Aging of Personality Judgment Ability: The Moderating Effect of Information Amount

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Abstract

Personality judgment exerts a significant influence on individuals' social functioning. This study employed a 2 (judge age group: older, younger) × 3 (target information amount: single, moderate, rich) between-subjects experimental design to investigate how information amount affects the accuracy of personality judgment in older and younger adults, encompassing both general accuracy (accuracy in judging personality commonalities of the target's group) and distinctive accuracy (accuracy in judging the target's individual personality). The results revealed that older adults demonstrated higher general accuracy in personality judgment than younger adults, and this age-related advantage was not influenced by information amount. Information amount only affected age differences in distinctive accuracy: with single information amount (real-time text only), older adults' distinctive accuracy was lower than that of younger adults; with moderate (real-time text and voice) and rich information amount (real-time text, voice, and image), the two groups performed comparably. In summary, older adults' personality judgment ability is generally well preserved, and they can effectively utilize incremental information to compensate for the gap with younger adults in distinctive accuracy.

Full Text

Aging of Personality Judgment Ability: The Moderating Role of Information Richness

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Abstract

Personality judgment plays a crucial role in individuals' social functioning. This study employed a 2 (age group of judge: older vs. younger) × 3 (information richness: unitary, medium, rich) between-subjects experimental design to examine how information richness influences the accuracy of personality judgments made by older and younger adults. The study investigated two components of accuracy: normative accuracy (accuracy in judging group-level personality commonalities) and distinctive accuracy (accuracy in judging individual-level personality). Results revealed that older adults exhibited higher normative accuracy than younger adults, and this age-related advantage was not moderated by information richness. Information richness only moderated age differences in distinctive accuracy: when information was unitary (text only), older adults showed lower distinctive accuracy than younger adults; however, when information was medium (text and audio) or rich (text, audio, and image), the performance of the two age groups was comparable. Overall, older adults' personality judgment ability remained largely intact and they could effectively utilize incremental information to compensate for their disadvantage in distinctive accuracy relative to younger adults.

Keywords: personality judgment, normative accuracy, distinctive accuracy, aging characteristics, information richness

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Introduction

"Knowing others is wisdom; knowing yourself is enlightenment" (*Tao Te Ching*). "In the art of governance, knowing people comes first" (*Zizhi Tongjian*). The ability to accurately understand others is considered a manifestation of wisdom and the foundation of effective personnel management, with accurate personality judgment being a key component of this ability. Throughout the lifespan, individuals must constantly engage in social interactions and frequently make personality judgments about others [**?**] to decide whether and how to interact with them [**?**, **?**]. The outcomes of personality judgments directly affect individuals' ability to establish and maintain high-quality social relationships, thereby fulfilling their social functions and achieving social goals [**?**, **?**, **?**]. As an important social cognitive ability, the developmental trajectory of personality judgment ability represents a significant lifespan developmental issue worthy of in-depth investigation [**?**, **?**, **?**]. On the one hand, older adults' basic cognitive abilities and cognitive resources gradually decline with age, which may create difficulties in acquiring and processing personality-relevant information and thus reduce the accuracy of their personality judgments [**?**, **?**]. On the other hand, older adults possess richer social experience than younger adults, making

them more experienced in understanding people and having acquired more naive knowledge about personality characteristics of different groups, which may help them make more accurate personality judgments [?, ?]. Therefore, whether personality judgment ability declines or improves in late adulthood remains an open question requiring further investigation.

Personality is an abstract concept without physical substance. When assessing personality judgment accuracy, self-other agreement is the most widely used indicator [?, ?, ?, ?]. This metric determines the accuracy of personality judgments by calculating the correlation between a judge's assessment of a target's personality and the target's self-rating (considered the "true personality") [?], reflecting overall personality judgment accuracy. Meta-analyses and numerous studies have shown that judges' personality judgments correlate significantly with targets' actual personalities [?, ?, ?, ?]. Even for strangers meeting for the first time, personality judgments demonstrate a certain degree of accuracy [?, ?].

Delving into the specific psychological processes of personality judgment, multiple theoretical models explain why and when personality judgments are accurate [?, ?, ?]. Brunswik's (1956) lens model posits that personality traits are latent beneath behavior and cannot be directly observed, but available cues in behavior and the environment can serve a lens function. The higher the validity of the cues and the judge's sensitivity to valid cues, the more accurately they can judge the target's personality traits [?].

