

Age as a Factor in Judgments of Wisdom and Creativity

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To examine the role that age plays when adults make judgments concerning wise and creative behaviours of others, a person-perception paradigm was employed (e.g., Erber, 1989). Young (N=60), middle-aged (N=50) and older (N=50) participants rated the behaviour of a target person of variable age in a written vignette in terms of the degree to which the target's behaviour reflected wise and creative characteristics (Sternberg, 1985).

Target age and participant age influenced judgments of others' behaviour. Older targets were rated as wiser than younger targets, but target age did not influence ratings of creativity. Older and middle-aged participants rated young targets as less wise than did young participants; younger participants gave higher overall ratings on the creativity scale than did older participants. A theoretically-important finding was that wisdom and creativity were differentiated on the basis of the personal and social aspects of each construct (Clayton, 1982), rather than on the more cognitive-intellectual aspects.

Overall, the results demonstrate that age, in terms of both age of participant, and age of person being judged, is an influential determinant of our evaluations of others' wise and creative behaviours, and therefore an important component of our implicit theories of wisdom and creativity.

Sternberg (1985) argued that humans have implicit theories of intelligence, wisdom, and creativity, and that we employ these implicit theories when evaluating the behaviours of ourselves and of others. Sternberg further commented (1989) that although researchers have attempted to understand and measure intelligence, the understanding and measurement of wisdom and creativity have been relatively neglected. The main purpose of the present study was to investigate the role that chronological age plays when people make judgments of others on the basis of their implicit theories of wisdom and creativity. A secondary aim of the study was to provide some degree of validation for Sternberg's (1985) descriptions of wise and creative behaviours, and to provide empirical support for the notion that the two polarities within each construct (Wisdom or Creativity) reflect different aspects of the respective construct.

The belief that wisdom comes with increasing chronological age is frequently found in popular myth, literature, and poetry. It is also an important component of Erikson's theory of lifelong personality development where wisdom and generativity are linked with successful aging (e.g., Erikson, Erikson, & Kivnick, 1986). Several empirical studies have also reported that both young and older adults view "wise" as an attribute that increases with age (e.g., Heckhausen, Dixon, & Baltes, 1989; Denney, Dew, & Kroupa, 1995).

However, the degree to which age is an inherent component of our implicit theory of wisdom is not clear from empirical enquiry to date. One major theorist, Clayton (1982), separates intelligence and wisdom on the basis that social and personal factors (e.g., an ability to grasp human nature) are inherent in wisdom, but are not important in the main operational measures of intelligence such as logical reasoning. Although other researchers have argued that Clayton's view of wisdom can be considered as "social intelligence" (e.g., Sternberg, 1989), it is generally agreed that wisdom does differ in some way(s) from what is typically considered as cognitive intelligence. With respect to age as an important factor in notions of wisdom, Clayton

What do we mean when we say that someone is wise? Wisdom has been of interest to scholars for hundreds of years and has been linked with successful aging (Baltes & Baltes, 1990) and with intelligence (Sternberg, 1985, 1989). However, theorising about wisdom has been accompanied by relatively little empirical enquiry, and there is no clear consensus as to the exact nature of this elusive construct. (Sternberg, 1989)

has argued on the basis of her psychometric work (1976) that participant age (young; middle-aged; older) influenced how stimuli (words such as 'observant', 'understanding') were rated in relation to wisdom, with increasing differentiation of the concept of wisdom with increasing age. Sternberg (1989), however, has questioned Clayton's interpretation of her data, particularly those on which conclusions concerning age-related effects were made.

A second major area of research aimed at understanding wisdom has taken a functionalist approach where wisdom is considered as an expert knowledge system dealing with the complexities of everyday life, rather than as the speeded, academic measures of "fluid" intelligence (Baltes & Smith, 1990, pp. 93-96). Inherent in the notion of wisdom adopted by Baltes and colleagues is that it concerns progressive change in personality and thinking throughout the lifespan, and in particular, throughout the second half of life. Empirical work with this model is in its infancy, and that published to date (e.g., Baltes & Smith, 1990) has shown that although older adults made more responses judged to be wise in a life-planning task than younger adults, age differences generally were small. The authors interpret these results as compatible with findings in crystallised intelligence (e.g., verbal fluency tasks) where no age-related decline is typically found (e.g., Denney, 1984). What is unclear however, but is essential to a concept of wisdom that includes expert knowledge accumulating across the lifespan as an integral part, is to what degree older adults do out-perform younger adults in terms of wise behaviour. Baltes and Smith (1990) have adopted a "weak" lifespan hypothesis (p. 112) where it is considered that although not all individuals will become wise, there will be a disproportionately large number of older persons among those designated as wise.

A somewhat different approach to understanding wisdom was put forward by Labouvie-Vief (1990). In her philosophical view of wisdom, wisdom is conceptualised as a stage of cognitive development that transcends the logical reasoning stage referred to as formal operations by Piaget (1976; 1980): Wise thinkers are able to combine intellect with emotional knowledge of the world to derive greater insight and meaning in their lives. Although a stage theory, this view differs radically from Erik Erikson's theory of human development. Erikson (1982) saw wisdom as the pinnacle of human endeavour; a stage of development reached after the individual had struggled to overcome despair in the later years of life to assume integrity.

There are also theorists who do not consider age as integral to a concept of wisdom. Meacham (1990), for example, argues that wisdom has traditionally been associated with older people because of a need by younger adults to believe that older people are wiser. Meacham argues that contrary to this belief, wisdom should be more prevalent in younger people as older people are too certain of their knowledge.

