks that involve canceling failing plans with so-called ‘sunk costs,’ or irrecoverably lost investments (Bruine de Bruin et al., 2012; Strough, Mehta, McFall, & Schuller 2008; Strough, Schlosnagle, & DiDonato, 2011b). Typically, ‘sunk-cost problems’ do indeed involve having made irrecoverable investments into a project that now appears to be failing (for a recent review, see Slesman, Conlon, McNamara, & Miles, 2012). The correct response is to refrain from investing the remaining budget and cancel the failing project. Indeed, theories of rational decision making posit that decisions should solely be based on expectations for future costs and benefits, because any prior investments will be lost regardless of how the decision maker proceeds (Edwards, 1954).

One reason for people’s hesitance to discontinue failing commitments is that they have inappropriate concerns about ‘wasting’ their irrecoverable investments, especially when those are relatively large (Arkes & Blumer, 1985). Based on a review of just a few studies with age-diverse participants, it has been speculated that this inappropriate application of the ‘waste not’ heuristic is learned with age, and that children therefore outperform young adults on ‘sunk cost’ decisions (Arkes & Ayton, 1999). However, recent findings have shown that this hypothesized developmental trajectory does not continue in older adult age, with the ability to cancel failing commitments actually improving from early to later adulthood (Bruine de Bruin et al., 2007; Strough et al., 2008).

Recent reviews have suggested that it is important to understand which specific skills and strategies improve with age to promote better decisions (e.g., Peters & Bruine de Bruin, 2012; Peters et al., 2007). In the present study, we test the novel idea that older adults are better than younger adults at coping when faced with decisions about canceling failing plans, in terms of avoiding rumination or repetitive thoughts about the past. Several findings contributed to this idea. First, rumination prevents individuals from resolving their issues or

their negative affect, and can be avoided by disengaging from the negative thoughts and focusing on the positive (Kessler & Staudinger, 2009; Sütterlin, Paap, Babic, Kübler & Vogele 2012; Torges, Stewart, & Nolen-Hoeksema, 2008). Second, older adults are more likely than younger adults to avoid rumination about especially negative experiences like the death of a loved one (Torges et al., 2008). Third, older adults are less likely than younger adults to mention prior losses when making decisions that involve ‘sunk costs’, suggesting that they are better at avoiding rumination about irrecoverable losses (Strough et al., 2011b). Overall, these findings suggest the importance of coping strategies for understanding why older adults make better decisions -- perhaps especially when faced with large ‘sunk costs’ or irrecoverable losses which are harder to resist (Arkes & Blumer, 1985).

We hypothesized that older adults would be more willing than younger adults to cancel failing plans, especially when the irrecoverable losses were large rather than small. We also hypothesized that older adults would cope better when faced with irrecoverable losses. Additionally, we explored whether age differences in coping may contribute to our understanding of age differences in willingness to cancel failing plans.

Method

Participants

We conducted an internet survey with RAND’s American Life Panel (ALP), whose members form a unique national sample of U.S. adults (<https://mmicdata.rand.org/alp/>). Panelists were initially recruited through random digit dialing for other national surveys, including the monthly Consumer Survey conducted by the University of Michigan Survey Research Center. Snowball procedures were used to recruit additional participants from underrepresented populations. To improve enrollment into the panel, the 3.7% who had no computer or internet access were given user-friendly equipment and training materials. Panel members also receive the phone number of a helpdesk, which, in the 2012 end-of-year survey, 6.1% reported having used in the prior six months. The 2012 end-of-year survey also found that 7.9% of participants had sent emails in the last six months about problems with the equipment, logging in, or getting stuck in a survey. Age is positively related to having received equipment ($r=.07, p<.001$) but not to calling the helpdesk ($r=.02, p=.29$) or emailing about problems ($r=.00, p=.93$).

