Aging, Affect and Decision Making

Quinn Kennedy
Stanford University

Mara Mather
University of California, Santa Cruz

Citation:

Address correspondence to:

Quinn Kennedy
Department of Psychiatry and Behavioral Sciences
401 Quarry Road
Stanford University School of Medicine
Stanford, CA, 94305
email: quinnk@stanford.edu
phone: (650)852-3287
fax: (650)852-3297
Aging, Affect and Decision Making

Older adults are faced with complex decisions, particularly medical and financial decisions, which can carry high levels of risk and have important consequences for their quality of life. Do older adults make decisions any differently than younger adults? Decision making involves cognitive and emotional processes that have been shown to change with age; for example, maintaining and manipulating information in working memory (MacPherson, Phillips, & Della Sala, 2002), and dealing with the emotional aspects of a decision (Bechara, Damasio, Damasio, & Lee, 1999; Blanchard-Fields, Jahnke, & Camp, 1995). In this chapter, we describe how age-related changes in emotion may affect decision making about uncertain options in old age.

As we will review in this chapter, emotional goals, such as feeling good in the moment, become more salient as people get older (Carstensen, Isaacowitz, & Charles, 1999). These changes have implications for older adults’ decision making. Older adults are more likely to attend and remember positively valenced information than younger adults (Carstensen & Mikels, 2005; Carstensen, Mikels, & Mather, in press; Mather, 2004; Mather & Carstensen, 2005) which may lead older adults to focus on different aspects of information available during the decision making process than younger adults (Mather, Knight, & McCaffrey, 2005) and remember their past decisions more positively than the decisions merit (Mather & Johnson, 2000).

In this chapter, we focus on decisions involving assessments of risk. A risky choice is one in which there is a probability or chance of various outcomes occurring. The final outcome is not determined by the choice, but by the way that the chosen probabilistic situation turns out. In contrast, other choices are riskless in that the ultimate
outcome for each option is known in advance and there is not uncertainty about how each option will end up turning out. We briefly review the literatures on emotion, decision making, and aging, describe age differences in decision making for risk, and then propose that age-related changes in emotion affect older adults’ decision making about options with uncertain outcomes.

Affect and decision making

While emotion and cognition often work together in decision making, emotion overrides cognition under some circumstances. Emotional reactions occur more rapidly than cognitive responses (LeDoux, 1993; Zajonc, 1980), and therefore can direct cognitive assessments, such as the perception of risk (Finucane, Alhakami, Slovic, & Johnson, 2000). For example, people often overweigh small probabilities or perceive a negative relationship between risks and benefits even when they are positively correlated, judgments that contradict rational thought (Finucane et al., 2000; Loewenstein, Weber, Hsee, & Welch, 2001). The tendency to erroneously perceive a negative relationship between perceived risk and perceived benefit seems to be the result of referring to one’s affective response when judging both risk and benefit. For instance, people who feel more positively about cell phones rate the benefit of cell phones higher and the risk lower than those who feel more negatively. This negative correlation increases when people are asked to make the judgments under time pressure and there is less time for analytic deliberation (Finucane et al., 2000).

In addition, several factors that influence risk taking behavior are mediated by affect rather than cognition, such as background mood, the time interval between decision and outcome, and vividness with which the outcome is represented mentally.
(Loewenstein et al., 2001). For example, emotional reactions are more sensitive to vivid possibilities than to the probability of an event occurring (Loewenstein et al., 2001). Thus, when an emotionally evocative outcome, such as winning a million dollars in a lottery, is involved in a risky decision, people are relatively insensitive to the probability of the outcome occurring. Whether the odds are 1 in 100,000,000 or 1 in 100,000 will make little difference in the decision to buy the lottery ticket.