Sternberg (1985), in one of the few empirical studies reported, attempted to delineate the characteristics that are important in our constructs of intelligence, wisdom, and creativity. Sternberg gathered data from a wide variety of

people, including academics and laypersons, concerning the behaviours thought characteristic of wise people, creative people, and intelligent people. For example, wise people were described by Sternberg's participants (1985, p. 616) as being able to consider advice, as displaying concern for others, and having good problem-solving abilities. Creative people, on the other hand, were described as impulsive, taking chances, and tending not to know their own limitations. The psychometric analyses reported in Sternberg's study showed the constructs of wisdom and intelligence to be closely correlated, as were creativity and intelligence. Interestingly, wisdom and creativity, although individually closely related to intelligence, were least correlated with each other.

The present study considered that age may be an important factor underlying Sternberg's (1985) pattern of results in relation to creativity and wisdom. Age was not directly investigated by Sternberg, either in developmental terms, that is in terms of age of participant, or in terms of age of the person being judged. It is conceivable that wisdom is associated with older adults in our culture (e.g., Taranto, 1989), and conversely, creativity is associated with youth (Simonton, 1984). For example, Slotterback and Saarnio (1996), in a study of young people's attitudes to young, middle-aged, and older adults, commented that although ratings to young and older adults' cognitive ability did not differ quantitatively, they presumably reflected that older adults are typically associated with wisdom but loss of information-processing speed, whilst young adults may lack wisdom but make up for it in terms of quick processing. It therefore seems plausible that age was a mediating factor in the judgments of both creativity and wisdom provided by Sternberg's participants. If that were the case, it could provide an explanation for the polarisation of the wisdom and creativity constructs in Sternberg's (1985) study.

We investigated age of the person being judged as either wise or creative, as well as age of the person making the judgment. Separate from any influence that age of the person being judged may have, the age of the person making the judgment may be significant. This suggests that our implicit theories of wisdom and/or creativity may change as we age. Given that implicit theories are mental constructions based on an individual's experience (Sternberg, 1985), their dynamic nature may result in individual differences as a function of chronological age, as well as with cultural factors such as occupational grouping.

With respect to wisdom, there are data that suggest age of person making the judgment to be important. Berg and Sternberg (1992) demonstrated that implicit theories of intelligence, as operationalized in their study, were subject to change over time. For example, they reported that their young participants regarded older people as less able to deal with novelty than other age groups, whereas older participants were reported as regarding younger people as being more competent in everyday affairs. Similarly, Dittmann-Kohli and Baltes (1990), in a review of wisdom literature, argued that self-perception of wise behaviours may change over the life period as a function of a general physical and mental decline of the individual. That is,

successful aging (Baltes, 1993) may involve a reinterpretation of one's identity in a way that includes giving increased value to qualities that are regarded as resulting from life experience, such as wisdom.

For creativity, there is no clear indication in the literature as to whether people's implicit theories of creativity change over time. Creativity has been studied with diverse methodology, with studies of aging and creativity concentrating on bibliographical and autobiographical accounts (e.g., Torrance's (1977) review of studies using creativity experts; Ruth & Birren's (1985) study of laypeople). There is also no consensus in the literature as to the relation between behaviour designated as creative and adult age. One prominent researcher, Simonton (e.g., 1984), has reported that creative individuals tend toward their peak creativity in their thirties, although the peak varies as a function of field of endeavour (for example, creative peaks are later (around middle-age) in the humanities than in mathematics and science). Other research has been undertaken from a cognitive-processing perspective (e.g., Sternberg & Davidson, 1983) with its basis in the Gestalt approach (e.g., Kohler, 1927). Despite the range of methods employed, Sternberg (1989) comments that we still have relatively little idea of what creativity is, suggesting that we have even less idea about its nature in relation to chronological age. The present study aims to investigate how adult age influences judgments of creative behaviours of others. Although relevant literature is sparse, it suggests an association of creativity with youth. On the basis of this, we proposed a directional hypothesis with respect to the influence on creativity ratings of both age of participant, and age of person being judged.

In exploring the role of age in our concepts of wisdom and creativity, the current study drew on Sternberg's (1985) work, and employed his behavioural descriptions of wise and creative people to develop a variant of the person-perception paradigm (e.g., Erber, 1989). The present investigation is novel in two ways: First, from a theoretical perspective, it extends Sternberg's (1985) study to consider age as a critical determinant of people's judgments of wise and creative behaviours of others. Second, it involved a methodological development where we adapted a paradigm often used in studies of attitudes to aging and memory (e.g., Erber & Rothberg, 1991; Erber, Szuchman, & Rothberg, 1990; Parr & Siegert, 1993), to permit investigation of the effect of age on judgments of wisdom and creativity. The paradigm is similar to that employed in Sternberg's (1985) fourth experiment where participants judged the intelligence, wisdom and creativity of fictitious individuals from letters of recommendation constructed about them.

The person-perception paradigm involves participants reading a series of vignettes in which the age of the person described in each vignette is varied but the situation is kept constant. In adopting this paradigm, we investigated whether people of various ages used age as a significant factor when making a judgment about another's wisdom or creativity from a written statement about a hypothetical person (a target). The behaviours described in the vignettes were taken from Sternberg's (1985) lists of behaviours that had high

loadings on either wisdom or creativity in his Multiple Dimensional Scaling (MDS) analysis. Sternberg's (1985) scaling solutions for wise and creative behaviours produced two poles for each construct. Although Sternberg did not report exactly how the two poles for either construct differed in a psychological sense, it can be seen in Appendix 2 that the positive-polarity behaviours for wisdom (reasoning ability) and the negative-polarity behaviours for creativity (integration and intellectuality) have much in common with academic, fluid intelligence measures, whilst the alternate pole in each construct (sagacity for wisdom; nonentrenchment for creativity) includes items that have been referred to as personal and social factors (Clayton, 1982) or social intelligence (Sternberg, 1989). In the current study, we employed the highest-loading behaviours for wisdom and creativity from each of the poles described by Sternberg (1985) in the vignettes.