ALP panelists receive invitations for monthly internet surveys, obtaining about \$20 per 30 minutes of their time. An invitation for our internet survey was sent to 1,353 panelists, 1,075 of whom completed it, for a response rate of 79.5%. Respondents were on average five years older than non-respondents ($M=53.49, SD=14.19$ vs. $M=48.79, SD=15.16$), $t(1351) = 4.84, p<.001$, more likely to be male (43.8% vs. 34.9%), $\chi^2(1)=7.22, p<.01$, and more likely to be white (80.4% vs. 68.7%), $\chi^2(1)=17.69, p<.001$. The procedures reported in this paper were given to a random sample of 335 out of the 1,075 respondents. Their mean age was 53.97 ($SD=13.77$; range 20–89), with 54 being 30 or younger, 157 in their 40s–50s, and 124 being 60 or older. A total of 58.5% were women, 19.6% were non-white, and 47.2% had a college degree. These demographic characteristics for our sample of 335 were not significantly different from the rest of the 1,075 participants or the rest of the 1,353 invitees ($p>.05$), except that our sample was on average two years older than the rest of the 1,353 invitees

($M=54.0$, $SD=13.8$ vs. $M=52.0$, $SD=14.7$), $t(1351)=-2.11$, $p<.05$. In our sample of 335, older adults were slightly more likely to be male ($r=.14$, $p<.01$) and white ($r=.28$, $p<.001$), but these demographic characteristics were not associated with our main dependent variable of sunk-cost decisions ($p>.05$).

Internet survey procedure

Sunk-cost decisions—After accepting the invitation to our internet survey by clicking on a link, participants received the first part of a multi-part internet survey, which included two sunk-cost scenarios. Below, we describe and analyze all measures pertaining to the presented sunk-cost scenarios. These measures were implemented to test our specific hypotheses and presented in the first part of a multi-part survey. No other questions were asked about the presented sunk-cost scenarios.

Participants received two consecutively presented sunk-cost scenarios that were adapted from a validated measure (Bruine de Bruin et al., 2007). The scenarios varied whether ‘*sunk costs*,’ or *irrecoverable losses* were relatively large or small. Because many studies of ‘sunk cost’ decisions involve only scenarios with large irrecoverable losses (Sleesman et al., 2012), all participants received the scenario with large irrecoverable losses first. The first scenario, which had relatively large irrecoverable losses, read “You have driven halfway to a vacation destination. Your goal is to spend time by yourself. You feel sick. You feel that you would have a much better weekend at home. You think that it is “too bad” you already drove halfway, because you would much rather spend the time at home. Please think about what you would do if you were in this situation. Would you be more likely to stick with your plans or to cancel your plans?” The ‘sunk’ prior investment of having driven halfway should tempt decision makers to stick with their plans. However, theories of rational decision making posit that the correct decision is to ignore prior investments and select the course of action that will make the decision maker better off in the future, that is, canceling plans and returning home. The decision maker should also make similar choices when prior investments are large or small. Hence, the second scenario, which had relatively small irrecoverable losses, was similar but entailed being at home rather than halfway to the destination. Participants were randomly assigned to whether or not their presented scenarios involved the presence of a friend. Thus, approximately half of the participants received these two scenarios as presented here, and the other half received scenarios referring to “you and your friend” rather than just “you.” The analyses reported here control for whether or not the scenarios involved the presence of a friend, though reported findings showed no difference between these conditions. After each scenario, participants indicated what they would do on a scale from 1 (*most likely to stick with plans*) to 6 (*most likely to cancel plans*) with higher ratings reflecting appropriately resisting sunk costs.

Coping strategies—After each scenario, participants also indicated their strategies for coping with the failed plans. To measure coping strategies that involve rumination avoidance, we adapted six items from the Disengagement versus Preoccupation dimension of the Action Control Scale, with positively framed items measuring disengagement from negative ruminative thoughts (e.g., “I would easily forget about it”) and negatively framed items measuring preoccupation with ruminative thoughts (e.g., “It would take me a long