Emotion plays an integral yet multifaceted role in decision making. Different emotions and even different aspects of the emotional experience affect decision making in distinct ways, and the effects of emotion on risky decision making depends on the nature of the risk, the level of risk involved, and whether potential losses are personally relevant or not (Isen, 2000; Isen, Nygren, & Ashby, 1988; Isen & Patrick, 1983; Mann, 1992). For example, people in a positive mood are less risk-taking than people in a neutral mood when the potential loss is personally relevant, regardless of the level of risk (Nygren, Isen, Taylor, & Dulin, 1996). In the next section, we describe how positive and negative emotions differentially influence decision making for risk.

Positive emotions

Work by Isen and colleagues demonstrates that positive mood has a complex effect on risk perception and decision making for risk (Isen, 2000; Isen & Labroo, 2003; Isen et al., 1988; Isen & Patrick, 1983; Isen, Rosenzweig, & Young, 1991; Mann, 1992). It is theorized that people are aware of their positive mood and try to maintain it, leading to more conservative risk taking when the task is personally relevant. For example, participants induced into a positive mood bet more on a low-risk bet but less on a high-risk bet (Isen & Patrick, 1983). These studies typically have used mood induction
techniques and were based in the laboratory. Consistent with this pattern of findings in which people in a positive mood are more optimistic in their perceptions of positive outcomes yet more conservative in their actual risk taking behavior, a naturalistic study which examined managers’ risk perceptions and risk intentions for business decisions found that managers who reported high levels of positive affect reported significantly lower perceptions of risk and personal consequence, but were not more likely to seek risk compared to managers who reported low levels of positive affect (Williams, Zainuba, & Jackson, 2003). Thus, perception of risk and reward by itself does not necessarily predict risk-taking behavior.

Negative emotions

Negative emotions affect risk perceptions and behavior, as well as how and how much people process information when making a decision. In the study regarding managers’ perceptions of risk mentioned above, managers who reported high levels of negative affect perceived risk-related gains more pessimistically and were more risk avoidant than managers who reported low levels of negative affect (Williams et al., 2003). The decision itself can be negatively laden. Many decisions, such as medical and financial decisions, are emotionally difficult. In these situations, negative emotions can act as a motivator for avoidance of most of the negative aspects of the decision making process (Luce, 1998). Participants with the highest decision-related negative affect when selecting which automobile to purchase were more likely to choose an avoidant option (the status quo); those who chose an avoidant option reported less intense negative emotions than those who chose other options (Luce, 1998). Thus, negatively laden decisions can prompt the use of emotion regulation strategies, in this case, avoidance.
Recently, researchers have begun to tease apart the effects of different negative emotions on decision making. Researchers have theorized and found evidence that sadness, which is associated with loss or absence of reward and a motivation to acquire reward, leads to a preference for high reward yet high risk options over low reward, low risk options (Raghunathan & Pham, 1999). In contrast, anxiety is the feeling of high uncertainty over outcome and low control over the situation, leading to risk avoidance (Raghunathan & Pham, 1999). On the other hand, depression, of which one symptom is lack of energy, is associated with action aversion, leading to slower decision making and greater reluctance to make decisions (Loewenstein et al., 2001). In addition, anger and fear lead to different effects on risk estimates (Lerner, Gonzalez, Small, & Fischhoff, 2003). Anger also interacts with decision-related affect differently than sadness. Using the same paradigm as the automobile study described above (Luce, 1998), participants induced into an angry mood were more likely to select the avoidant option (status quo) than participants in a neutral mood when the decision was emotionally difficult (Garg, Inman, & Mittal, 2005). In contrast, participants induced into a sad mood chose the avoidant option regardless of the level of negative emotion associated with the decision (Garg et al., 2005).

In summary, emotions have direct and indirect effects on decision making for risk. Current mood, the emotional attributes of the decision, and emotional reactions all contribute to the decision making process and outcome. Of note are the findings that people often attempt to regulate their emotions during the decision making process – when in a positive mood, people attempt to maintain it by being more conservative for personally relevant risk (Isen, 2000). Decision-related negative affect, particularly when
coupled with current feelings of anger, can lead to decision avoidance (Anderson, 2003; Garg et al., 2005; Luce, 1998; Mather, in press).