In summary, the purpose of the present study was to investigate the role that age plays when people use their implicit theories of wisdom and creativity in judging or evaluating other individuals' behaviours. There were seven hypotheses. First, we predicted that wise behaviours would be rated more highly on the wisdom scale than creative behaviours, and conversely, that creative behaviours would be rated more highly on the creativity scale than wise behaviours. Second, we predicted that older targets would be rated as more wise than younger targets. Third, we hypothesised that younger targets would be judged as more creative than older targets. The fourth and fifth hypotheses predicted that age of participant would influence judgments on the Likert-type scales of creativity and wisdom. Despite a lack of clarity in the literature, we formulated directional hypotheses about participant age on the basis of trends identified in previous studies. Specifically, older adults were expected to make higher wisdom ratings than younger adults overall, and in particular, to the negative polarity behaviours (sagacity); younger adults were expected to make higher creativity ratings overall, and in particular to the positive-polarity behaviours (nonentrenchment) than older adults. The final hypotheses predicted polarity to influence ratings, with higher wisdom ratings to negative-polarity behaviours, and higher creativity ratings to positive-polarity behaviours. The latter two hypotheses have their basis in the notion that it is personal and social factors that differentiate wisdom and creativity from being conceptualised in terms of traditional views of intelligence (Baltes & Smith, 1990).

Method

Participants

One hundred and seventy-six community-dwelling adults participated in the study. Data from 16 questionnaires were not used in analyses, due to incompleteness. The sample therefore comprised 160 adults in three age groups: Young adults (N = 60; 13 men and 46 women) were aged 18-30 years; Middle-aged adults (N = 50; 23 men and 27 women) were aged 38-50 years; Older adults (N = 50; 20 men and 30 women) were aged 58-70 years. All of the young adults,

and some of the middle-aged adults, were recruited from Victoria University of Wellington's first year undergraduate psychology class. To reduce cohort effects, the remaining middle-aged and all the older participants were recruited from the Central Institute of Technology, the Alumni Society, New Zealand Federation of University Women, University of the Third Age, and the Cognitive Laboratory Participant Pool. This recruitment process effectively minimised cohort effects due to educational level in that 91% of the final sample of participants reported tertiary-level education. The ethnicity of participants was predominantly European New Zealander (74%).

Materials

Materials comprised a series of written vignettes. The vignettes involved 12 fictitious people, called targets, who were either young (18-30), middle-aged (38-50) or older (58-70). The target-age range within each category was identical to the range for each participant-age category. A specific target age within the category range was randomly selected without replacement for each vignette. Appendix 1 provides examples of vignettes. Each vignette described two behaviours characteristic of the target person. The behaviours were taken from Sternberg's (1985) list of behaviours that strongly identified Wise or Creative people in his study. Sternberg's (1985) list resulted from a Multiple Dimensional Scaling (MDS) analysis which included the top 40 behaviours that were identified by his participants as characteristic of Wise and Creative people (1985, Experiment 1). The MDS revealed that people's implicit concept of Creativity comprised four dimensions, and the concept of Wisdom comprised three dimensions. Each dimension contained both a positive and a negative pole. The behaviours selected for the present study were taken from Dimension 1 of each concept (see Appendix 2). Dimension 1 behaviours were selected because they had the highest loadings in Sternberg's (1985) psychometric analyses and therefore could reasonably be assumed to be more strongly identified with the particular concept, i.e., Creativity or Wisdom, than those with lower loadings (confirmed by personal communication via e-mail with R. J. Sternberg, April 29, 1997).

The two behaviours included in each vignette were from either the positive or the negative pole of Dimension 1 (Sternberg, 1985, Tables 4 and 5, pp. 615-616) of the relevant construct. For Wisdom, the positive pole came under the heading "Reasoning ability", and the negative pole, "Sagacity". For Creativity, the positive pole came under the heading "Nonentrenchment", and the negative pole, "Integration and intellectuality". A mixture of behaviours from both negative and positive polarities of either Wisdom or Creativity was not used in any one vignette because each polarity was said to be characteristic of a different type of person. In exactly what ways the poles differed is as yet unclear. Sternberg's (1985) paper reported them as being classified differently, but no specific details, other than their category heading, were provided as to how they differed. What is clear from Appendix 2 is that with

respect to Wisdom, the negative-polarity behaviours include what previous researchers have termed social intelligence (Sternberg, 1989) or expert knowledge for dealing with the complexities of everyday life (Baltes & Smith, 1990). The positive polarity behaviours for Creativity also contain personal and social aspects, whereas the negative-polarity behaviours for Creativity and the positive-polarity behaviours for Wisdom are more closely aligned with intelligence as it has traditionally been studied.