time to adjust myself to it”) (Dieffendorf, Hall, Lord, & Streat, 2000), as well as eight coping items from the Constructive Thinking Inventory with positively framed items reflecting focusing on the positive instead of ruminating about the negative (e.g., “I would try to imagine the best outcome and avoid thinking about what might go wrong”) and negatively framed items doing the opposite (e.g., “I would waste a lot of time worrying about it instead of just doing something about it”) (Epstein & Meier, 1989; Katz & Epstein, 1991). We selected the Disengagement versus Preoccupation dimension of the Action Control Scale because it had previously detected age-related differences in coping strategies (Kessler & Staudinger, 2009) and the Constructive Thinking Inventory because it had been associated with improved decisions about sunk costs (Bruine de Bruin et al., 2007). All coping items were presented with a Likert scale that ranged from 1 (*definitely false*) to 6 (*definitely true*). Participants rated how true the statement was for them when deciding how to deal with failed plans. After reverse-coding negatively framed items, the mean scores of the items taken from the separate scales were highly correlated at each assessment ($r=.62$, $p<.001$ for high irrecoverable losses; $r=.63$, $p<.001$ for low irrecoverable losses), with Cronbach’s alpha showing good internal consistency across all items ($\alpha=.88$ for high irrecoverable losses; $\alpha=.87$ for low irrecoverable losses), with all items loading highly onto the first unrotated factor ($>.42$ for high irrecoverable losses; $>.38$ for low irrecoverable losses). For the analyses presented below, we computed the mean coping score across all presented items, for the scenario with high irrecoverable losses, and for the scenario with low irrecoverable losses.

Results

Analysis strategy

To test our hypotheses, we began by conducting two sets of multi-level models with repeated measures, each using a different criterion variable. In the first set, the criterion variable was willingness to cancel failing travel plans despite irrecoverable losses or sunk costs (see section on “age and sunk cost decisions”). In the second set, the criterion variable was coping through rumination avoidance (see section on “age and coping strategies”). In each set, we first used age and the size of the irrecoverable losses (large vs. small) as predictors, then entered the interaction of these two variables in a second step. All models controlled for whether or not the scenarios included the presence of a friend. We also present the associated correlations between age, canceling failing plans, and coping through rumination avoidance (Table 1), as well as the independent-sample *t*-tests examining the effect of large vs. small irrecoverable losses or sunk costs on the two criterion variables (see section on “age, coping strategies, and sunk cost decisions”).

Because age was a continuous variable, the unstandardized parameter estimates reported with the models reflect the difference in the dependent variable that is associated with a difference of only one year of age. To examine, say, the result of a 20-year or 40-year age difference (e.g., between younger and older adults), the estimate should be multiplied by the appropriate number. We provide estimates with three digits to facilitate that exercise.

Subsequently, to explore the possibility of statistical mediation, we followed steps outlined by Baron and Kenny (1986). These analyses examined (a) the relationship between age and

coping, (b) the relationship between age and willingness to cancel, and (c) the relationship between age and willingness to cancel while controlling for coping, as well as the relationship between coping and willingness to cancel while controlling for age. These analyses also included variables for whether or not the scenarios included the presence of a friend, and for high vs. low irrecoverable losses.

Age and sunk-cost decisions

As expected, willingness to cancel failing plans, as reported across scenarios, was stronger with older age, ($B=.015, se=.005; p=.005$), and with low (vs. high) irrecoverable losses ($B=1.380, se=.088; p<.001$). The latter was also seen in an independent-sample t -test ($M=4.98, SD=1.45$ vs. $M=3.60, SD=1.75$), $t(334)=15.65, p<.001$). When the interaction between age and (low vs. high) irrecoverable losses was entered in a second step, it was significant ($B=.015, se=.006; p=.020$) and showed that age was significantly related to appropriately canceling plans under high irrecoverable losses ($B=.023, se=.007; p=.001$) but not under low ones ($B=.008, se=.006; p=.179$).

Age and coping strategies

As expected, avoiding rumination was associated with older age ($B=.006, se=.002; p=.012$) and with low (vs. high) irrecoverable losses ($B=.176, se=.022; p<.001$). The latter was also seen in an independent-sample t -test ($M=4.15, SD=.60$ vs. $M=3.98, SD=.63$), $t(334)=8.27, p<.001$. When the interaction between age and (low vs. high) irrecoverable losses was entered in a second step, it was not significant ($B=.002, se=.002; p=.144$).

