Supporting Information

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SI Methods

This section contains a detailed description of the recruitment methods for each study, the experimental procedures followed (with illustration of the wisdom materials in Appendix S1 and Appendix S2), and the coding procedure.

Study 1: Method. ***Participants.*** We contacted by letter and then by phone 1,366 households in Washtenaw County, MI, of which the two primary cities are Ann Arbor, a predominantly middle- and upper-middle-class community, and Ypsilanti, a predominantly working-class community. Households were randomly chosen from the county phonebook. We used disproportionate stratified sampling (1), attempting to include an approximately equal number of participants of both sexes and of each of three age groups (25–39, 40–59, and 60+ years), as well as an adequate number of lower socioeconomic status (SES) participants (Tables S3 and S4). To achieve this goal, we oversampled the middle-aged male stratum. The overall rate of agreement to participate was 57%. The resulting sample of 247 included proportionally more whites and more highly educated people than the US population as a whole but the full range of social class—from the nonworking poor to the wealthy—was represented. Participants were compensated with $70 for 2 h of their participation, which included responding to a large number of questions about personal relations and working on a variety of cognitive tasks.

Procedure and materials. We first prescreened for cognitive impairment using the Mini-Mental State Examination (impairment cutoff: 26 out of 30), as well as participants' self-report (e.g., Alzheimer's or brain damage). Eleven subjects were excluded on the basis of extremely low cognitive functioning. Next, participants completed several cognitive ability tests, including the Wechsler Comprehension Subtest (2) and two perceptual speed tests (3). In the main part of the study, participants read three newspaper articles describing an *intergroup conflict* with two strong groups opposing each other (topics: immigration, ethnic tensions, and natural resources; see Appendix S1). Because the newspaper articles were not real, we first confirmed that our subjects were not familiar with the country they read about. None of the subjects indicated that they knew the countries well. Because the countries were unfamiliar to our participants and to ensure that the participants focused on the conflict situation in the articles, the interviewer read out loud a summary after participants had read each story (Table 1 in main text). After each story the interviewer instructed participants to talk about future developments of the conflict, guided by three questions in the following order: "What do you think will happen after that?", "Anything else?", and "Why do you think it will happen this way?" In case a participant showed difficulty in understanding a question, it was repeated without changing the content and/or revealing additional information. Participants' responses were audio-recorded. The majority of structured interviews were conducted by hypothesis-blind trained interviewers. Analysis indicated that interviewer's knowledge did not influence participants' responses.

Collection of demographic data. At the end of the study session, participants answered demographic questions. Participants were asked their age, education, ethnicity, and occupation (as well as the occupation of their significant other). This information was used to obtain an index of their SES. We coded occupations using the International Standard Index of Occupational Status (ISEI) (4). The ISEI scale refers to relative job prestige. ISEI job prestige scores are estimated using average level of income and education within a specific occupation. We also took into account the occupations of significant others. To determine the SES of a participant, the higher score of the two (participant and significant other) was used.

Coding procedure. Participants' transcripts were masked, and the age-related information was removed. Two hypothesis-blind coders were trained on sample materials until they reached high interrater reliability ($r > 0.9$). After extensive training, raters coded participants' transcripts on the six dimensions of wise reasoning on a scale from 1 to 3. High scores indicated greater wisdom for the dimensions *uncertainty* and *perspective*, and low scores indicated greater wisdom for the dimensions *compromise*, *flexibility*, *change*, and *conflict resolution* (Table S5). Thereafter, the obtained ratings were pooled in the same direction (1 = "not at all" to 3 = "a great deal"). Finally, text analysis software (5) counted the number of words in each essay.

In the interest of parsimony and to enhance the measurement reliability, we collapsed scores across three stories (average correlations across three stories: $0.15 \leq M(r) \leq 0.40$). We also created a composite wisdom score by taking the mean across the six dimensions ($\alpha = 0.71$).

Study 2: Method. ***Participants.*** We recontacted the participants in study 1, inviting them to participate in a follow-up study having a similar format. We could not reach 13%; 2% were reached but declined to participate; see Tables S3 and S4. As in study 1, participants received $70 for 2 h of their participation.