Funder's (1995, 2012) Realistic Accuracy Model further describes the cognitive process of personality judgment: First, the target exhibits personality-relevant behavioral information; second, this behavioral information becomes available to the judge; third, the judge detects the available behavioral information; and fourth, the judge correctly utilizes the detected behavioral information. Only when relevant behavioral information is available (i.e., valid cues) and is detected and correctly utilized by the judge can accurate personality judgment occur. The first two stages ("relevance" and "availability") are primarily determined by the situation and are difficult for the judge to control. Individual characteristics of the judge, such as judgment ability, mainly influence personality judgment accuracy by affecting the latter two stages ("detection" and "utilization").

The Social Accuracy Model further proposes that personality judgment accuracy is related not only to whether judges can effectively detect and utilize behavioral information but also to whether they understand and use knowledge about personality commonalities within the target's group [?]. Consequently, this model, combined with multilevel linear analysis methods, decomposes personality judgment accuracy into two subcomponents: normative accuracy and distinctive accuracy. The former measures the accuracy of judges' assessments of group-level personality commonalities, reflecting their mastery and application of personality commonalities within the target's group; the latter measures the accuracy of judges' assessments of individual-level personality, reflecting their detection and utilization of the target's behavioral information in the current

situation [?]. Knowledge of group personality commonalities is an important component of social knowledge and experience, representing relatively stable cognitive schemas that can be directly retrieved, with their application process being less influenced by situational factors [?, ?]. With age, older adults' social knowledge and experience (including personality commonality knowledge) become increasingly rich, and their ability to apply social knowledge strengthens [?, ?]. Since the ability to apply social knowledge and experience is positively correlated with social judgment quality [?], older adults' rich knowledge of personality commonalities may give them an advantage in normative accuracy of personality judgment. Because the retrieval and application of personality commonality knowledge are less affected by specific behavioral information [?], if older adults have an advantage in normative accuracy, this advantage should not be affected by characteristics of current information (such as the amount of information).

According to the Social Accuracy Model, distinctive accuracy reflects judges' detection and utilization of specific personality-relevant behavioral information [?], corresponding to stages three and four of the Realistic Accuracy Model [?, ?]. As an important medium for personality judgment, behavioral information such as text, voice, video, and verbal and nonverbal cues in face-to-face interactions [?, ?, ?] are key factors influencing personality judgment accuracy (especially distinctive accuracy) and may interact with judges' individual abilities and characteristics. Research has found that increased information richness generally has a positive effect on forming accurate personality judgments [?, ?, ?]. This is because more behavioral information often means a broader range of personality-relevant cues, helping judges integrate different information to form more accurate personality judgments [?]. However, the premise of this conclusion is that judges have sufficient cognitive resources and ability to fully integrate and utilize different information. As information richness increases, judges need to expend more cognitive resources to detect and correctly utilize effective personality-relevant cues from large amounts of information while resisting interference from irrelevant information. Due to older adults' cognitive decline and insufficient cognitive resources, increased information may not be beneficial and may even pose challenges, thereby impairing their personality judgment accuracy.

With age, older adults' fluid intelligence (such as basic cognitive abilities like attention, processing speed, working memory, and executive function) continuously declines [?, ?, ?], which may adversely affect their detection and utilization of targets' behavioral information. Previous studies have mostly defined information richness by the duration of information presentation [?, ?, ?], where the amount of information per unit time remains relatively constant, and the cognitive resources occupied by individuals at different moments are basically similar. Therefore, the manipulation of information richness in these studies makes it difficult to influence judges' information detection and utilization, making it challenging to test the interactive effects of judge age and information richness on personality judgment.

This study adopted a simultaneous approach to manipulate information richness to avoid this research limitation. Specifically, we manipulated the number of information channels presented to change the amount of information per unit time, thereby examining how changes in information richness affect the personality judgment accuracy of older and younger judges. When information is presented through multiple channels simultaneously, younger adults often demonstrate good integration of information from different channels [?], thereby improving their distinctive accuracy of personality judgment. However, for older adults, declines in sensory function and attention span may make it difficult for them to detect, integrate, and utilize effective information from different sensory channels [?, ?]. Additionally, due to weakened inhibitory ability [?], older adults find it more difficult than younger adults to suppress interference from irrelevant information [?] and are more susceptible to conflicts within and between sensory channels [?, ?], which may negatively affect their distinctive accuracy of personality judgment. In summary, increasing the number of information channels may improve distinctive accuracy for younger but not older adults, thereby exacerbating older adults' age-related disadvantage in distinctive accuracy.

