

Reasoning about social conflicts improves into old age

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It is well documented that aging is associated with cognitive declines in many domains. Yet it is a common lay belief that some aspects of thinking improve into old age. Specifically, older people are believed to show better competencies for reasoning about social dilemmas and conflicts. Moreover, the idea of aging-related gains in wisdom is consistent with views of the aging mind in developmental psychology. However, to date research has provided little evidence corroborating this assumption. We addressed this question in two studies, using a representative community sample. We asked participants to read stories about intergroup conflicts and interpersonal conflicts and predict how these conflicts would unfold. We show that relative to young and middle-aged people, older people make more use of higher-order reasoning schemes that emphasize the need for multiple perspectives, allow for compromise, and recognize the limits of knowledge. Our coding scheme was validated by a group of professional counselors and wisdom researchers. Social reasoning improves with age despite a decline in fluid intelligence. The results suggest that it might be advisable to assign older individuals to key social roles involving legal decisions, counseling, and intergroup negotiations. Furthermore, given the abundance of research on negative effects of aging, this study may help to encourage clinicians to emphasize the inherent strengths associated with aging.

aging | wisdom | intelligence | problem-solving | reasoning

Folk psychology holds that people become wiser as they get older (1–3), even in the face of significant age-related declines in many (but not all) forms of cognitive processing (4). A sufficient reason for assuming that older people are wiser is that they have more life experience (especially experience of social life) (3, 5, 6). Moreover, the idea of aging-related gains in wisdom is consistent with views of the aging mind in developmental psychology (7).

There are many different views of the nature of wisdom (8). However, there is some consensus that wisdom involves the use of certain types of pragmatic reasoning to navigate important challenges of social life. For instance, Paul Baltes, who developed the Berlin Wisdom Paradigm, defined wisdom as knowledge useful for dealing with life problems, including an awareness of the varied contexts of life and how they change over time, recognition that values and life goals differ among individuals and among groups, and acknowledgment of the uncertainties of life together with ways to manage those uncertainties (9). Similarly, Michael Basseches (10, 11) and Deirdre Kramer (12)—representing the neo-Piagetian or postformal view of reasoning—formulated a set of cognitive schemas involved in wise thinking, among them acknowledgment of others' points of view, appreciation of contexts broader than the issue at hand, sensitivity to the possibility of change in social relations, acknowledgment of the likelihood of multiple outcomes of a social conflict, concern with conflict resolution, and preference for compromise.

Measuring Wisdom. Several lines of prior empirical work have tested the hypothesized age-related increase in wisdom in general and pragmatic reasoning competence in particular. In the most important effort so far, Baltes and colleagues content-coded narratives that adult participants generated when asked to comment on another person's personal problems. This work, however, did not find consistent support for the idea that wisdom increases into old

age (although other researchers have found age-related gain in skills of socioemotional regulation; 13, 14). Instead, the researchers found that wisdom approaches an asymptote at young adulthood and increases little thereafter (9, 15). Unfortunately, the vast majority of the study populations tested in this project, if not all of them, were highly selected, nonrepresentative samples of adults, leaving open the possibility that selection effects may have colored the results. In addition, most of the study populations in the Berlin Wisdom Project were well-educated adults, which could have restricted the likelihood of detecting individual differences in wisdom-related reasoning. Moreover, the stimulus materials in the Berlin project consisted of very brief descriptions of personal problems, which provided little contextual information (16–18).

Both Basseches (10, 11) and Kramer (12, 19, 20) also attempted to investigate cognitive processes associated with wisdom and age. They found that some aspects of wise reasoning were positively associated with age. However, because of serious problems in the samples they used, their results were inconclusive with regard to differences between the middle-aged and the elderly. Basseches' sample consisted solely of college students and mostly middle-aged university faculty members but no sample of older adults. Kramer used nonrepresentative samples of convenience. Furthermore, in both lines of research age was confounded with degree of education and possibly with intelligence, and wisdom scores were confounded with the length of the content-analyzed narratives.