Procedure and materials. First, participants completed additional cognitive ability tests, including the Wechsler vocabulary and digit span subtests. In the main part of the study, participants read three letters describing an interpersonal conflict. The letters were selected from the "Dear Abby" advice column and described mundane problems between friends, siblings, and spouses (Appendix S2). The interviewer asked participants four questions about the further developments of the described relationships: (*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?" These questions were more specific than in study 1, because we tried to reduce participants' tendency to go off on a tangent (see corresponding analysis below). Their responses were audio-recorded. At the end of each interview, the interviewer asked the participant a forced-choice question: "In the long run, do you see this conflict as a benefit (a) or as an obstacle (b) for the further development of relationship?"

Coding procedure. We followed the same procedure as in study 1. We obtained index scores for each of the six wisdom dimensions by collapsing ratings across three stories (average correlations across three stories: $0.10 \leq M(r) \leq 0.29$). We created a composite wisdom score by taking the mean across the six dimensions ($\alpha = 0.56$). We also created a composite score across both studies ($\alpha = 0.80$; $r = 0.30$, $P < 0.001$).

Study 3: Method. ***Participants.*** We contacted members of the "Defining Wisdom Research Network" at the University of Chicago—a large-scale collaboration and news platform for researchers and professionals interested in wisdom research ($n = 543$). We first verified the entries in the network database, focusing on wisdom-related research fields and members with high levels of professional expertise ($n = 386$). Next, we contacted those members of the network who were researchers with postgraduate degrees, as well as those who were executives of large companies, inviting them to participate in a short survey on wisdom ($M_{age} = 50.35$; $SD_{age} = 12.70$) (see Tables S6 and S7 for further demographics).

Procedure and materials. We selected a set of four responses to each of the stories presented in studies 1 and 2 (24 responses in total). Two of these responses were randomly chosen from the pool of participants who scored 1 SD above the mean wisdom score (SD plus) for the story. The other two responses were chosen from the pool of participants who scored 1 SD below the mean (SD minus) of the story. Therefore, each individual was presented with four responses to the same story.

Participants completed the study online (using the DatStat Illume 4.7 survey platform) guided by written instructions, which informed them that the study they were about to participate in explored wisdom of four responses to a newspaper story describing either a societal or an interpersonal conflict. Next, participants were randomly assigned to read one of the six newspaper stories and the set of four responses to these stories. Half of the experts were presented with the following order of the responses: first SD plus response, followed by first SD minus response, second SD plus response, and second SD minus response. The other half of the participants were presented with these responses in reversed order. Follow-up analyses indicated that order of the presentation did not influence the results ($F < 1$). After reading the four responses, they were asked which of them was the wisest. Next, participants indicated which of the responses was the least wise. Finally, they indicated which one was the wisest response among the remaining two transcripts. At the end of this study, participants provided additional demographics: age, gender, geographic location, ethnicity, and occupation (Table S6). Furthermore, academics also indicated their field of research (Table S7).

Cognitive abilities. Participants' cognitive abilities were measured by five tasks. Two tasks from the verbal comprehension block of the Wechsler Adult Intelligence Scale-IV (WAIS) (2) assessed participants' crystallized intelligence: Vocabulary (the degree to which one has learned and been able to understand and verbally express the meaning of various words) and Comprehension (of abstract social conventions, rules, and expressions). Three tests assessed participants' working memory and processing speed, which we used as indicators of fluid intelligence: WAIS digit span (attention, concentration, and mental control; e.g., repeat the numbers 1-2-3 in reverse sequence) and dot matching and pattern matching (two speed-of-processing tests) (3). The three fluid intelligence quotient (IQ) tasks were weighted (processing speed tasks accounted for half of the composite score) and combined to form a single index ($r = 0.29$). The two crystallized IQ tasks were combined to form a single index ($r = 0.49$).