To more accurately reflect the age characteristics of personality judgment in real life, recent research has increasingly emphasized the ecological validity of experimental materials, gradually shifting from traditional text descriptions and static pictures [?, ?] to more ecologically valid dynamic pictures, videos, and even face-to-face interactive scenarios [?, ?]. Previous studies have found that the ecological validity of experimental materials may significantly affect older adults' personality judgment accuracy, with materials far removed from real-life social situations potentially preventing older adults from effectively utilizing their social experience and thus underestimating their personality judgment ability [?, ?]. Therefore, this study used more ecologically valid dynamic experimental materials.

In summary, this study manipulated information richness by changing the number of information channels to examine how changes in information richness affect the personality judgment accuracy (using self-other agreement as the indicator) of older and younger judges. Specifically, participants watched self-introduction videos of target characters with the same duration but different information richness (unitary: text only; medium: text and sound; rich: text, sound, and image), and then judged the target characters' Big Five personality traits. Additionally, based on multilevel linear analysis methods from the Social Accuracy Model, we further examined the effects of judge age and information richness on the two subcomponents of personality judgment accuracy—normative accuracy and distinctive accuracy—to clarify the sources of age differences in personality judgment accuracy.

Due to the accumulation of social knowledge and experience, older adults may have an advantage over younger adults in normative accuracy judgments, and normative accuracy judgments are less affected by current information. Therefore, this study proposed Hypothesis 1: Older adults have higher normative

accuracy in personality judgment than younger adults, and this age-related advantage is not affected by information richness. Due to cognitive declines, older adults may not be able to utilize incremental information as effectively as younger adults to improve distinctive accuracy of personality judgment. Therefore, this study proposed Hypothesis 2: Information richness moderates age differences in distinctive accuracy; older adults have lower distinctive accuracy in personality judgment than younger adults, and this age-related disadvantage is exacerbated with increasing information richness.

Method

2.1 Experimental Design

A 2 (age group of judge: older vs. younger) × 3 (target character information richness: unitary, medium, rich) completely randomized between-subjects design was adopted, with personality judgment accuracy (using "self-other agreement" as the overall measure) as the dependent variable. Simultaneously, multilevel linear modeling was used to decompose personality judgment accuracy into normative accuracy and distinctive accuracy, further examining the interactive effects of judge age group and information richness on these two subcomponents.

2.2 Participants

G*Power [**?**] was used to estimate sample size, with significance level set at $\alpha = 0.05$, statistical power at $1–\beta = 0.80$, and assumed effect size at $f = 0.25$, yielding a minimum sample size of 158. Ultimately, 163 participants were recruited, including 81 older judges (aged 60~83 years, M ± SD = 66.67 ± 4.44, 42 females) and 82 younger judges (aged 18~27 years, M ± SD = 21.98 ± 2.12, 40 females). The Clock Drawing Test [**?**] was used to screen out older individuals suspected of dementia; all older judges passed the cognitive screening (full score = 10, all participants scored $ $6, M ± SD = 9.56 ± 0.59). Younger and older judges did not differ significantly in household per capita monthly income (younger: M ± SD = 2.02 ± 1.07; older: M ± SD = 2.00 ± 0.88; $t(161) = 0.16$, $p = 0.874$), self-rated health (younger: M ± SD = 3.80 ± 0.94; older: M ± SD = 3.84 ± 0.75; $t(161) = –0.26$, $p = 0.795$), or implicit personality theories (younger: M ± SD = 0.32 ± 0.47; older: M ± SD = 0.26 ± 0.44; $t(161) = 0.81$, $p = 0.418$). Older judges had significantly fewer years of education (M ± SD = 11.42 ± 2.59) than younger judges (M ± SD = 15.94 ± 2.11), $t(161) = –12.21$, $p < 0.001$, Cohen's $d = 1.914$, 95%CI = [–5.25, –3.79]. Further analysis revealed that years of education were negatively correlated with personality judgment accuracy ($r = –0.185$, $p = 0.018$), but the partial correlation controlling for age was not significant ($r = 0.091$, $p = 0.250$). Age was significantly positively correlated with personality judgment accuracy ($r = 0.370$, $p < 0.001$), and the partial correlation remained significant after controlling for years of education ($r = 0.337$, $p < 0.001$). These analyses indicate that the correlation between years of education and personality judgment accuracy was primarily due to age

rather than education itself; therefore, years of education should not be included as a covariate in subsequent analyses.