We expected to find aging gains in wisdom throughout the lifespan by avoiding the foregoing limitations of the previous work and by examining several aspects of wise reasoning using naturalistic, context-rich materials concerning social conflicts, and by measuring reasoning in a structured interview with a researcher rather than via written materials.

Wisdom of Social Conflict Resolution. We presented participants with several stories involving conflicts between social groups (study 1) and between individuals (study 2) (see Table 1 for summaries of study 1 stories; also see [Appendixes S1](#) and [S2](#)). We measured wisdom by performing a content analysis of participants' verbal reflections on possible ways that social conflicts might develop (Table 2 for examples of responses). We derived six wisdom dimensions, using the most frequently mentioned characterizations of wisdom in the psychological literature (8–10, 12, 21, 22): (i) perspective shifting from one's own point of view to the point of view of people involved in the conflict; (ii) recognition of the likelihood of change; (iii) prediction flexibility, as indicated by multiple possible predictions of how the conflict might unfold; (iv) recognition of uncertainty and the limits of knowledge; (v) search for conflict resolution; and (vi) search for a compromise.

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Table 1. Topics of the intergroup conflict stories provided in study 1

Topic/country	Summary
Immigration/Tajikistan	Because of the economic growth of Tajikistan, many people from Kyrgyzstan immigrate to the country. Whereas Kyrgyz people try to preserve their customs, Tajiks want Kyrgyz people to assimilate fully and abandon their customs.
Natural resources/Chuuk	Huge crude oil resources have been discovered in the economically disadvantaged Chuuk state. Because of governmental restrictions, many interested firms cannot establish the required infrastructure for production. On the one side, government tries to preserve the ancient laws. On the other side, there are also a huge number of people in Chuuk who would like to eliminate the regulations entirely.
Ethnic tensions/Djibouti	Two ethnic groups in Djibouti, the Issa and the Afari, have completely different perspectives on politics. Whereas one group tries to preserve traditions, the other group wants to alter the society entirely. Both groups are very strong.

In study 1, a representative probability sample of young, middle-aged, and older adults first performed several cognitive ability tests and next read three newspaper articles describing an *intergroup conflict* with two strong groups opposing each other (topics: immigration, ethnic tensions, and natural resources). Participants were asked, “What do you think will happen after that?” and “Why do you think it will happen this way?” Their responses were audio-recorded. After transcribing and removing age-related information, two trained hypothesis-blind coders who were also blind to the age of the subjects coded the overall response for each story on the six wisdom-related dimensions.

Results and Discussion

In line with most lifespan studies of intelligence (23–25), we found aging to be associated with decline in fluid intelligence quotient (IQ), measured by the Wechsler Adult Intelligence Scale (WAIS)

digit span and processing speed ($\beta = -0.15, t = 2.06, P = 0.04$; and $\beta = -0.55, t = 10.00, P < 0.001$, respectively) but not in crystallized IQ, measured by comprehension and vocabulary subtests of WAIS ($\beta = -0.10, t = 1.54, P = 0.12$; and $\beta = 0.04, t < 1$, respectively). In line with research on inhibition deficit of the elderly (26, 27), content analysis of interview responses showed that older participants manifested significantly more distractibility and inclination to drift from the topic at hand than did younger participants ($\beta = 0.26, t = 4.11, P < 0.001$).

Analyses of wisdom ratings supported our expectations. Older participants scored significantly higher for each wisdom dimension (Fig. 1), as well as for the composite score of wisdom ($\beta = 0.51, t = 9.21, P < 0.001$). Length of response was positively correlated with wisdom ($r = 0.33, P < 0.001$), but the effect of age was very substantial even when response length was controlled ($\beta = 0.52, t = 9.77, P < 0.001$).