Aging and affect

Substantial evidence shows that despite physical and social losses, older adults aged 65 years and older experience high levels of emotional well-being into advanced old age. Life satisfaction among older people increases or is comparable to levels among young adults in their 20s: the declines in life satisfaction that are seen in very old age are in part due to proximity to death, presumably because of declines in health (Agren, 1998; Diener & Suh, 1998; Mroczek & Spiro, in press). Emotional well-being typically is defined by high frequencies of positive and low frequencies of negative emotions. There appears to be a curvilinear relationship between age and frequency of positive and negative emotions with the least optimal emotional experiences in young adulthood and the most optimal emotional experiences in early old age (Charles, Reynolds, & Gatz, 2001; Stacy & Gatz, 1991). As people approach their 80s, the quality of emotional experience declines from this peak somewhat (Charles et al., 2001; Stacy & Gatz, 1991). However, at no point do older adults experience greater frequencies of negative affect than do younger adults (Carstensen, Pasupathi, Mayr, & Nesselroade, 2000). Furthermore, older adults experience longer durations of positive emotions and shorter durations of negative emotions than younger adults do (Carstensen et al., 2000).

The salience of emotion in old age

According to one theoretical perspective, socioemotional selectivity theory (Carstensen et al., 1999), as people age and perceive time as increasingly limited, they

---

1 A similar curvilinear pattern is found for self esteem, in which self esteem gradually increases through adulthood with a peak in the late 60s, and then declines through very old age (Robins & Trzesniewski, 2005).
place greater importance on emotional goals, such as feeling good in the moment and creating emotional meaning from life, and on the emotional aspects of their lives than on achieving knowledge related goals, such as acquiring information. The increased salience of emotion leads to good emotional well-being and improved emotion regulation. Several lines of research now document that older adults place greater importance on emotional goals, experience high levels of emotional well-being, and regulate their emotions better than younger adults (Agren, 1998; Carstensen et al., 2000; Charles et al., 2001; Diener & Suh, 1998; Gross et al., 1997).

The increased salience of emotion with age also occurs in the areas of preferences, attention, and memory (Mather & Carstensen, 2005). Older adults attend to and remember a greater proportion of emotional information than neutral information, and prefer and better remember advertisements with emotional slogans than knowledge related slogans compared with younger adults (Fung & Carstensen, 2003). The increased salience of emotion appears to be driven by heightened attention and memory for positive information and de-emphasis on negative stimuli (Carstensen & Mikels, 2005; Mather & Carstensen, 2005). This positivity effect has been defined as a developmental pattern in which there is a shift from a disproportionate preference for negative information in young adulthood to a disproportionate preference for positive information in old age (Carstensen et al., in press). This positivity effect has been linked with improved emotional well-being, as studies have found that older adults show enhanced moods after recalling autobiographical events, especially among those who show the positivity effect in their memories (Kennedy, Mather, & Carstensen, 2004; Pasupathi & Carstensen, 2003).
Positivity effects among older adults

Remembering positive information is likely to benefit emotional well-being more than remembering negative information is likely to do. Thus older adults’ focus on emotion may lead to selective increases in the potency of positive relative to negative information. Below, we briefly review evidence of a positivity effect among older adults in the areas of attention, memory retrieval, memory review strategies, and autobiographical memory.

Attention. If older adults focus on emotional goals, this bias also should appear in earlier stages of the memory process, such as in the encoding phase. In one study, age differences in the encoding phase were examined by having younger and older adults view positive, negative, and neutral pictures while their brain activity was recorded using an fMRI scanner (Mather et al., 2004). Both older and younger adults showed greater activation in the amygdala for emotional than for neutral pictures; however, for older adults, seeing positive pictures led to greater amygdala activation than seeing negative pictures, whereas younger adults showed similar levels of activation for positive and negative pictures. The findings indicate that younger and older adults show different patterns of attention during initial encoding depending on the emotional valence of the stimuli.