The 12 vignettes were presented to participants in booklet form. Each booklet contained written instructions followed by the 12 vignettes in one of three different random orders. In developing the vignettes, target age was controlled for across behaviours by assigning age (young = y; middle-aged = m; older = o) in the order y,m,o,o,m,y down the list of Sternberg's behaviours for each polarity of Dimension 1 of both Creativity and Wisdom. Two other ordering sequences were devised (m,o,y,y,o,m; o,y,m,m,y,o) to produce three different variants of the questionnaire that together controlled for target age across vignettes. Each age group was repeated twice in the six Wisdom vignettes and in the six Creativity vignettes. The gender of the person described in each vignette remained the same for each question (three women and three men being described in the Wisdom vignettes, and three women and three men in the Creativity vignettes) throughout the questionnaire. The six behaviours with the highest loadings from each polarity of Sternberg's (1985) MDS were used, with one exception: Behaviour 5 under Sagacity, which was "knows self best" was not used as it was judged by the present experimenters to be too ambiguous. Instead, the next highest loading, Behaviour 7, "is fair", was used.

Following each vignette in the booklet, two 9-point, Likert-type scales, were presented. Each scale ranged from (0) "not at all wise" to (9) "extremely wise", or, from (0) "not at all creative" to (9) "extremely creative". The numbers were not explicitly shown on the questionnaire, but were indicated by clearly demarcated spaces (see Appendix 1).

Design and Procedure.

A mixed 3 x 3 x 2 factorial design was used. Participant age (young; middle-aged; older) was a between-participants factor. Within-participant factors were target age (young; middle-aged; older), behaviours (wise; creative), and polarity (positive; negative).

Participants were tested either individually or in small groups. They were advised that they were taking part in a research project designed to help our understanding of people's judgments of creativity and wisdom. After an opportunity for questions, they were asked to complete the questionnaire booklet, answering all questions even where some of the descriptions they had to evaluate were quite short. Demographic data (age; education level) were recorded before participants completed the questionnaire booklet.

Results

The data used to test the hypotheses comprised the 12 Wisdom ratings and the 12 Creativity ratings made by each participant on the 9-point, Likert-type scales following each vignette. A 3 x 3 x 2 x 2 (Participant Age x Target Age x Behaviour Type x Polarity) mixed multivariate analysis of variance (MANOVA) was performed. Visual inspection of residuals showed no obvious signs of strong non-normality. Since MANOVA is robust to non-normality, the normality assumption can be argued as adequately met even though the data are not exactly normal by the nature of the Likert Scales. In the MANOVA, participant age was a between-groups variable, and the other variables were within-participant factors. When effects reached significance on the MANOVA, the univariates for the two dependent measures were inspected via separate univariate ANOVAs, one for Wisdom ratings, and one for Creativity ratings. In all the omnibus analyses described below, a type 1 error rate of 0.05 was adopted for testing significance. Bonferroni adjustments were made for post hoc, pairwise comparisons.

The MANOVA demonstrated significant main effects of participant age, $F(4, 312) = 2.65$, target age, $F(4, 626) = 10.65$, behaviour type (Wise; Creative), $F(2, 156) = 270.30$, and polarity (positive; negative), $F(2, 156) = 249.10$. There were significant interactions in the MANOVA between target age and participant age, $F(4, 314) = 2.92$, participant age and behaviour type, $F(4, 312) = 3.38$, participant age and polarity, $F(4, 626) = 2.73$, and behaviour type and polarity, $F(2, 156) = 154.64$. There was a significant higher order interaction in the MANOVA involving participant age, behaviour type and polarity, $F(4, 312) = 7.78$. No other effects reached significance.

Table 1. Mean Ratings for Wisdom and Creativity as a Function of Polarity and Behaviour Type

Polarity	Wisdom Rating		Creativity Rating	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Behaviour Type in Vignettes: Wise				
Positive	6.99	1.66	6.08	2.20
Negative	6.93	1.53	5.20	1.96
Behaviour Type in Vignettes: Creative				
Positive	3.49	1.91	5.94	2.23
Negative	6.72	1.52	6.08	1.88

Note. Positive polarity for Wisdom = Reasoning Ability; Negative polarity for Wisdom = Sagacity; Positive polarity for Creativity = Nonentrenchment; Negative polarity for Creativity = Integration and Intellectuality.

Ratings range from 1 (not at all wise) to 9 (extremely wise).

Univariate Analysis of Wisdom Ratings

With respect to the univariate analysis on Wisdom, there were main effects of target age, $F(2, 314) = 19.83$, $MS_e = 2.01$, behaviour type, $F(1, 157) = 501.59$, $MS_e = 3.29$, and polarity, $F(1, 157) = 399.21$, $MS_e = 3.05$. There were significant interactions between participant age and target age, $F(4, 314) = 2.89$, $MS_e = 2.01$, participant age and behaviour type, $F(2, 157) = 5.68$, $MS_e = 3.29$, participant age and polarity, $F(2, 157) = 5.81$, $MS_e = 3.05$, target age and polarity, $F(2, 314) = 4.50$, $MS_e = 1.96$, and behaviour type and polarity, $F(1, 157) = 279.68$, $MS_e = 4.64$.

The main effect of behaviour type shows that when the vignette involved Wise behaviours, ratings on the Wisdom scale were higher ($M = 6.96$, $SD = 1.59$) than Wisdom ratings for vignettes involving Creative behaviours ($M = 5.10$, $SD = 2.37$) (see left-hand column of Table 1). This supports our first hypothesis, and offers a degree of validation to Sternberg's description of behaviours involved in an implicit theory of wisdom. However, the result is more complex, and must be qualified in light of interactions of behaviour type with other variables.