2.3 Materials

2.3.1 Target Character Video Materials Target character video materials were created through a pilot experiment. Specifically, the pilot experiment recruited 64 older participants (aged 60~77 years, M ± SD = 66.00 ± 3.74, 43 females) and 56 younger participants (aged 18~25 years, M ± SD = 21.50 ± 2.34, 48 females) as potential target characters. The Chinese version of the Ten-Item Personality Inventory (TIPI-C) self-report version was used for participants to rate their own personality traits. Based on the self-report results, 12 older participants (aged 60~76 years, M ± SD = 65.08 ± 5.02, 7 females) and 12 younger participants (aged 18~24 years, M ± SD = 20.75 ± 2.38, 8 females) were selected as target characters for video recording. The selection criteria were: target characters' self-report scores on each personality dimension were relatively widely distributed within their age group, and there were no significant age differences in self-report scores on the five personality dimensions: extraversion ($t(22) = -1.03$, $p = 0.317$), agreeableness ($t(22) = 0.47$, $p = 0.642$), conscientiousness ($t(22) = -0.91$, $p = 0.375$), neuroticism ($t(22) = 1.78$, $p = 0.089$), and openness ($t(22) = 0.12$, $p = 0.909$).

Target characters were instructed to complete self-introduction recordings: walk to the center of the frame and sit in a designated chair, greet the camera, introduce their surname, age, and major/occupation/pre-retirement occupation, and finally briefly describe a recent memorable event (content unrestricted, but they must be an important participant in the event). Before recording, target characters were told that the self-introduction was to help viewers quickly understand them but to avoid using evaluative words as much as possible. Each original video material lasted 60~95 seconds (older targets: M ± SD = 77.83 ± 9.10 seconds; younger targets: M ± SD = 80.42 ± 10.86 seconds), with no significant difference in video duration between the two age groups, $t(22) = -0.63$, $p = 0.534$.

After recording, video editing software was used to process the original materials. Real-time subtitles were added below the original videos to generate rich information materials containing three components: real-time text, original audio, and image (Figure 1c [Figure 1: see original paper]). Dynamic waiting icons were used to replace the original image information to generate medium information materials containing real-time text and original audio (Figure 1b). White noise was used to replace the original audio information to generate unitary information materials containing only real-time text (Figure 1a).

Figure 1. Examples of target character video materials under unitary (a), medium (b), and rich (c) information richness conditions (Note: The images show what judges saw in the visual channel: a and b show waiting icons and real-time text on a black screen, c shows original images and real-time text;

below the images are annotations of what judges heard in the auditory channel: a shows white noise, b and c show original audio).

Additionally, the 24 target characters completed the Big Five Inventory-2 (BFI-2) [**?**, **?**] for self-report again. Significant positive correlations were found between the two self-report scores for extraversion ($r = 0.804$, $p < 0.001$), agreeableness ($r = 0.407$, $p = 0.048$), conscientiousness ($r = 0.687$, $p < 0.001$), neuroticism ($r = 0.775$, $p < 0.001$), and openness ($r = 0.442$, $p = 0.031$). This indicates that individuals can provide effective self-reports of their personality levels when measured with TIPI-C, and the measurement results can be regarded as their true personality.

2.3.2 Chinese Version of the Ten-Item Personality Inventory (TIPI-C) This scale contains 10 items, with each of the Big Five personality dimensions measured by 2 items [**?**]. The scale uses a seven-point rating (1 = strongly disagree, 7 = strongly agree) and can be used for self-report or other-report of the Big Five personality. For example, "I am extraverted, enthusiastic" (self-report version) and "Zhang San is extraverted, enthusiastic" (other-report version). In this study, the self-report version was used for target characters and judges to rate their own personality traits, while the other-report version was used for judges to rate target characters' personality traits. To assess test-retest reliability, 59 younger adults (aged 18~22 years, $M \pm SD = 19.12 \pm 0.65$, 33 females) and 32 older adults (aged 60~76 years, $M \pm SD = 67.47 \pm 3.81$, 17 females), totaling 91 participants, completed the scale twice with a one-week interval. Results showed that test-retest reliability for all five personality dimensions reached good or better levels: extraversion = 0.84, agreeableness = 0.64, conscientiousness = 0.75, neuroticism = 0.71, and openness = 0.67. Additionally, Li Jinde's (2013) reliability and validity test of the scale indicated that in the Chinese cultural context, the scale's internal consistency reliability, test-retest reliability, and criterion validity all reached acceptable levels, making it a reliable and effective tool for measuring the Big Five personality.