Distraction in interviews: Going off on a tangent. In addition to the aforementioned wisdom dimensions, coders rated participants' level of distraction when answering the interview questions. Participants' interviews were evaluated with regard to the participant *going off on a tangent* (1 = "not at all" to 3 = "a great deal"). For instance, some participants talked about unrelated subjects without explaining a connection to the interview questions (e.g., interior US politics) or talked about unrelated personal life-experiences. Note that the questions in study 2 were more specific (e.g., "What will be the final outcome of this conflict?"), which we introduced to reduce the amount of distraction. We collapsed these scores across individual stories to form an index of distraction in study 1 ($M = 1.21$, SD = 0.44) and in study 2 ($M = 1.03$, SD = 0.13).

SI Results

This section contains a summary of statistical analyses used in the studies. In addition, it contains a discussion of analyses with covariates, as well as follow-up analyses of distractibility and wisdom, outcome contextualism, and unsolicited advice-giving.

Wisdom of Academics vs. Nonacademic Professionals. One of the research sites in our studies was located in Ann Arbor, MI—a community with a large percentage of academics. Could it be that older academics produced the aging effect in our studies? To control for this possibility, we conducted a supplementary analysis with age and profession (1 = "academic" vs. −1 = "non-academic") among participants with postgraduate education. Comparing the composite wisdom scores of academics vs. nonacademics (n in study 1 ($n = 12$ vs. $n = 44$) and study 2 ($n = 8$ vs. $n = 37$), we found that academics (study 1: $M = 1.65$, SD = 0.27; study 2: $M = 1.67$, SD = 0.23) and nonacademic postgraduates (study 1: $M = 1.72$, SD = 0.37; study 2: $M = 1.57$, SD = 0.21) did not differ in wisdom [study 1: $F(1,54) < 1$; study 2: $F(1,43) = 1.45$, $P = 0.24$]. Next, controlling for occupation (academic vs. nonacademic), greater age remained a significant predictor of greater wisdom (study 1: $\beta = 0.58$, $t = 5.12$, $P < 0.001$; study 2: $\beta = 0.35$, $t = 2.44$, $P = 0.02$).

Aging and Cognitive Decline. The effect of age on distractibility in study 1 was substantial even when response length was controlled ($\beta = 0.20$, $t = 3.64$, $P < 0.001$). We did not replicate the effect of age on distractibility measure in study 2 [$F(1,193) < 1$]. This might be because the topics in study 2 were more familiar and the stories contained less information. In addition, to have fewer participants going off on a tangent, we made the questions more specific in study 2.

We performed multivariate analyses on the scores from five tasks assessing fluid and crystallized IQ. The analyses indicated that greater age was associated with lower fluid IQ (dot matching: $\beta = -0.49$, $P = 0.001$; pattern matching: $\beta = -0.44$, $P = 0.001$; WAIS digit span: $\beta = -0.17$, $P = 0.02$), but not with crystallized IQ (WAIS comprehension: $\beta = -0.04$, nonsignificant; WAIS vocabulary: $\beta = 0.06$, nonsignificant).

Analyses with Covariates: IQ, Length of the Response, Gender, and SES. Additional analyses included several covariates (Table S1 and S2). Previous research suggested that IQ may be related to wisdom, although weakly (6), supported by the previous findings in the Berlin Wisdom Paradigm (7). Consistent herewith, fluid IQ was negatively related to wisdom in study 1 ($\beta = -0.19$, $t = 2.96$, $P = 0.007$), but this was due solely to the fact that the older participants had lower fluid IQs (with age as a covariate: $\beta = 0.09$, $t = 1.42$, nonsignificant). Crystallized IQ was positively and nontrivially related to wisdom in study 2 ($\beta = 0.27$, $t = 3.96$, $P < 0.001$). We also controlled for the length of participants' response. Longer responses might receive higher scores on wisdom dimensions just by virtue of having more statements overall. We did not have clear predictions for gender and SES.