Table 2. Responses to the immigration story, indicating high/low scores

Wisdom dimension	High score	Low score
Compromise	They might want to let them continue with their ways and maybe at the same time maybe try to do some kind of promotion to encourage them to better assimilate into the culture although, not throw away their own culture, but to try to make the country more unified, maybe bring customs together that might be similar for both cultures, to unify the country.	I’m sure that each, each culture will keep their original customs. It’s not likely that someone that’s lived a certain way is going to change just because they moved to a new area. (...) People are pretty true to their nature and they’re not really big on change so I’m sure that it won’t be an easy thing for them to change their culture.
Perspective shifting	I think there’ll be friction between those two ideas. People do assimilate eventually but it often takes a couple generations to do that. (...) There’ll be influences both ways but people who are in particular countries that receive immigrants, they always see it from their point of view, namely that these immigrants are changing the country. They don’t necessarily see it from the other point of view. Also, immigrants might be upset because their children are not the way they would be if they were back in their homeland.	Most likely there are going to be very similar things as going on in the United States: economic drivers are going to want to keep the immigration going and traditionalists (...) are going to want to stem it and make laws like only speaking Tajik, instead of both. It’s just like “English only.” So I think there is going to be a lot of pressure on political stage and most likely a new political leader from right or left will come up and try to fight for or against what’s going on.
Uncertainty	I don’t know, that’s a tough one. I guess that’s like what’s going on here with the Mexicans that are immigrating here. (...) I don’t know too much about the Tajiks and their national pride. I don’t know how much of that they actually want to keep. And I’m sure when the Kyrgyz come over they’re acting and speaking differently and they don’t want to assimilate.	I say it’s up to them and if you can’t speak the language stay at home or get the hell out of there. Same as all of the people coming over here. (...) You got all of the outsiders coming in and they want to change everything. They’re welcome to come, but you got to adapt to the ways of their country that’s already there. Any immigrants should have to adapt to where they’re going, not that country adapting to the immigrants, in my opinion.

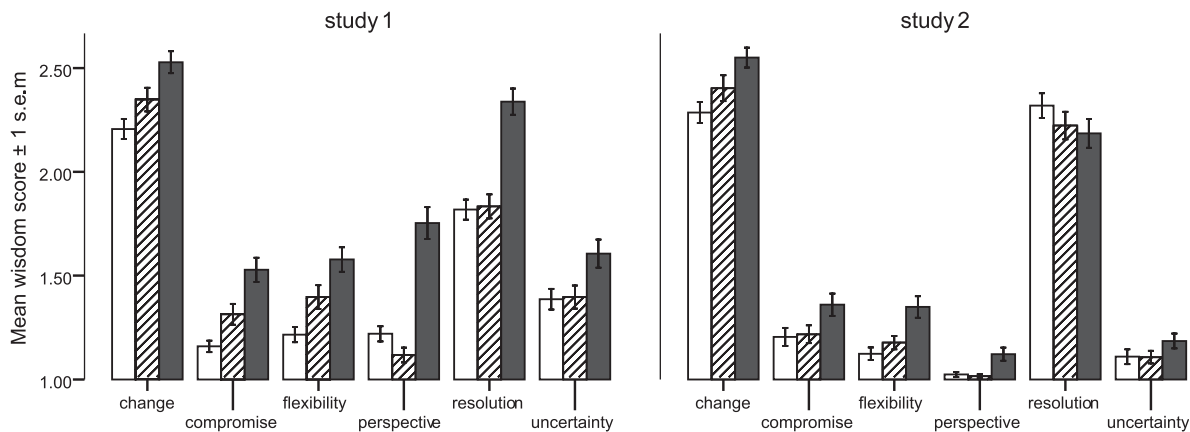


Fig. 1. Changes on wisdom-related reasoning across the lifespan. The effect of age on wise thinking (scale of 1–3) for the individual six dimensions in study 1 and study 2. For presentation purposes, age is divided into three categories used during participants’ recruitment: young (25–40 years; $n_{\text{study 1}} = 89$; $n_{\text{study 2}} = 69$; white bars), middle-aged (41–58 years; $n_{\text{study 1}} = 73$; $n_{\text{study 2}} = 63$; striped bars), and older (60–90 years; $n_{\text{study 1}} = 81$; $n_{\text{study 2}} = 64$; black bars). Higher bars indicate higher scores on wisdom-related dimensions. Older participants showed more wisdom than younger (study 1: $t = 10.26$, $P < 0.001$; Study 2: $t = 3.54$, $P < 0.001$) and middle-aged adults (study 1: $t = 7.97$, $P < 0.001$; study 2: $t = 3.05$, $P = 0.003$), whereas the contrast between younger and middle-aged adults revealed a marginal trend in the predicted direction in study 1 ($t = 1.71$, $P = 0.09$) and no effect in study 2 ($t = 0.41$, ns.).