The behaviour type and polarity interaction demonstrates that when the behaviour type and rating scale matched (i.e., Wisdom ratings to Wise behaviours), ratings were unaffected by polarity (see left-hand column of Table 1). On the other hand, when the behaviour type and rating scale did not match (Wisdom ratings to Creative behaviours) ratings were higher to negative-polarity behaviours (Creative behaviours of Integration and Intellectuality) ($M = 6.72$, $SD = 1.52$) than when the behaviours in the vignette were from the positive polarity (Creative behaviours of Nonentrenchment) ($M = 3.49$, $SD = 1.91$). The latter polarity included more personal and social aspects of the construct of creativity than the other pole. Post hoc pairwise comparisons confirmed this effect. In other words, when forced to give a wisdom rating to behaviours defined as creative by Sternberg's (1985) subjects, participants in the current study judged creativity's traditional intellectual aspects to be more associated with wisdom than creativity's personal and social aspects. This result indicates that the constructs of wisdom and creativity may more easily be differentiated on the basis of the personal and social aspects than on the traditional intellectual components (e.g., reasoning logically; having a high IQ), and offers support to theorists who argue for the importance of personal and social factors in our implicit theories of wisdom.

With respect to the participant-age and behaviour-type interaction, post hoc pairwise comparisons showed older participants gave higher ratings for Wise behaviours on the Wisdom scale ($M = 7.16$, $SD = 1.56$) compared to middle-aged ($M = 6.79$, $SD = 1.67$) and young adults ($M = 6.94$, $SD = 1.55$), supporting the fourth hypothesis. However, they gave lower Wisdom ratings than young participants to behaviours that were designated creative (Older $M = 4.92$, $SD = 2.53$; Middle-age $M = 4.97$, $SD = 2.36$; Young $M = 5.32$, $SD = 2.21$). In other words, older participants were more discriminating with respect to the type of behaviour in the vignette than other age groups.

Table 2. Mean Ratings for Wisdom as a Function of Participant Age and Target Age

Participant Age	Target age					
	Young		Middle-aged		Older	
	M	SD	M	SD	M	SD
Young	6.10	2.07	6.05	2.08	6.33	2.02
Middle-aged	5.56	2.30	5.73	2.18	6.35	2.15
Older	5.78	2.38	6.07	2.40	6.26	2.35

Note. Ratings range from 1 (not at all wise) to 9 (extremely wise).

The second hypothesis was supported. Table 2 shows that older targets were given significantly higher wisdom ratings ($M = 6.31$, $SD = 2.16$) than middle-aged ($M = 5.95$, $SD = 2.12$) or younger targets ($M = 5.83$, $SD = 2.25$). Duncan's Multiple Range Test confirmed that the latter two age groups were rated similarly. Age of target therefore significantly influenced how wise a particular target's behaviour was judged to be. However, the result needs to be qualified in light of interactions between target age and polarity, and target age and participant age, which are discussed below.

The target age and participant age interaction (Table 2) shows that whereas all participants rated older targets highly on the Wisdom scale, participant age affected ratings to young targets and middle-aged targets. Specifically, young participants gave higher ratings to young targets than the other age groups (post hoc pairwise comparisons with Bonferroni adjustment). Conversely, middle-aged participants gave significantly lower wisdom ratings to middle-aged targets than to other age groups. This result is not easily interpretable: Whereas all participants rated older targets as wiser than younger targets, young participants judged their own age group positively with respect to wisdom while middle-aged participants gave harsher

Table 3. Mean Ratings for Wisdom as a Function of Participant Age and Polarity

Participant Age	Polarity			
	Positive (Wise = Reasoning Ability) (Creative = Nonentrenchment)		Negative (Wise = Sagacity) (Creative = Integration and Intellectuality)	
	M	SD	M	SD
Young	5.51	2.29	6.80	1.55
Middle-aged	5.07	2.53	6.68	1.51
Older	5.06	2.68	7.01	1.51

Note. Ratings range from 1 (not at all wise) to 9 (extremely wise).

Table 4. Mean Ratings for Wisdom as a Function of Target Age and Polarity

Participant Age	Polarity			
	Positive (Wise = Reasoning Ability) (Creative = Nonentrenchment)		Negative (Wise = Sagacity) (Creative = Integration and Intellectuality)	
	M	SD	M	SD
Young	4.97	2.50	6.69	1.56
Middle-aged	5.09	2.47	6.82	1.49
Older	5.65	2.48	6.97	1.53

Note. Ratings range from 1 (not at all wise) to 9 (extremely wise).

judgments to targets in their own age grouping.

The target age and polarity interaction can be seen in Table 4. Judgments to the two polarities were significantly different at each level of target age (post hoc pairwise comparisons). More specifically, for positive-polarity behaviours, older targets were given significantly higher Wisdom ratings ($M = 5.65$, $SD = 2.48$) than middle-aged ($M = 5.08$, $SD = 2.47$), and younger targets ($M = 4.97$, $SD = 2.50$), although the ratings were still significantly lower than for any target-age level within the negative-polarity behaviours. Wisdom ratings to negative-polarity behaviours were also higher for older targets than young targets, but there was no significant difference between ratings to older and middle-aged targets (post hoc pairwise comparisons with Bonferroni adjustment).

There was no main effect of participant age. Table 3 shows that each age group discriminated the two polarities, giving higher Wisdom ratings to the negative polarities (Sagacity for Wisdom; Integration and Intellectuality for Creativity) than to the positive polarities (Reasoning ability for Wisdom; Nonentrenchment for Creativity). The participant age and polarity interaction on Wisdom ratings (Table 3) shows that whereas the highest ratings to positive-polarity behaviours were given by young participants, older participants gave significantly higher ratings than the other age groups to negative-polarity behaviours.

No other interactions reached significance.