Age differences in attention also were found in a study in which older and younger adults completed a dot probe task (Mather & Carstensen, 2003). Participants first viewed a neutral and an emotional version of a face displayed on the left and right sides of the computer screen for 1000 ms. The faces disappeared from the screen and a small grey dot appeared in the center of where one of the faces had been displayed.
soon as they saw the dot probe, participants pressed a key on the keyboard. Older adults were significantly slower in responding to the dot probe behind negative faces than neutral faces; this bias did not appear in younger adults’ response rates. Although no significant age group difference was found for the positive trials, older adults were significantly faster in responding to dot probes behind the positive faces than neutral faces. Similar age differences in attention to emotional stimuli have been found in eyetracking studies (Isaacowitz, Wadlinger, Goren, & Wilson, in press; Rosler et al., 2005).

These age differences in attention occur during decision making, as well. For instance, when making a choice between descriptions of two cars in which each option included both positive and negative features, older adults spent a larger proportion of their time reviewing the positive features than the younger adults did, whereas the younger adults spent more of their time reviewing the negative features than the older adults did (Mather et al., 2005). Older adults also had more accurate memory for positive features than negative features of choice options, whereas younger adults did not show this bias.

*Memory retrieval.* Recent findings indicate that older adults disproportionately forget negative information (Charles, Mather, & Carstensen, 2003; Denburg, Buchanan, Tranel, & Adolphs, 2003; Leigland, Schulz, & Janowsky, 2004; Mather & Knight, in press; Mather et al., 2005). For example, after looking at a slide show of positive, negative, and neutral pictures, older adults recalled a greater proportion of positive pictures than negative pictures compared with younger adults (Charles et al., 2003). This diminishment of negative relative to positive among older adults was revealed both
when participants listed all the pictures they remembered and when, out of a series of pictures, they indicated which were pictures they had seen before and which were new pictures. Furthermore, the age differences could not be accounted for by differences in mood in the two samples, or in differences in the intensity level of the negative and positive pictures.

Memory review strategies. The above studies indicate that older adults attend more to emotional information than nonemotional information, and more to positive than negative information. Results from a study of memory for decisions provides evidence that older adults’ emotionally gratifying memories go beyond just remembering relatively fewer negative elements of an event, extending also to choice-supportive memory. Choice-supportive memory occurs when people attribute more positive features to the option they have chosen and more negative features to the option they have rejected (Mather, Shafir, & Johnson, 2000). In a study comparing younger and older adults’ memories of choices (Mather & Johnson, 2000), participants chose between two options, each of which included positive and negative features. Older adults were more likely to attribute more positive and fewer negative features to options they chose than to options they did not choose. These findings held even after controlling for age-related declines in memory. Although older adults were more choice-supportive than younger adults in the control condition, when participants were instructed to think about how they felt about the options in each decision task, younger adults displayed the same levels of choice-supportive memory as older adults. In contrast, older adults were significantly choice supportive in every condition, whether they were cued to focus on their emotions or not. The findings demonstrate that older and younger adults focus on the same information
quite differently. Older adults spontaneously focus on the affective qualities of
information, whereas younger adults do not. When younger adults do focus on the
affective qualities of the information, they show the same choice supportive bias as older
adults. The findings indicate that affective processing of information contributes to
choice-supportive behavior. In particular, older adults may use choice-supportive
memory as a way to regulate their current emotional state.