Study 2 investigated wisdom in the domain of *interpersonal* conflict, following similar experimental and coding procedures as in study 1 (Appendix S2). The results indicated that older participants scored significantly higher for each wisdom dimension, except conflict resolution and uncertainty (Fig. 1), and scored higher for the composite score of wisdom ($\beta = 0.21$, $t = 2.97$, $P = 0.003$). Replicating the results from study 1, length of response was positively correlated with wisdom ($\beta = 0.22$, $t = 3.06$, $P = 0.003$), but the effect of age remained unchanged when response length was controlled ($\beta = 0.22$, $t = 3.13$, $P = 0.002$).

We explored the effects of age on the aggregate wisdom score across both studies (Cronbach’s α across all scores = 0.8). As Fig. 2 illustrates, the overall effect of age was substantial ($\beta = 0.52$, $t = 9.09$, $P < 0.001$), with older people being significantly over-represented among the top 20% on wisdom performance. The average age of the participants in the top 20% was 64.9 years; the average age of participants in the bottom 80% was 45.5 years.

Next, we examined the association between wisdom and several demographic and cognitive variables. Men and women did not differ in aggregate wisdom ($\beta = -0.001$, $t < 1$). Zero-order correlations

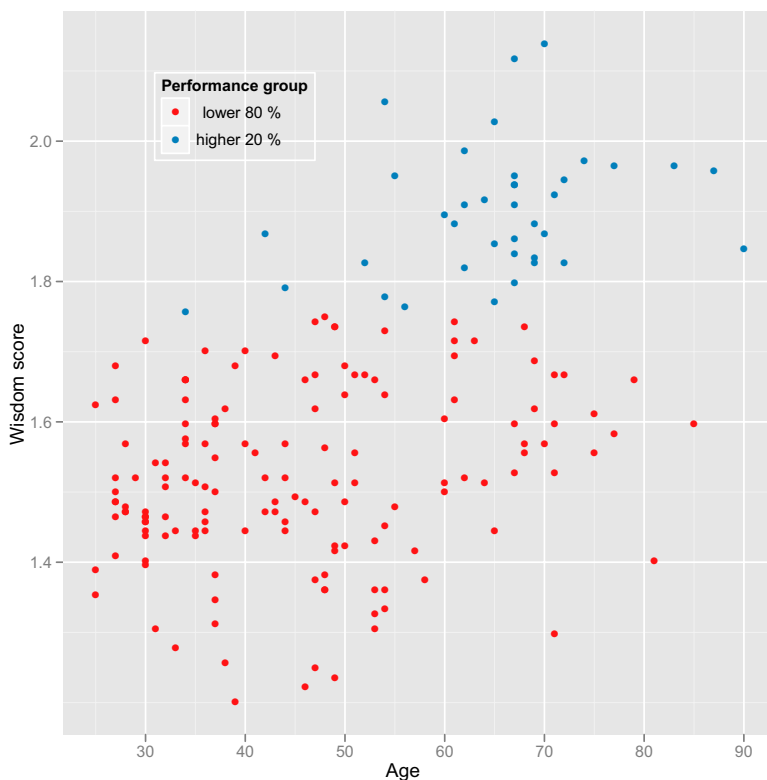


Fig. 2. Age distribution of top performers on wisdom-related reasoning. The relationship between age and aggregate wisdom score among participants who completed study 1 and study 2. Blue represents the upper 20% in overall wisdom-related performance, whereas red represent the lower 80% in overall wisdom-related performance.