Age, coping strategies, and sunk-cost decisions

Figure 1 shows the initial steps of Baron and Kenny's (1986) procedure for testing whether, across the presented scenarios, the relationship between age and canceling failing plans was statistically mediated by coping, while controlling for whether or not the scenarios included the presence of a friend, and high vs. low irrecoverable losses. As noted, the analyses reported above indicated, across presented scenarios, a significant relationship (a) between age and coping ($B=.006, se=.002; p=.012$), and (b) between age and appropriately canceling failing plans ($B=.015, se=.005; p=.005$). Next, the relationship between age and canceling failing plans was reduced after controlling for coping ($B=.013, se=.005; p=.015$), while the relationship between coping and canceling failing plans was significant after controlling for age ($B=.375, se=.109, p<.001$). A Sobel test ($z=2.209; p=.027$) indicated significant statistical mediation.¹

Discussion

Older adults were more likely than younger adults to appropriately discontinue a failing plan despite having made irrecoverably lost investments, replicating previous findings (Strough et al., 2008; Bruine de Bruin et al., 2012). Thus, older adults' decisions correctly follow

¹The reported mediation analysis is not significant when conducting it separately for the conditions with high or low irrecoverable losses. After adding the interaction term between age and low vs. high irrecoverable losses to the reported mediation analysis, the relationship between age and canceling failing plans was no longer significantly mediated by coping – while the relationship between the interaction term and cancelling failing plans was not significantly mediated by coping either.

principles outlined in theories of rational decision making. Moreover, we found that older adults were better than younger adults at coping with failing plans. Specifically, older adults avoided unproductive ruminative thoughts about what they have lost or should have done differently. Avoiding such thoughts was associated with making better decisions about canceling failing plans. Because the more effective coping strategies that were reported by our older participants can be taught, it should be possible to help people of all ages to make better decisions (e.g., van Putten, Zeelenberg, & van Dijk, 2009).

Our findings are congruent with prior research showing that negative information about lost investments is less salient to older adults (Strough et al., 2011b). Research from other literatures has also shown that older adults are less likely than younger adults to ruminate (Sütterlin et al., 2012; Torges et al., 2008) and are more likely to effectively use emotion regulation strategies (Blanchard-Fields, 2007). More generally, motivation to enhance emotional well-being is thought to increase with age as people perceive limits on their time left in life (Carstensen, 2006). The age-related differences in coping strategies and decisions uncovered in our study could be a reflection of this motivation.

Age differences in canceling a failing course of action were especially pronounced when prior irrecoverable losses were larger rather than smaller. This finding suggests that the age differences in decisions we found do not simply reflect an age difference in valuing travel. If younger adults would truly have put greater value on the plans under consideration, they should have stuck with them regardless of how much they had already invested. After all, good decisions are made exclusively on the basis of expected future outcomes, since prior losses are gone no matter how the decision maker proceeds (Arkes & Blumer, 1985).

Like all studies, ours has potential limitations. Although our study used a unique national sample, its cross-sectional, correlational design precludes causal conclusions about age-related improvements in coping contributing to better sunk-cost decision making with older age (e.g., Lindenberger, van Oertzen, Ghisletta, & Hertzog, 2011; Maxwell & Cole, 2007). The reported differences between older adults and younger adults may reflect a cohort effect, such that our older participants' better coping skills were learned from unique life experiences that our younger participants may never face. However, longitudinal research also demonstrates age-related increases in the coping strategies analyzed here (Folkman, Lazarus, Pimley, Novacek, 1987).

Another potential limitation is that our hypothetical decision scenarios were limited to canceling travel plans, across two scenarios involving larger and smaller irrecoverable losses. Our previous research does suggest that age differences consistently emerge in the ability to cancel failing plans despite irrecoverable losses as reported across a variety of scenarios (Bruine de Bruin et al., 2012), with the validity of the scenarios having been demonstrated through significant correlations of overall performance with better life decision outcomes (Bruine de Bruin et al., 2007). Overall, there is evidence to suggest that hypothetical decision scenarios do indeed measure decision skills that are relevant to real-world decision making -- even after controlling for fluid cognitive ability and socio-economic status (Bruine de Bruin et al., 2007; Parker & Fischhoff, 2005).

As noted, the reported relationships were relatively small. Because age was used as a continuous variable, parameter estimates reflect the effect of only one additional year of age on the dependent variable. To see the effect of a decade of aging or more, the relevant estimate should be multiplied by the appropriate number. Yet, the small statistical mediation suggests that coping may not be the only factor that is associated with older adults' better decisions about irrecoverable losses. Another factor that may play an important role is older adults' shorter future time perspective, which motivates them to optimize their present experiences (Charles & Carstensen, 2010) and may lead them to discontinue failing commitments. In younger adults, inducing a limited time perspective increases ability to appropriately discontinue a failing plan (Strough et al., in press).