2.3.3 Background Variable Measurement Tools (1) Sociodemographic Information. Including age, gender, years of education, household per capita monthly income (1 = below 5,000 yuan, 2 = 5,000~10,000 yuan, 3 = 10,000~15,000 yuan, 4 = 15,000~20,000 yuan, 5 = above 20,000 yuan), and self-rated health status (5-point rating, 1 = very unhealthy, 5 = very healthy).

(2) Implicit Personality Beliefs Questionnaire. Adapted from the Personality Beliefs Scale compiled by Norenzayan et al. (1999), this questionnaire measures individuals' implicit personality theories by asking participants to choose between View A (advocating personality entity theory, i.e., personality determines behavior) and View B (endorsing personality incremental theory, i.e., environment determines behavior) (0 = personality entity theory, 1 = personality incremental theory). This reflects the degree to which individuals associate certain personality traits with specific behaviors. For example, whether one

associates high extraversion with more eye contact during communication influences the extent to which individuals judge personality based on a person's behavior, making it an individual characteristic variable that should be considered in this study. Based on test-retest reliability data from 59 younger and 32 older adults (the same participants as in the TIPI-C test-retest reliability assessment) with a one-week interval, the test-retest reliability of this questionnaire was 0.54, indicating acceptable reliability.

2.4 Procedure

All participants were recruited online. Due to strict pandemic control measures, all older participants completed the experiment online via Tencent Meeting with one-on-one guidance from an experimenter, while 24 younger participants completed the experiment in a physical laboratory (8 in each information richness condition) and the remaining 58 participated via Tencent Meeting.

(1) After signing the informed consent form, participants were presented with a list of over 50 names containing the real names of the 24 target characters. Participants reported whether they knew anyone with the same name in real life. If they answered "yes," subsequent responses related to that target character were excluded.

(2) Each participant used the TIPI-C self-report version to rate their own five personality traits.

(3) According to their assigned information richness condition (younger judges: 27 in each of the three groups; older judges: 27 in unitary, 27 in medium, and 28 in rich information conditions), the experimenter sequentially played the 24 target character materials at that level for the participant. After watching each material, participants used the TIPI-C other-report version to judge the target character's five personality traits until all video materials had been viewed. Half of the participants watched the 12 older target character materials first, while the other half watched the 12 younger target character materials first. Within each age group of target characters, there were three presentation orders, and the viewing order was counterbalanced across participants.

(4) Participants reported sociodemographic information, completed the implicit personality beliefs questionnaire, and older participants additionally completed the Clock Drawing Test.

The study took approximately 70 minutes to complete, and each participant received 70 yuan as compensation. According to the above procedure, theoretically, there should have been 3,912 (163×24) unique "judge-target" combinations. However, 20 combinations were excluded because judges reported knowing the target character in real life, and one combination was excluded due to operational error, resulting in 21 combinations being recorded as missing values (missing rate = 0.54%). Additionally, for 23 combinations, judges gave

identical ratings across all 10 personality items for the target character (e.g., selecting "1 strongly disagree" for all 10 items), making correlation calculation impossible; self-other agreement for these combinations was recorded as 0.

2.5 Data Analysis

2.5.1 Calculation of Personality Accuracy and Variance Analysis Self-other agreement is the most intuitive overall measure of personality judgment accuracy (not distinguishing between normative and distinctive accuracy), referring to the correlation between participants' other-report scores of target characters' personality and target characters' self-report scores. Higher correlations indicate greater accuracy. Since correlation coefficients do not follow a normal distribution, all calculated correlation coefficients were Fisher Z-transformed [**?**], with higher transformed values still indicating greater accuracy. Subsequently, in SPSS 22, a 2 (judge age group) × 3 (target character information richness) completely randomized ANOVA was conducted with transformed self-other agreement as the dependent variable.