Autobiographical memory. Older adults also recast distant personal events in a
more positive light than younger adults. Longitudinal studies of distant personal
memories find a positivity effect with age for many types of personal information, such
as parental care, emotionally charged personal experiences, physical and emotional well-
being, and personality characteristics (Field, 1981, 1997; Kennedy et al., 2004; Robbins,
1963; Yarrow, Campbell, & Burton, 1970). Furthermore, age-related forgetting of past
traumatic personal experiences occurs, indicating that lack of memory for extremely
negative experiences also may aid current emotional well-being (Robins et al., 1985;
Wagenaar & Groeneweg, 1990). These findings are consistent with a study in which
younger and older adults recalled memories from previous periods of life (Berntsen &
Rubin, 2002). Negative memories were longer-lasting for younger adults, whereas
positive memories were endured longer for older adults. Positively recalling the distant
past appears to aid emotional well-being. In a study of American nuns, older participants
were more likely to distort autobiographical memories in a positive direction and end up
in a better mood than before they recalled their memories compared with younger
participants (Kennedy et al., 2004). In this study, all the Sisters recalled personal
information that they had originally reported 14 years prior. Thus the findings are not
due to older participants recalling more temporally distant information than younger participants. In addition, findings remained after controlling for scores on a short-term memory test and for current mood at the time of recollection.

In summary, older adults attend more to emotional information – in particular, positively valenced information relative to other types of information than younger adults (Carstensen & Turk-Charles, 1994; Fung & Carstensen, 2003; Hashtroudi, Johnson, & Chrosniak, 1990). Furthermore, several memory studies suggest that older adults regulate their emotions while recalling past decisions, public events, and personal experiences in ways that optimize current emotional states (Kennedy et al., 2004; Levine & Bluck, 1997; Mather & Johnson, 2000; Pasupathi & Carstensen, 2003). As a whole, the literature on aging and emotion indicates that older adults place greater importance on emotion, leading to higher levels of emotional well-being and more effective emotion regulation than younger adults.

Aging and decision making

Age differences in risk attitude and behavior

Most studies of decision making for risk that include older adults report no age differences in risk attitude and risk behavior for financial and health decisions, and games of risk (Bechara, Damasio, Damasio, & Anderson, 1994; Kovalchik, Camerer, Grether, Plott, & Allman, in press; Mayhorn, Fisk, & Whittle, 2002; Stout, Rodawalt, & Siemers, 2001; Zwahr, Park, & Shifren, 1999). Even when negative aging stereotypes were activated, older adults had equivalent levels of risk behavior as younger adults in playing a computerized version of blackjack (Ashman, Dror, Houlette, & Levy, 2003). Several other studies found no age differences in risk behavior when selecting cards from decks
varying in their level of risk and rewards; indeed, some of these studies found that older
and younger adults were equally likely to select cards from high reward/high risk decks
(Bechara et al., 1994; Bechara, Damasio, Tranel, & Anderson, 1998; Dror, Katona, &
Mungur, 1998; MacPherson et al., 2002; Wilder, Weinberger, & Goldberg, 1998; Wood,
Busemeyer, Keling, Cox, & Davis, 2005). These studies primarily have used the Iowa
Gambling task, in which participants learn the contingencies of the payoffs through trial
and error (Bechara et al., 1999). One study that displayed the probabilities of winning
did find that older adults were less risk taking than younger adults (Deakin, Aitken,
Robbins, & Sahakian, 2004). The authors suggest that in experienced-based tasks, older
adults may be slower in learning to avoid high risk options than younger adults, leading
older adults to make more risky decisions than they would otherwise (Deakin, Aitken,
Robbins, & Sahakian, 2004). If this is the case, then the amount of cognitive and
memory demand required by the decision making task may affect older adults’ risk
behavior. We describe in more detail the role of age-related declines in memory on
decision making below.