We recognize that older adults will not systematically outperform younger adults on all decisions. Older adults may perform especially poorly on decision tasks that involve cognitive effort, and especially well when decisions require affective or experiential skills (e.g., Bruine de Bruin et al., 2012; Hess et al., 2012; Peters et al., 2007; Peters & Bruine de Bruin, 2012; Strough et al., 2011a) – although older adults' reliance on emotional processing may sometimes pull older adults towards non-optimal choices (Mikels et al., 2012). Our findings suggest that when decisions capitalize on experience or when emotions cue optimal decisions, such as those involving sunk costs, older adults may perform better. Hence, one next step in this line of research would be to design interventions that promote reliance on experience and emotional skills with the goal of improving decisions across the life span and counteracting the negative effects of age-related cognitive decline.

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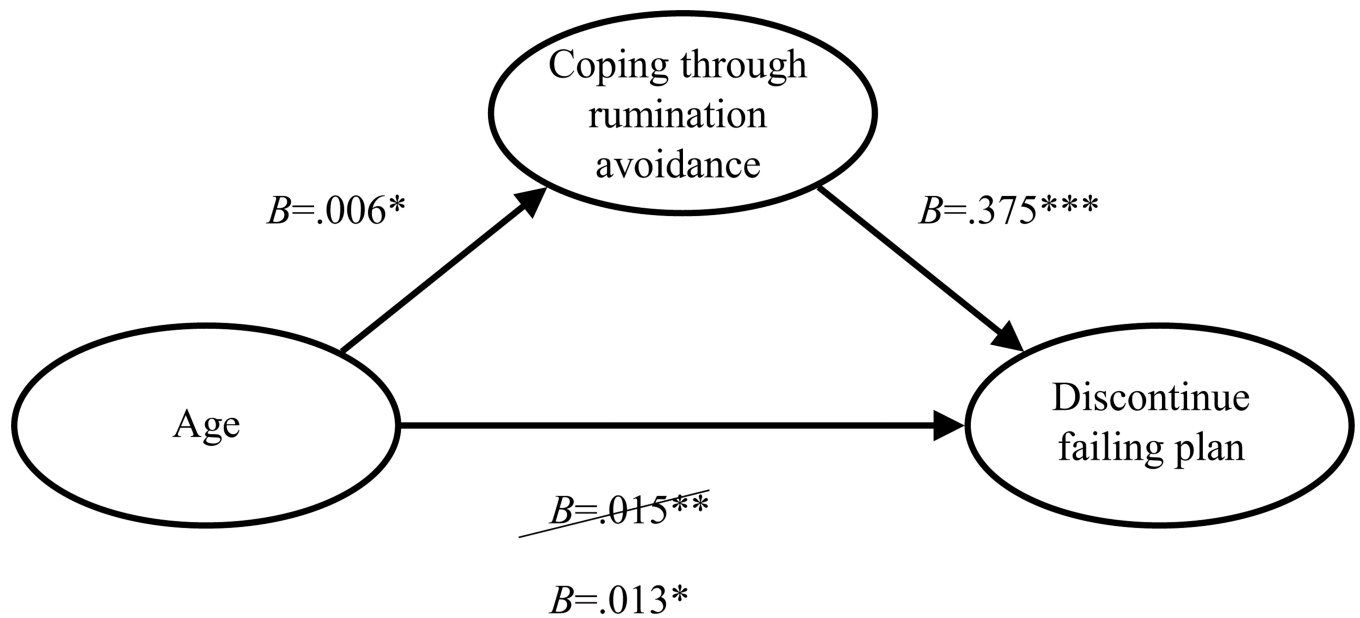


Figure 1.

Model of age differences in coping and decision making about failing plans.

Note: All models controlled for whether or not the scenarios included the presence of a friend, and high vs. low irrecoverable losses. Because age is a continuous variable, parameter estimates reflect the difference in the dependent variable that is associated with a difference of only one year of age. To see the result of a 20-year or 40-year age difference, the relevant estimate should be multiplied by the appropriate number.

* $p < .05$, ** $p < .01$; *** $p < .001$

Table 1

Pearson correlations across presented scenarios.

	Age	Discontinue failing plan	Coping through rumination avoidance
Age	-		
Discontinue failing plan	.119**	-	
Coping through rumination avoidance	.108**	.180***	-

**
 $p < .01$;***
 $p < .001$

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