2.5.2 Multilevel Linear Analysis In Mplus 8, multilevel linear models were constructed to decompose personality judgment accuracy into normative accuracy and distinctive accuracy. According to the Social Accuracy Model, each combination of a participant and a specific target character was treated as the basic unit for statistical testing. The multilevel linear models were constructed as follows: Participants' other-report scores on each TIPI-C item (Yijk) served as the outcome variable. At Level 1 (the "judge-target" level), there were two predictors: (1) the mean self-report scores of the personality traits for the age group to which the target character belonged (Normjk), representing personality commonalities of the corresponding age group; and (2) each target character's self-report scores on each item after subtracting the age group mean (TSelfjk). Both variables were centered before being entered into the model. At Level 2 (the "judge" level), predictors were participant age group (Agei), information richness (Info1i and Info2i), and their interaction terms. The specific models were:

(1) Level 1 ("Judge-Target" Level)

$$Y_{ijk} = \beta_{0i} + \beta_{1i}Norm_{jk} + \beta_{2i}TSelf_{jk} + r_{ijk}$$

(2) Level 2 (Model 1): No Level 2 Predictors

$$\beta_{0i} = \gamma_{00} + u_{0i}$$

$$\beta_{1i} = \gamma_{10} + u_{1i}$$

$$\beta_{2i} = \gamma_{20} + u_{2i}$$

(3) Level 2 (Model 2): Judge Age Group and Information Richness as Level 2 Predictors

$$\beta_{0i} = \gamma_{00} + \gamma_{01}Age_i + \gamma_{02}Info1_i + \gamma_{03}Info2_i + u_{0i}$$
$$\beta_{1i} = \gamma_{10} + \gamma_{11}Age_i + \gamma_{12}Info1_i + \gamma_{13}Info2_i + u_{1i}$$
$$\beta_{2i} = \gamma_{20} + \gamma_{21}Age_i + \gamma_{22}Info1_i + \gamma_{23}Info2_i + u_{2i}$$

(4) Level 2 (Model 3): Judge Age Group, Information Richness, and Their Interaction Terms as Level 2 Predictors

$$\beta_{0i} = \gamma_{00}+\gamma_{01}Age_i+\gamma_{02}Info1_i+\gamma_{03}Info2_i+\gamma_{04}Age_i\times Info1_i+\gamma_{05}Age_i\times Info2_i+u_{0i}$$
$$\beta_{1i} = \gamma_{10}+\gamma_{11}Age_i+\gamma_{12}Info1_i+\gamma_{13}Info2_i+\gamma_{14}Age_i\times Info1_i+\gamma_{15}Age_i\times Info2_i+u_{1i}$$
$$\beta_{2i} = \gamma_{20}+\gamma_{21}Age_i+\gamma_{22}Info1_i+\gamma_{23}Info2_i+\gamma_{24}Age_i\times Info1_i+\gamma_{25}Age_i\times Info2_i+u_{2i}$$

In the above equations, i represents different participants, j represents different target characters, and k represents different items in TIPI-C. At Level 1, Yijk refers to participant i's other-report score for target character j on item k. Normjk refers to the mean self-report score on item k for the age group (older or younger) to which target character j belongs [**?**]. Tselfjk refers to target character j's self-report score on item k minus Normjk. Therefore, $ $1i and $ $2i reflect normative accuracy and distinctive accuracy of personality judgment, respectively. Previous research suggests that personality commonalities should be calculated based on as large a sample as possible [**?**]. Based on the actual situation of this study, Normjk was calculated from the self-report scores on TIPI-C of 145 older participants and 131 younger participants from both the pilot and formal studies (specific scores are shown in Table 1). Independent samples t-tests on the self-report scores of the five personality dimensions for younger and older groups showed that the older group had higher conscientiousness, t(274) = 4.96, p < 0.001, Cohen's d = –0.60, 95%CI = [0.38, 0.88], and lower neuroticism, t(274) = –6.10, p < 0.001, Cohen's d = 0.73, 95%CI = [–1.11, –0.57]; there were no age differences in extraversion (t(274) = 0.07, p = 0.943), agreeableness (t(274) = –1.43, p = 0.155), or openness (t(274) = –0.46, p = 0.650). That is, personality commonalities of different age groups do differ in some aspects.