Evidence also indicates that older and younger adults perceive risk in comparable
ways. Both younger and older adults tend to value immediate reward over longer term,
more profitable gain (Green, Myerson, Lichtman, Rosen, & Fry, 1996; MacPherson et al.,
2002). When forced to make a decision in hypothetical scenarios, such as whether or
not to begin cancer or estrogen replacement therapy, no significant age differences
emerged for participants’ estimates of the risk of therapy (Zwahr et al., 1999).
Furthermore, both younger and older adults are equally susceptible to framing effects, in
which changes in the wording of a decision option such that the option is viewed as either
a gain (positive framing) or a loss (negative framing) lead to changes in the perception of the expected utility of the decision option. Positive framing is associated with risk aversion, whereas negative framing is associated with risk taking (Mayhorn et al., 2002). An exception to the above findings is that older adults who have disproportionate aging of the ventromedial prefrontal cortex (VPC), an area associated with decision making and reasoning, appear to make more risky and less advantageous gambling decisions than younger adults and older adults with typical aging of the VPC (Denburg, Tranel, & Bechara, 2005). This finding is consistent with research on decision making for risk among patients with prefrontal cortex lesions (Bechara et al., 1994; Bechara et al., 1999), in which the patients were more risk taking than healthy controls. Currently, it is unknown as to whether damage to the prefrontal cortex is linked with greater desire for risk taking or to ignorance of the level of risk involved (Sanfey, Hastie, Colvin, & Grafman, 2003). Thus, some older adults who show advanced aging to their VPC make more risky decisions than younger adults, but the motive is unclear (Denburg et al., 2005).

It does appear that older adults use dissimilar strategies and deal with certain aspects of the decision making process differently from younger adults. Compared with younger adults, older adults forget early decisions on the Iowa gambling task more quickly and are more likely to make decisions based on recently experienced outcomes rather than from more objective cognitive assessments which incorporate all experienced outcomes (Wood et al., 2005). They also tend to generate fewer options, deliberate for less time and seek out and review less information – particularly negative information -- than younger adults in hypothetical and real-life situations (Berg, Meegan, & Klaczynski,
In fact, in a study of everyday decisions regarding medical adherence and nutrition, most of older adults’ errors were due to incomplete reading of the provided information (Willis, Dolan, & Bertrand, 1999). Finally, older adults also are more likely than younger adults to avoid making a decision regarding serious medical treatments by either putting off making a decision or preferring that their physician make the decision for them (Hudak et al., 2002; Mather, in press; Orsino, Cameron, Seidl, Medelssohn, & Stewart, 2003).

In summary, laboratory studies indicate that the majority of older adults and younger adults have comparable levels of risk aversion and perceive comparable amounts of risk involved in making decisions. Older adults, however, forget decisions more rapidly, deliberate for less time, seek out less information, are more decision avoidant, and use less cognitively demanding information search strategies than younger adults, which could lead to more risky decisions. In the following sections, we describe how two factors that change with age – memory and emotional salience -- could influence older adults’ decision making about alternatives with uncertain outcomes.

*Age differences in memory that may affect decision making*

Decision making depends on working and long-term memory (Bechara et al., 1998). Older adults have reduced working memory capacity for immediately available information, such as remembering telephone numbers (Light, Zelinski, & Moore, 1982) and worse long-term memory than younger adults (Ahlberg & Sharps, 2002). Little is currently known as to how age differences in memory affect decision making. A recent study suggests that memory decline affects decision making in old age. When asked to judge several hypothetical patients’ diseases based on information provided, older adults...
made more conservative judgments than younger adults. However, when older adults were given more time to study the information, age differences in level of conservatism disappeared (Spaniol & Bayen, 2005). Findings from this study indicate that after controlling for memory encoding, no age differences occur for level of conservatism. More work is needed to understand whether the effect of memory on any particular task depends on the extent, and type of memory that the task requires, and whether these particular memory demands mediate the effects of aging on risk taking.