Distractibility and Wisdom. Previous research by Hasher and colleagues suggests that distractibility may be associated with broader attention and can be adaptive when distracting information becomes relevant (8, 9). Could broader attention processing contribute to more wisdom among the elderly? We addressed this question by performing a series of regression analyses on the composite scores of distractibility and wisdom across both studies. The results indicated that distractibility was positively associated with wisdom ($\beta = 0.20$, $t = 2.87$, $P = 0.005$). A linear regression with wisdom scores as a dependent variable and age and distractibility as predictors indicated a significant effect of age ($\beta = 0.46$, $t = 7.22$, $P < 0.001$) and a marginally significant effect of distractibility ($\beta = 0.11$, $t = 1.65$, $P = 0.10$). The effect of distractibility was significantly attenuated when age was entered as a second predictor in the model, as indicated by the Sobel test (Sobel = 2.62, SE = 0.03, $P = 0.008$).

Outcome Contextualism in Study 2. In study 2, the interviewer also noted whether the participant spontaneously mentioned a contextual "it depends" statement instead of answering in line with the two categories provided. The number of stories in which participant made an "it depends" statement was taken as a measure of *outcome contextualism* ($M = 0.36$, SD = 0.67). There was a marginally significant tendency for older participants to provide more responses indicating outcome contextualism than younger participants ($\beta = 0.12$, $t = 1.73$, $P = 0.06$).

Unsolicited Advice-Giving in Interviews. Advice is an important component of wisdom (10, 11). An initial observation of the interviewers was that some participants had a tendency to give advice in addition to a descriptive prediction of the future. Therefore, we analyzed responses for the amount of advice given [1 = "not at all" to 3 = "a great deal of advice"). We specifically focused on the responses in study 1 ($M = 1.27$, SD = 0.43), because the instructions in this study did not solicit advice. In contrast, study 2 explicitly asked participants to give advice at the end of each response.

The advice score across the three stories in study 1 was collapsed to form a composite score ($\alpha = 0.4$). The advice score was submitted to a general linear model analysis with age as a predictor. We found that greater age was associated with more advice giving ($\beta = 0.34$, $t = 5.52$, $P = 0.001$).

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Table S1. Zero-order correlations between aggregate wisdom (study 1 + study 2) and cognitive and demographic variables

Variable	COM	UN	FLEX	PER	CH	RES	WIS
Age	0.37*	0.15†	0.34*	0.42*	0.36*	0.23§	0.51*
C. IQ	0.09	0.14‡	0.23§	−0.02	0.19§	0.20§	0.23§
F. IQ	−0.14‡	0.09	−0.02	−0.13‡	-0.10	0.01	−0.08
SES	0.13‡	0.08	0.13‡	0.09	0.11	0.13‡	0.18§
Education	0.01	0.08	0.21§	0.15†	0.08	0.07	0.16†

COM, search for a compromise; UN, uncertainty/recognition of limits of knowledge; FLEX, attentional flexibility; PER, taking others' perspective; CH, prediction of change; RES, search for conflict resolution; WIS, composite wisdom score; C. IQ, crystallized intelligence quotient; F. IQ, fluid IQ.
*$P \leq 0.001$.
†$P \leq 0.05$.
‡$P \leq 0.1$.
§$P \leq 0.01$.

Table S2. Results of regression analyses for model I (age alone) and model II (age, cognitive, and demographic variables) in studies 1 + 2

		Study 1 + 2 regression βs						
Model	IVs	COM	UN	FLEX	PER	CH	RES	WIS
I	Age	0.37*	0.15†	0.34*	0.42*	0.36*	0.23‡	0.51*
II	Age	0.36*	0.24‡	0.40*	0.46*	0.37*	0.27*	0.58*
	C. IQ	0.11	0.10	0.18†	−0.08	0.20‡	0.19†	0.20‡
	F. IQ	0.01	0.17§	0.08	0.07	0.01	0.08	0.12
	SES	0.10	−0.01	−0.05	−0.04	0.02	0.05	0.02
	Education	−0.08	0.019	0.16*	0.19*	−0.01	−0.03	0.07

IVs, independent variables; COM, search for a compromise; UN, uncertainty/recognition of limits of knowledge; FLEX, attentional flexibility; PER, taking others' perspective; CH, prediction of change; RES, search for conflict resolution; WIS, composite wisdom score; C. IQ, crystallized intelligence quotient; F. IQ, fluid IQ.
*$P \leq 0$ 0.001.
†$P \leq 0.05$.
‡$P \leq 0.01$.
§$P \leq 0.1$.