Table 1. Personality Commonalities of Younger and Older Groups (Mean TIPI-C Self-Report Scores)

Group	n	Item 1	Item 6[c]	Item 2[c]	Item 7	Item 3	Item 8[c]	Item 4	Item 9[c]	Item 5	Item
Younger	131[a]										
Older	145[b]										

Note: a. The younger group consisted of 56 participants from the pilot study and 75 from the formal study; 7 participants in the formal study had missing

self-report scores. b. The older group consisted of 64 participants from the pilot study and 81 from the formal study. c. Items with superscript c were reverse-scored; Table 1 shows raw scores.

At Level 2, Agei is a dummy variable for participant age group, with younger participants coded as 0 and older participants coded as 1. Info1i and Info2i are two dummy variables for information richness, both coded as 0 for unitary information, Info1i coded as 1 and Info2i coded as 0 for medium information, and Info1i coded as 0 and Info2i coded as 1 for rich information. Therefore, $ $00, $ $10, and $ $20 represent the intercept, fixed part of normative accuracy, and fixed part of distinctive accuracy, respectively; $ $01, $ $11, and $ $21 represent the effects of judge age group on the intercept, normative accuracy, and distinctive accuracy, respectively; $ $02 and $ $03, $ $12 and $ $13, $ $22 and $ $23 represent the effects of information richness on the intercept, normative accuracy, and distinctive accuracy, respectively; $ $04 and $ $05, $ $14 and $ $15, $ $24 and $ $25 represent the interaction effects of judge age group and information richness on the intercept, normative accuracy, and distinctive accuracy, respectively.

Results

3.1 Effects of Age and Information Richness on Personality Judgment Accuracy

The self-other agreement (Fisher Z-transformed values) of younger and older judges under the three information richness conditions are shown in Table 2 . One-sample t-tests showed that judges' self-other agreement was significantly greater than 0, M ± SD = 0.45 ± 0.16, t(162) = 36.71, p < 0.001, Cohen's d = 3.98, 95%CI = [0.42, 0.47], indicating that judges had some accuracy in judging strangers' personalities.

Table 2. Personality Judgment Accuracy of Younger and Older Judges Under Different Information Richness Conditions

Measure	Younger Judges (n = 82)			Older Judges (n = 81)		
	Unitary	Medium	Rich	Unitary	Medium	Rich
Self-other agreement[a]	0.37 (0.14)	0.40 (0.13)	0.41 (0.16)	0.45 (0.20)	0.51 (0.12)	0.54 (0.10)
Subcomponent indices						
Normative accuracy[b]						

Measure	Younger Judges (n = 82)	Older Judges (n = 81)
Distinctive accuracy[c]		

Note: a. Mean and standard deviation of Fisher Z-transformed values; b. $ $1i (unstandardized coefficient) obtained from multilevel linear modeling for each condition; c. $ $2i (unstandardized coefficient) obtained from multilevel linear modeling for each condition.

A 2 (judge age group: older vs. younger) × 3 (target character information richness: unitary, medium, rich) ANOVA on self-other agreement coefficients revealed a significant main effect of judge age group, $F(1, 157) = 22.67$, $p < 0.001$, $^2 = 0.126$, with older judges showing significantly higher overall personality judgment accuracy than younger judges, MD = 0.108, SE = 0.023, 95%CI = [0.06, 0.15]. The main effect of target character information richness was marginally significant, $F(2, 157) = 2.66$, $p = 0.073$, $^2 = 0.033$, with post-hoc tests showing that self-other agreement under rich information richness was significantly higher than under unitary information richness, MD = 0.063, SE = 0.028, p = 0.026, 95%CI = [0.01, 0.12]. The interaction between the two independent variables was not significant, $F(2, 157) = 0.50$, $p = 0.610$ (see Figure 2 [Figure 2: see original paper]).

Figure 2. Personality judgment accuracy of younger and older judges under different information richness conditions (error bars represent standard errors)

3.2 Effects of Age and Information Richness on Normative and Distinctive Accuracy

The results of the multilevel linear model tests are summarized in Table 3 . Before testing the three aforementioned models, a null model without any predictors was constructed as a baseline model. Model 1 test results indicated: First, the mean self-report scores of target characters' age groups significantly predicted participants' other-report scores of target characters' personality, B = 0.872, SE = 0.039, $p < 0.001$, indicating that participants had some degree of normative accuracy when judging strangers' personalities. Second, target characters' self-report scores (after subtracting their age group mean) also significantly predicted participants' other-report scores of target characters' personality, B = 0.052, SE = 0.005, $p < 0.001$, indicating that participants also had distinctive accuracy when judging strangers' personalities. Compared with the null model, the variance of Level 1 random effects (σ^2) decreased from 2.089 to 1.329. The effect size of the two Level 1 predictors was the proportion of variance reduction at Level 1, calculated as 0.364 [**?**].