One decision making strategy linked to memory that has been extensively studied is the use of heuristics. Older adults are more likely to rely on gist information or heuristics in recall (Bayen, Nakamura, Dupuis, & Yang, 2000; Mather, Johnson, & De Leonardis, 1999). Heuristic decisions are habitual or intuitive, nonanalytical, and require minimal processing speed (Ariely & Zakay, 2001). A similar reliance on heuristic processing may occur in older adults’ decision making, as well (Peters, Finucane, MacGregor, & Slovic, 2000; Yates & Patalano, 1999). For example, older adults are more likely than younger adults to use personal experience in making judgments (Loeckenhoff & Carstensen, 2004) and to rely on stereotypes in source monitoring (Mather et al., 1999). The reliance on heuristics under certain circumstances can be beneficial and in other cases, detrimental. For example, it can be detrimental if older adults rely solely on general background knowledge in reviewing medical information and in giving advice to another medication user (Gould, 1999). In contrast, researchers have suggested that older adults do not show the “attraction effect” because of their reliance on heuristics (Kim & Hasher, 2005). The attraction effect occurs when adding an irrelevant option to an existing set of options increases the likelihood of people
choosing the irrelevant option. The attraction effect leads to inconsistent decisions across similar problems, which can have deleterious effects. To date, little is known about the relationship between age-related changes in reliance on heuristics and decision making for risk, but findings do suggest older adults rely more on heuristics in their decision making as well as in their memory.

The relationship between aging, affect, and decision making

In previous sections, we have described links between emotion and decision making and age-related changes in the salience of emotion. In this section, we attempt to link these two areas together with some predictions about how the increased salience of emotion with age may lead to age differences in decision making processes and behavior. The increased salience of emotion with age can affect the decision making process in three ways: (1) the effects of emotion on decision making found among young adults will be heightened among older adults; (2) a focus on the emotional aspects of decision making will increase with age; (3) greater likelihood of showing a positivity effect in memory for past decisions among older adults than among younger adults.

*Greater effects of emotion on decision making due to the increased salience of emotion with age*

We described above how emotion regulation can occur during the decision making process. When faced with a decision, people try to maintain a positive mood, and if in a negative mood, to mitigate negative feelings (Anderson, 2003; Isen, 2000; Luce, 1998). Older adults are more adept at emotion regulation than younger adults, and therefore may be more likely to try to regulate their emotions during the decision making process. Older adults also are more likely to be in a positive mood at any given time.
compared to younger adults (Carstensen et al., 2000). According to theorizing about mood maintenance (Isen, 2000), older adults should be more likely to have low thresholds for risk when the decision is personally relevant compared to younger adults. To our knowledge, this question has yet to be addressed experimentally. Greater attention to maintaining positive mood and better emotion regulation may also explain why older adults are more likely to avoid making a serious medical decision compared to younger adults. Deciding whether or not to have a serious medical procedure, such as total joint arthroplasty, is a highly emotional, conflict-laden task and thus one way to avoid negative affect is to postpone the decision (Hudak et al., 2002). Other research has demonstrated that people who feel decision-related negative affect are more likely to choose an avoidant option and to feel less negative affect after doing so (Luce, 1998). We conjecture that attempting to mitigate decision-related affect may also lead older adults deliberate for less time, and seek out less information for negatively-laden decisions than younger adults do.

**Focus on emotional aspects of decision making**

Research indicates that older adults are more attuned to the emotional aspects of everyday interpersonal problems, and adjust their problem-solving strategies accordingly (Blanchard-Fields et al., 1995; Blanchard-Fields, Stein, & Watson, 2004; Watson & Blanchard-Fields, 1998). In solving everyday interpersonal problems, older adults show greater flexibility in their use of problem-solving strategies, and are better able to place the problem in context and adjust their problem-solving strategy accordingly compared with younger adults (Blanchard-Fields et al., 2004). For example, younger adults reported using mostly problem-focused strategies regardless of problem type or the
emotional consequences of the solution. In contrast, older adults reported changing their strategies based on the emotional salience of the problem. They used problem-focused strategies for low emotionally salient problems and emotion-focused strategies for highly emotionally salient problems.