Univariate Analysis of Creativity Ratings

With respect to the univariate analysis on Creativity, there were main effects of participant age, $F(2, 157) = 3.50$, $MS_e = 9.38$, behaviour type, $F(1, 157) = 15.73$, $MS_e = 4.22$, and polarity, $F(1, 157) = 13.08$, $MS_e = 4.85$. There was a significant interaction between behaviour type and polarity, $F(1, 157) = 30.42$, $MS_e = 4.09$, and a significant higher-order interaction among participant age, behaviour type, and polarity, $F(2, 157) = 13.63$, $MS_e = 4.09$. Table 5 shows these effects.

The main effect of behaviour type on Creativity ratings

Table 5. Mean Ratings for Creativity as a Function of Participant Age, Polarity, and Behaviour Type

Polarity	Behaviour Type			
	Wise		Creative	
	Young Participants			
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Positive	6.01	2.08	6.51	1.98
Negative	5.65	1.85	6.05	1.90
	Middle-aged Participants			
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Positive	6.03	2.30	6.00	2.22
Negative	4.92	1.83	6.02	1.73
	Older Participants			
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Positive	6.19	2.24	5.19	2.33
Negative	4.95	2.11	6.19	1.98

Note. Positive polarity for Wisdom = Reasoning Ability; Negative polarity for Wisdom = Sagacity; Positive polarity for Creativity = Nonentrenchment; Negative polarity for Creativity = Integration and Intellectuality. Ratings range from 1 (*not at all creative*) to 9 (*extremely creative*).

demonstrates that overall ratings for Creative behaviours ($M = 6.01, SD = 2.06$) were higher than ratings for Wise behaviours ($M = 5.64, SD = 2.13$). This supports the first hypothesis, showing that participants were in reasonable agreement over what constituted Creative behaviours as distinct from Wise behaviours. The result also offers some degree of validity for Sternberg's (1985) classification.

The main effect of participant age is in keeping with the fifth hypothesis: There was a significant difference between young and older participants' ratings of Creativity (see Table 5), with younger participants giving higher ratings overall for Creativity ($M = 6.06, SD = 1.98$) than older participants ($M = 5.63, SD = 2.24$). Middle-aged participants' ratings were between those of the young and older adults and were not significantly different from either of the other age groups (Duncan's Multiple Range Test). This result is qualified below in light of an interaction among participant age, behaviour type and polarity.

The main effect of polarity can also be seen in Table 1 (right-hand side). The data show that overall ratings on the Creativity scale were higher to the positive-polarity behaviours ($M = 6.01, SD = 2.22$) than to the negative-polarity behaviours ($M = 5.64, SD = 1.97$). This result must be qualified by considering the higher-order interactions between behaviour type and polarity, and among participant age, behaviour type and polarity. The triple interaction shows that when behaviour type and rating scale did not match (Creativity ratings to Wise behaviours — see left-hand side of Table 5), polarity influenced ratings which were higher

for the positive polarity for each participant age group than to the negative polarity. In other words, behaviours in Sternberg's Reasoning Ability category of Wisdom were rated higher by all participants on the Creativity scale than behaviours in the Sagacity category. This was confirmed by post hoc, pairwise comparisons with Bonferroni adjustment. However, when behaviour type and rating scale did match (Creativity ratings to Creative behaviours — right-hand side of Table 5), middle-aged participants did not discriminate on the basis of polarity (Nonentrenchment vs Integration and Intellectuality). In the two age groups that did discriminate on the basis of polarity, young participants gave higher ratings to positive-polarity behaviours (Nonentrenchment) while older participants rated the negative-polarity behaviours of Integration and Intellectuality more highly. The result therefore shows that the participant-age and polarity effect is localised in the rating of Creative behaviours on the Creativity scale, with personal and social aspects rated highly by young adults while traditional aspects of intelligence were rated highly by older adults.

Contrary to prediction, there was no effect of target age on Creativity ratings and target age did not interact with any other variables. The third hypothesis was therefore not supported in that young targets were not seen as more creative than older targets.

To summarise these complex results, it appears that, as was demonstrated previously with Wisdom ratings, when participants were forced to make a judgment of wise and creative behaviours on the Creativity scale, they relied on the social and personal aspects of the alternate construct (Sagacity for Wisdom) as the major differentiating component. The traditional components of cognitive intelligence (Reasoning Ability for Wisdom; Integration and Intellectuality for Creativity) appear more interchangeable across constructs.

Discussion

The present study's primary aim was to investigate age as a determinant of people's judgments of wisdom and creativity in terms of both age of the person judged and age of the person making the evaluation. A person-perception paradigm was employed where behaviours taken from Sternberg's (1985) descriptions of wise and creative individuals were kept constant, whilst age of the target in the vignette varied. A secondary aim was to offer a degree of validation for the constructs of wisdom and creativity as described by Sternberg (1985), including their polarity divisions, whilst employing a novel methodology.

The first major result relates to the second aim: Wise behaviours received significantly higher wisdom ratings than creative behaviours (an effect size of 21%), and creative behaviours received significantly higher creativity ratings than wise behaviours (an effect size of 4%) on the Likert-type scales. This is important for two reasons. First, it supports Sternberg's (1985) description of the behaviours underlying each construct. Second, it confirms that the adaptation of the Erber-style paradigm (Erber, 1989; Erber,

Szuchman, & Rothberg, 1990), employed in the present study to judge people's implicit theories about wisdom and creativity in relation to age, has been appropriate.