Table S3. Demographics of the sample in studies 1 and 2: Education, age, and gender

			Age (y)		Education			
Study no.	Age group	Gender (*n*)	Range	Mean	No college	Some college	College	Postgraduate
1 (*n* = 233)	Young	Female (47)	25–40	32.30	4	15	17	11
		Male (42)	25–39	32.57	3	17	10	12
	Middle-aged	Female (38)	42–58	49.08	5	11	11	11
		Male (35)	41–57	48.58	5	13	9	8
	Old	Female (39)	60–90	70.15	6	11	17	5
		Male (42)	60–93	70.55	8	8	13	13
2 (*n* = 196)	Young	Female (34)	25–40	32.68	3	13	12	6
		Male (35)	25–39	32.54	2	15	8	10
	Middle-aged	Female (34)	42–58	49.29	5	9	11	10
		Male (29)	41–57	49.00	3	12	8	6
	Old	Female (33)	60–90	69.79	5	10	13	5
		Male (31)	60–83	68.58	5	8	7	11

Numbers represent participants without missing data. Because of cognitive impairment or procedural error, data from 14 participants in study 1 and 4 participants in study 2 were not included.

Table S4. Demographics of the sample in studies 1 and 2: Ethnicity

Measure	Study 1 (*n* = 233)	Study 2 (*n* = 196)
European American	186	154
African American	28	27
Asian American	4	3
Latino	9	8
Other	6	4

Numbers represent participants without missing data. Because of cognitive impairment or procedural error, data from 14 participants in study 1 and 4 participants in study 2 were not included.

Table S5. Categories of wisdom-related thinking

Search for a compromise	1. Complete compromise
	2. Partial compromise
	3. No compromise
Uncertainty/recognition of limits of knowledge	1. Certain
	2. Partly certain
	3. Uncertain
Rigid application of a rule vs. flexibility	1. Flexible
	2. Somewhat flexible
	3. Inflexibly
Taking others' perspective	1. No acknowledgment of others' perspective
	2. Some acknowledgment of others' perspective
	3. A great deal of acknowledgment of others perspective
Recognition of change	1. Recognizes or predicts lots of change
	2. Predicts some change
	3. Predicts no change
Search for a conflict resolution	1. Complete resolution
	2. Partial resolution
	3. No resolution

To reduce carry-over effects, compromise, flexibility, change, and resolution dimensions were reverse-coded.

Table S6. Demographics of the wisdom expert sample (n = 141) in study 3: Gender, geographic location, ethnicity, and occupations

Demographic variable	Frequency (%)
Gender	
Male	65
Female	35
Geographic location	
North America	77
South America	1
Australia	2
East/South-East Asia	5
Eastern Europe	2
Western Europe	15
Ethnicity	
Caucasian	81
African American	1
Asian/Asian American	8
Latino	1
Middle Eastern	2
Native American	2
Other	6
Occupations	
University professor	52
Postgraduate researcher	18
Independent researcher	6
Chief executive officer/director/managerial	12
Consultant	6
Law	1
Other	5

Numbers represent participants without missing data. Information from 16 participants was missing because of technical errors when filling out the online survey or because participants decided not to provide this information.

Table S7. Academic fields among academics in study 3

Academic field	Frequency (%)
Anthropology	1
Biology	4
Business/finance	3
Communication	3
Education	11
Human development	7
Health	3
Information systems	1
Law	3
Leadership/organizational behavior	4
Liberal arts	6
Neuroscience	3
Philosophy	24
Psychology	17
Religious studies/theology	4
Social work	1
Sociology	6

Numbers represent participants without missing data. Information from 32 participants was missing because of technical errors when filling out the online survey or because participants decided not to provide this information.

Other Supporting Information Files

SI Appendix