Older adults utilize heuristics when making decisions, in part due to age-related changes in cognitive processes (Mather et al., 1999; Peters et al., 2000). They may rely more heavily on a particular type of heuristic, the affective heuristic, than younger adults. The affective heuristic is the reliance on the emotional labels associated with the decision or judgment (Slovic, Finucane, Peters, & MacGregor, 2002). The stronger the affective impression of a potential decision and the more clearly positive or negative is the impression, the more weight the affective impression has on decision making. For example, when people have a strong positive or negative affective reaction to a particular decision, the affective reaction overrides sensitivity to changes in probabilities. The increased salience of emotion coupled with declining memory in old age may lead to greater reliance on the affective heuristic than other types of heuristics. Time pressure leads to greater reliance on the affective heuristic and poorer decision making (Finucane et al., 2000; Mann, 1992). Because older adults process information more slowly than younger adults, they may feel more pressured by time and consequently rely more heavily on the affective heuristic.

Positive memory effect for past decisions

As reviewed in an earlier section, older adults disproportionately attend to and remember positive information compared to negative information, showing a positivity effect. The positivity effect may lead older adults to disproportionately remember their
good decisions over bad decisions or the positive aspects of past decisions over the negative aspects to a greater extent than younger adults. They also may forget bad decisions more rapidly than good decisions. This memory bias may then influence future decisions for risk. For example, older gamblers report that their largest win in the past year was a significantly larger amount than that reported by younger gamblers (Desai, Maciejewksi, Dausey, Caldarone, & Potenza, 2004). There are several possible explanations for this age difference. It may be that simply because older adults gamble more frequently, their chances of “winning big” are better. It may be that older adults bet more money. Or it could be due to the positivity effect, in which the older gamblers recalled their biggest win as larger than it actually was, whereas younger adults are less optimistic in their recall. Indeed, older adults are more likely to attribute more positive and fewer negative attributes to options they chose than to options they did not choose, showing choice-supportive memory (Mather & Johnson, 2000). Furthermore, research on the affective heuristic has demonstrated that the remembered affect associated with a product influences subsequent product choice (Slovic et al., 2002). Thus, if older adults remember more positive attributes than negative attributes to past decisions – even if the decision was poor – they may be likely to make the same decision in the future.

Conclusion

Older adults are faced with complex and difficult decisions, particularly in the areas of medical and financial decisions. Many of these decisions are risky, such as whether or not to have a serious medical procedure, or even deciding how much money to gamble at the casino. Yet little research to date has investigated how older adults make decisions, and which factors may influence older adults’ decision making. In this
chapter, we linked the literatures on aging, emotion, and decision-making to suggest that age-related changes in emotion lead to age differences in the decision-making process and memory for past decisions. Older adults disproportionately attend and remember emotional information than nonemotional material compared to younger adults; this age-related focus on emotion appears to be driven primarily by a focus on positive emotion. This positivity effect can affect older adults’ decision making for risk in multiple ways: greater reliance on the affective heuristic, greater effort to maintain positive mood during the decision making process, greater attention to the emotional aspects of the decision making process, and positively biased memory for past decisions. Consequently, emotion seems to affect how, what, and when older adults make decisions.
References


Amygdala responses to emotionally valenced stimuli in older and younger adults.

*Psychological Science, 14*(5), 409-415.


decisions seem better to us as we age? *Psychology & Aging, 15*(4), 596-606.


Mather, M., & Knight, M. (in press). Goal-directed memory: The role of cognitive
control in older adults' emotional memory. Psychology and Aging.

and older adults' false memories of choice features. *Journal of Experimental Psychology: General, 134*(1), 38-51.


and Human Factors Perspectives (pp. 31-54). Mahwah, NJ: Lawrence Erlbaum

Psychologist, 35(2), 151-175.

therapy: The role of age, cognitive abilities, and beliefs. Psychology and Aging, 14(2), 179-191.