indicated that higher socioeconomic status (SES), education, and crystallized IQ were significantly positively related to wisdom (Table S1). Simultaneously entering these variables in regression indicated that age and crystallized IQ remained significant predictors of wisdom (Table S2). This latter analysis is particularly important because it establishes that the age effects on wisdom hold at every level of social class, education, and IQ level. In contrast, neither SES nor educational attainment contributed to wisdom over and above the fact that participants with higher SES have higher IQ ($IQ_{\text{crystallized}}$: $r = 0.28, P < 0.001$; IQ_{fluid} : $r = 0.21, P = 0.002$) and participants with higher education have higher IQ ($IQ_{\text{crystallized}}$: $r = 0.36, P < 0.001$; IQ_{fluid} : $r = 0.29, P = 0.002$). Sixteen of our participants were faculty or university-based researchers. These academics were no wiser than nonacademics having postgraduate degrees [$F(1,54) < 1$].

Validation of the Wisdom Measure. Did we really measure wisdom, or is it possible that our operational definition of it was idiosyncratic? To address this question, we randomly selected a subsample (24 responses) of wise (1 SD above the mean) vs. nonwise (1 SD below the mean) responses from our studies and asked a group of counseling professionals and wisdom researchers to evaluate the wisdom of these responses, using a procedure similar to that used by Baltes (28). We randomly assigned each individual ($n = 141$) to read one of six stories and to rank a corresponding subset of four responses (two that were 1 SD above and two 1 SD below the mean of our wisdom ratings). The analysis indicated that these professional counselors and wisdom researchers agreed with our coders. They ranked the two “high-score” responses as being significantly wiser than the two “low-score” responses [$F(1,140) = 94.98, P < 0.001$].

The present study suggests that the adage “with age comes wisdom” is indeed correct in at least some respects. Using a large, randomly selected sample in two studies looking at societal and interpersonal conflicts, we found wisdom-related gains into old age. These findings document that despite the well-established cognitive declines in fluid intelligence associated with old age (4, 23, 24, 26, 27), reasoning about social conflicts improves. Moreover, our results indicate that wisdom gains occur mainly between middle and old age (Fig. 1).

It is important to note that one unique aspect of our studies is the focus on naturalistic, context-rich materials concerning social conflicts. Another key aspect deals with the naturalistic setting of a structured interview. In line with some earlier experimental research showing that some older adults may give wiser responses than younger adults when the tasks involve social interaction (18), we believe that these conditions facilitated wisdom-related sociocognitive reasoning among older adults.

An important question concerns the limits of wisdom of the elderly. Are the old still wise when the social dilemma requires a great amount of emotional involvement? In other words, does psychological distance (29) act as a moderator of wisdom? It is possible that self-immersion in the problem and the associated emotional involvement (30, 31) might impair the judgment of older people more than that of younger people. On the other hand, the elderly may chronically self-distance from the social conflict more than younger counterparts and be less emotionally affected when reasoning about social life dilemmas. These boundary conditions should be examined in further detail in future work.

The present data suggest that it might be advisable to assign older individuals to key social roles involving legal decisions, counseling, and intergroup negotiations. Furthermore, given the abundance of research on negative effects of aging, this study may provide an impetus to clinicians to emphasize the inherent strengths of the elderly.

Methods

This study was approved by the institutional review board at the University of Michigan (HUM00003207/HUM00005106). Informed consent was obtained from all subjects in each of the studies.

Study 1 Subjects. We recruited a probability sample (32) of a Michigan county. The full range of social class—from the nonworking poor to the wealthy—was represented. We contacted participants by randomly selecting names from a telephone directory. We sent out personalized letters with our contact information, inviting them to participate in our study and announcing that we would also attempt to contact them by phone. We recruited a large number of participants, $n = 247$, with an approximately equal number of participants of both sexes, and of each of three age groups (25–40, 41–59, and 60+ years; see Tables S3 and S4).