There were three other major findings. First, older people in the vignettes were judged as significantly wiser than people in other age groups, but judgments of creativity were independent of target age. It should be noted however that in terms of everyday life, the effect of target age on wisdom ratings was small (effect size of 5%). Second, judgments of wisdom and creativity varied according to the age of the person making the judgment; third, judgments of wisdom and creativity were influenced by Sternberg's (1985) polarity division; specifically, the polarity of each construct that contained personal and social behaviours was particularly influential when participants made judgments on a scale that did not match the behaviours in the vignette (e.g., rating creative behaviours on a wisdom scale). Each of these will be discussed below.

The major, novel empirical finding was that people's implicit theories about wisdom include age as an inherent component, but their implicit theories about creativity do not. Older targets were perceived as being wiser than both middle-aged and younger targets, despite all aspects other than age being identical in the vignettes. This result is in agreement with general cultural beliefs that wisdom comes with increasing age (Taranto, 1989). On the other hand, target age did not influence ratings of creativity. Contrary to prediction, young people were not judged as more creative than older people. Target age, therefore, does not appear to be an important factor in people's judgments of creativity, at least as investigated in the present study.

The second major finding was that the age of participant influenced judgments of others. Although the overall effect size was small (5%), there were several significant effects relevant to the developmental aspect of the present study: First, older participants were more discriminating than other age groups in terms of what constituted wise and creative behaviours. This is in keeping with Berg and Sternberg (1992) who found participant age to influence judgments of the nature of intelligence. Second, older and middle-aged participants gave lower wisdom ratings than the young participants to young targets, showing a developmental change in attitude towards wisdom. This suggests that as adults grow older their perception concerning what constitutes wise behaviours in others changes. Third, young participants gave higher creativity ratings than other age groups. This effect combined with polarity and behaviour type to show that when rating creative behaviours on a creativity scale, young participants rated the personal and social nonentrenchment behaviours highly, whereas older participants rated the traditional aspects of cognitive intelligence (integration and intellectuality) highly. Overall, the results show the role of participant age to generally be in keeping with stereotypes about wisdom (e.g., Taranto). With respect to creativity, age differences in our implicit theory are in keeping with society's re-examination of the nature of intelligence over the last decade (Baltes & Smith, 1990), with younger adults placing more emphasis on personal and social factors (e.g., impulsivity) and older

adults' views being more in keeping with traditional notions of cognitive intelligence (e.g., ability to grasp abstract ideas).

The third important finding of the present study was that Sternberg's (1985) polarities of each construct influenced ratings to both wisdom and creativity scales. Specifically, when the rating scale was consistent with behaviours in the preceding vignette (i.e., wise behaviours of a target were being rated on a wisdom scale, or creative behaviours were being rated on a creativity scale), behaviours from both poles of the respective construct contributed similarly to the judgment of wisdom or creativity. However, when the rating scale and the behaviours in a vignette were inconsistent (i.e., wise behaviours of a target were rated on a creativity scale, and creative behaviours were rated on a wisdom scale), the intellectual aspects of wisdom and creativity (reasoning ability, and integration and intellectuality, respectively) were less differentiating than the personal and social aspects of each construct. It therefore appears that wisdom's behaviours classified under sagacity, and creativity's behaviours classified under nonentrenchment, are more salient when differentiating the relevant construct than traditional aspects of intelligence (Baltes & Smith, 1990). This result is in keeping with wisdom theories that have argued for social and personal factors (Clayton, 1982), or skills for dealing with everyday life (Baltes & Smith, 1990), as integral components of wisdom, and goes some way towards delineating exactly what factors or behaviours are involved in people's implicit theories of wisdom. Similarly, creativity, although independent of age of the person being judged in the present study, may be differentiated from traditional views of intelligence by personal and social aspects of the construct.

A further result that follows from the polarity effect described above is that judgments of creative and wise behaviours from Sternberg's (1985) MDS analyses were similar when based on the intellectual aspects of each construct. This accords with Sternberg's report that intelligence correlated strongly with both wisdom and creativity. Thus, the present results are in accord with Sternberg's (1985) finding that although wisdom and creativity can be differentiated, they have mutual links with intelligence. The present investigation has shown that the basis on which the two constructs were differentiated was with respect to the more personal and social aspects, that is, on the basis of sagacity and nonentrenchment as described by Sternberg (1985). In other words, participants did not distinguish between reasoning ability characteristics of wisdom, and integration and intellectuality characteristics of creativity, but have judged others' levels of wisdom and creativity from an evaluation in terms of emotional and social qualities of the target person. However, any analysis of these polarities in the present study must be at face value, as a certain degree of ambiguity surrounds their interpretation. Although Sternberg has described the bipolar factors as separate dimensions, a psychological explanation of the factors was not provided. The present data suggest the two poles are representative of two different types of behavioural characteristics, and deserve further study to delineate the critical factors.

Since participants did not distinguish between reasoning ability and integration and intellectuality, they may not have seen these characteristics as being specific to either wise or creative people. Sternberg (1985, p. 623) noted that the reasoning ability behaviours of wisdom are similar to those of the first dimension of intelligence in his Multidimensional Scaling Model. In a later study on creativity he examined the nature of creativity, regarding it as being composed of three critical facets: intelligence, style, and personality (Sternberg, 1988). According to the three-facet-model of creativity posited by Sternberg (1988) the three facets interact within the individual, either allowing the creativity to be expressed or not, depending on the individual's unique make up. Although specific behaviours attributed to intelligence may well be essential characteristics of both creativity and wisdom, the presence of 'style' and 'personality' factors appear to have formed the basis for the particular pattern of judgments recorded in the present study.