Cognitive Tasks and Interviews, Study 1. After prescreening for cognitive impairment, participants completed several cognitive ability tasks. We measured crystallized or knowledge-based intelligence using the comprehension and vocabulary subtests of the WAIS, and we measured fluid or working memory- and speed-related intelligence using the digit span subtest of WAIS and two processing speed tasks. Participants read three alleged newspaper articles describing a fictitious intergroup conflict between two equally strong groups from an unfamiliar country (Tajikistan, Chuuk, Djibouti). The topics were chosen to be relevant to contemporary social issues, and included ethnic tension over political power, conflict over immigration, and conflict over natural resources. After each article the interviewer provided a brief verbal summary of the article and asked three questions: “What do you think will happen after that?” and “Why do you think it will happen this way?”, as well as the additional probe, “Anything else?” Interviewers who were knowledgeable about the hypothesis did not elicit answers different from those of interviewers not knowledgeable about the hypothesis.

Content Analysis. After responses were transcribed and age-related information removed, two trained coders blind to the hypothesis and to the age, gender, and social class of the participants coded the responses for each story on the six wisdom-related dimensions on a scale from 1 (“not at all”) to 3 (“a lot”) (Table S5). Table 1 shows summaries of each conflict. Table 2 illustrates the examples for high- and low-wisdom responses for the immigration story. Overall interrater reliability was good ($0.61 < \text{Cohen's } \kappa < 0.75$), with the disagreement resolved in a group discussion. We collapsed scores across the three stories. A mean score for each dimension and a composite mean score of wisdom-related thinking were obtained.

Study 2 Subjects. Within 1 year of completing study 1, we recontacted participants and asked them to participate in another study (of those we were able to reach, $n = 200$ participated, 2.4% declined to participate). In this new wisdom task, participants read three authentic, detailed letters addressed to an advice columnist (“Dear Abby”; letter length, 145–180 words), which described relational conflicts between siblings, friends, and spouses. The interviewer instructed participants to talk about future developments in these relationships, guided by four questions: (i) “How did the story develop after this letter?”; (ii) “Why do you think it happened as you said?”; (iii) “What was the final outcome of this conflict?”; and (iv) “What do you think should be done in this situation?” Two hypothesis-blind coders judged the use of the six wisdom categories in participants’ transcripts ($0.52 \leq \text{Cohen's } \kappa < 0.98$). We obtained a mean score for each dimension across the three stories.

Study 3 Subjects. We first screened the Wisdom Research Network database, a group of scholars, psychotherapists, clergy, and consulting professionals interested in wisdom, for individuals whom we could clearly identify as doing academic research on wisdom-related topics, or working in legal, economic, or psychological consulting. We contacted this subsample ($n = 327$), of whom 141 agreed to participate in the study (see Tables S6 and S7 for demographics of this sample).

Story-wise Analysis of Study 3. The analyses indicated that the predicted pattern was significant for five of six stories ($P_s < 0.005$). The results of expert ratings for the spousal conflict story did not show a significant difference between the responses 1 SD above and below the mean on our wisdom ratings [$F(1,27) < 1$]. The overall pattern of results does not change if this story is excluded from the analysis on wisdom composite scores ($\beta = 0.45, t = 7.80, P < 0.001$).

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1. Orwoll L, Perlmutter M (1990) The study of wise persons: Integrating a personality perspective. *Wisdom: Its Nature, Origins, and Development*, ed Sternberg RJ (Cambridge Univ Press, New York), p 160.
2. Heckhausen J, Dixon RA, Baltes PB (1989) Gains and losses in development throughout adulthood as perceived by different adult age groups. *Dev Psychol* 25:109–121.
3. Rowley J, Slack F (2009) Conceptions of wisdom. *J Information Sci* 23:110–119.
4. Park DC, et al. (2002) Models of visuospatial and verbal memory across the adult life span. *Psychol Aging* 17:299–320.
5. Erikson EH (1980) *Identity and the Life Cycle* (W W Norton, New York).
6. Glaser R (1984) Education and thinking: The role of knowledge. *Am Psychol* 39: 93–104.
7. Baltes PB (1993) The aging mind: Potential and limits. *Gerontologist* 33:580–594.
8. Sternberg RJ, Jordan J (2005) *A Handbook of Wisdom: Psychological Perspectives* (Cambridge Univ Press, New York).
9. Baltes PB, Smith J (2008) The fascination of wisdom: Its nature, ontogeny, and function. *Perspect Psychol Sci* 3:56–64.
10. Basseches M (1984) *Dialectical Thinking and Adult Development* (Ablex, New York).
11. Basseches M (1980) Dialectical schemata: A framework for the empirical study of the development of dialectical thinking. *Hum Dev* 23:400–421.
12. Kramer D (1990) Conceptualizing wisdom: The primacy of affect-cognition relations. *Wisdom: Its Nature, Origins, and Development*, ed Sternberg RJ (Cambridge Univ Press, Cambridge, UK), p 279.
13. Carstensen LL, Mikels JA (2005) At the intersection of emotion and cognition: Aging and the positivity effect. *Curr Dir Psychol Sci* 14:117–121.
14. Blanchard-Fields F (2007) Everyday problem solving and emotion—an adult developmental perspective. *Curr Dir Psychol Sci* 16:26–31.
15. Baltes PB, Staudinger UM (2000) Wisdom. A metaheuristic (pragmatic) to orchestrate mind and virtue toward excellence. *Am Psychol* 55:122–136.
16. Smith J, Baltes PB (1990) Wisdom-related knowledge: Age/cohort differences in response to life-planning problems. *Dev Psychol* 26:494–505.
17. Staudinger UM, Smith J, Baltes PB (1992) Wisdom-related knowledge in a life review task: Age differences and the role of professional specialization. *Psychol Aging* 7: 271–281.
18. Staudinger UM, Baltes PB (1996) Interactive minds: A facilitative setting for wisdom-related performance? *J Pers Soc Psychol* 71:746–762.
19. Kramer D, Woodruff DS (1986) Relativistic and dialectical thought in three adult age-groups. *Hum Dev* 29:280–290.
20. Kramer DA, Kahlbaugh PE, Goldston RB (1992) A measure of paradigm beliefs about the social world. *J Gerontol* 47:P180–P189.
21. Riegel KF (1973) Dialectic operations: The final period of cognitive development. *Hum Dev* 16:346–370.
22. Labouvie-Vief G (1982) Dynamic development and mature autonomy: A theoretical prologue. *Hum Dev* 25:161–191.
23. Schaie KW (1994) The course of adult intellectual development. *Am Psychol* 49: 304–313.
24. Birren JE, Schaie KW (2001) *Handbook of the Psychology of Aging* (Academic Press, San Diego, CA), 5th Ed.
25. Bosworth HB, Hertzog C (2009) *Aging and Cognition: Research Methodologies and Empirical Advances* (American Psychological Association, Washington, DC).
26. Hasher L, Tonev ST, Lustig C, Zacks R (2001) Inhibitory control, environmental support, and self initiated processing in aging. *Perspectives on Human Memory and Cognitive Aging: Essays in Honour of Fergus Craik*, eds Naveh-Benjamin M, Moscovitch M, Roediger RL (Psychology Press, East Sussex, UK), p 286.
27. Hasher L, Zacks RT (1988) Working memory, comprehension, and aging: A review and a new view. *The Psychology of Learning and Motivation*, ed Bower GH (Academic Press, New York), Vol 22, pp 193–225.
28. Baltes PB, Staudinger UM, Maercker A, Smith J (1995) People nominated as wise: A comparative study of wisdom-related knowledge. *Psychol Aging* 10:155–166.
29. Liberman N, Trope Y (2008) The psychology of transcending the here and now. *Science* 322:1201–1205.
30. Kross E, Ayduk O, Mischel W (2005) When asking “why” does not hurt. Distinguishing rumination from reflective processing of negative emotions. *Psychol Sci* 16:709–715.
31. Grossmann I, Kross E The impact of culture on adaptive vs. maladaptive self-reflection. *Psychol Sci*, in press.
32. Kish L (1965) *Survey Sampling* (John Wiley & Sons, New York).