Several methodological issues should be raised as possible limitations of the present study. The first issue concerns the general use of vignettes. The degree to which judgments made to brief, decontextualised descriptions actually reflect individuals' judgments of the complex behaviours under consideration is unclear. An assumption made by previous researchers employing similar instruments is that the brief material provided to a participant will elicit retrieval of easily-accessible information from long-term memory which presumably reflects stereotypes within that particular society (Slotterback & Saarnio, 1996). It is possible that in such a contrived situation, demand characteristics may have biased responses from some participants. Although vignettes of the type used in the present study have been used extensively in studies concerning attitudes to memory, future research may improve ecological validity by employing a paradigm where audio- or video-tapes of targets' behaviour are employed instead of text vignettes (e.g., Erber, Etheart, & Szuchman, 1992). There is also a more specific issue concerning the vignettes. It is conceivable that with target age as a within-participant variable in the brief vignettes employed, target age would be highly salient in each description; that is, participants may surmise that target age should be considered important in their judgments of the person's behaviours. This criticism can be countered however by the null effect of target age on creativity ratings.

A second potential criticism of the present study concerns our selection of behaviours from Dimension 1 only of each construct described by Sternberg (1985). Certainly, including behaviours from the other dimensions (two for Wisdom; three for Creativity) may have captured the breadth of a construct. On the other hand, Dimension 1 was considered to represent the key dimension of each construct, and allowed us to develop a profile that seemed less contrived than when a larger number of behaviours was included in any particular vignette. Finally, absence of a clear description of the psychological nature of the polarity divisions described by Sternberg (1985) for the constructs of wisdom and creativity weakens any current interpretation.

However, what the present study has achieved is to demonstrate that when people are asked to judge others' wisdom and creativity on the basis of behaviours selected from the different polarities, distinguishing wise from creative behaviours relied on inclusion of the personal and social aspects of the relevant construct.

To conclude, results of this study show that people made use of their implicit theories of wisdom and creativity when making judgments of others, and that these implicit theories were largely in agreement with the characteristics described by Sternberg (1985). Wisdom judgments were mediated by the age of the person being judged and also the person making the evaluation. Therefore, age is a constituent part of a person's mental picture of wisdom, with older adults regarded as wiser than younger adults. Further, the present study has shown that our picture of wisdom appears to change over the lifespan. On the other hand, age of target was not a factor in people's judgments of creativity, even though the age of the person performing the evaluation did affect judgments. Therefore age alone cannot be used as a satisfactory explanation for Sternberg's (1985) finding that wisdom and creativity were least well correlated when implicit theories of wisdom, creativity, and intelligence were compared. Some suggestion concerning what factor(s) other than age may be implicated is found in the present study's finding that participants distinguished others' wisdom and creativity on the personal and social, rather than the intellectual, aspects of the two constructs. Our results confirmed that intelligence is a common component of both wisdom and creativity. Future research could attempt to distinguish between the positive polarity of wisdom and the negative polarity of creativity, in order to confirm whether their similarity was a cause of confusion between the constructs of wisdom and creativity, or whether participants really were making judgments based on others' social intelligence. (Sternberg, 1989)

References

- Baltes, P. B. (1987). Theoretical propositions of life-span developmental psychology: On the dynamics between growth and decline. *Developmental Psychology*, 23, 611-626.
- Baltes, P. B. (1993). The aging mind: Potential and limits. *Gerontologist*, 33, 580-594.
- Baltes, P. B. & Smith, J. (1990). Towards a psychology of wisdom and its ontogenesis. In R. J. Sternberg (Ed.), *Wisdom: Its nature, origins, and development* (pp. 87-120). Cambridge: Cambridge University Press.
- Baltes, P. B. & Baltes, M.M. (1990). Psychological perspectives on successful aging: The model of selective optimization and compensation. In P.B. Baltes and M.M. Baltes (Eds.), *Successful aging: Perspectives from the behavioral sciences*. Cambridge: Cambridge University Press.
- Berg, C. A. & Sternberg, R. J. (1992). Adults' conceptions of intelligence across the adult life span. *Psychology and Aging*, 7, 221-231.
- Clayton, V. (1982). Wisdom and intelligence: The nature and function of knowledge in the later years. *International Journal of Aging and Human Development*, 15, 315-321.
- Denney, N.W. (1984). A model of cognitive development across the life span. *Developmental Review*, 4, 171-191.

Appendix 2

Behaviours used in the vignettes, taken from Sternberg's Scaling Solutions for Wise and Creative behaviours (Sternberg, 1985, Tables 4 and 5, pp. 615-616).

Wisdom

Positive polarity: Reasoning ability.

Has the unique ability to look at a problem or situation and solve it.
Has good problem-solving ability.
Has a logical mind.
Is good at distinguishing between correct and incorrect answers.
Is able to apply knowledge to particular problems.
Is able to put old information, theories, and so forth, together in a new way.

Negative polarity: Sagacity.

Displays concern for others.
Considers advice.
Understands people through dealing with a variety of people.
Feels he or she can always learn from other people.
Is thoughtful.
Is fair.

Creativity

Positive polarity: Nonentrenchment.

Makes up rules as he or she goes along.
Is impulsive.
Takes chances.
Tends not to know own limitations and tries to do what others think is impossible.
Is emotional.
Has a free spirit.

Negative polarity: Integration and intellectuality.

Makes connections and distinctions between ideas and things.
Has the ability to understand and interpret his or her environment.
Has the ability to recognise similarities and differences.
Is able to grasp abstract ideas and focus his or her attention on those ideas.
Is productive.
Has a high IQ level.

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