Table 3. Effects of Normative and Distinctive Accuracy and Age, Information Richness, and Their Interaction on the Two Subcomponents

Predictor	Personality Other-Report (Yijk)	Normative Accuracy ($ 1*i*)|*DistinctiveAccuracy*($2i)	
Intercept	4.300***	0.872***	0.052***
Age (Agei)	0.325***	0.251**	<0.001
Medium Info (Info1i)	0.387***	0.098*	–0.030+
Rich Info (Info2i)	0.044*	0.045+	
Age × Medium Info			0.044*
Age × Rich Info			0.045+
Level 1, σ^2	2.089***	1.329***	1.329***
Level 2, $ $00	0.098***	0.102***	0.073***

Note: *** p < 0.001, ** p < 0.01, * p < 0.05, + p < 0.08.

Model 2 examined the effects of judge age group and target character information richness on normative and distinctive accuracy. Results showed that judge age group significantly predicted normative accuracy, B = 0.251, SE = 0.073, p = 0.001, with older judges showing higher normative accuracy than younger judges, supporting Hypothesis 1. Information richness did not significantly predict normative accuracy, ps > 0.080. Neither judge age group nor information richness could predict distinctive accuracy, ps > 0.080. Compared with Model 1, the variance of Level 2 random effects ($ $00) decreased from 0.102 to 0.075. The effect size of the Level 2 predictors (judge age group and information richness) was the proportion of variance reduction in Level 2 random effects, calculated as 0.265.

The normative and distinctive accuracy coefficients of older and younger judges under the three information richness conditions are shown in Table 2. Model 3 added interaction terms between judge age group and target character information richness to Model 2. Results showed that neither interaction term significantly predicted normative accuracy, ps > 0.080, indicating that information richness did not affect the age-related advantage in normative accuracy,

again supporting Hypothesis 1. However, the interaction term Agei × Info1i significantly predicted distinctive accuracy, B = 0.044, SE = 0.022, p = 0.044; the other interaction term Agei × Info2i marginally significantly predicted distinctive accuracy, B = 0.045, SE = 0.025, p = 0.071. Further analysis (Figure 3 [Figure 3: see original paper]) showed that under unitary information richness, older judges' distinctive accuracy was marginally significantly lower than that of younger judges, MD = 0.030, SE = 0.017, p = 0.071; under medium information richness, there was no significant difference in distinctive accuracy between older and younger judges, MD = 0.014, SE = 0.014, p = 0.320; the same was true under rich information richness, MD = 0.015, SE = 0.018, p = 0.421. These results indicate that judge age and information richness interactively influence distinctive accuracy, but the interaction pattern differs from Hypothesis 2: as information richness increased, the gap between older and younger adults in distinctive accuracy judgment decreased rather than increased. Compared with Model 1, the variance of Level 2 random effects ($ 00)$decreased from 0.102 to 0.073. The effect size of all Level 2 predictors in Model 3 was the proportion of variance$ decreased from 0.075 to 0.073, and the effect size of the newly added Level 2 predictors (interaction terms between judge age group and information richness) in Model 3 was 0.027.

Figure 3. Distinctive accuracy of younger and older judges under different information richness conditions

This study manipulated the amount of personality-relevant information in target characters' self-introductions by changing the number of information channels presented, examined the effects of information richness on older and younger judges' Big Five personality judgment accuracy, and further tested the effects of judge age and information richness on the two subcomponents of personality judgment accuracy—normative accuracy and distinctive accuracy—through multilevel linear analysis to clarify the sources of age differences in personality judgment accuracy. Results showed: First, after viewing strangers' self-introductions with unitary (text only), medium (text and audio), and rich (text, audio, and image) information richness, older adults' overall personality judgment accuracy was higher than that of younger adults. Second, older adults' normative accuracy was higher than that of younger adults, and information richness did not affect this age-related advantage, indicating that older adults' mastery and application of group-level personality trait commonality knowledge were better than younger adults', supporting Hypothesis 1. Third, information richness only moderated age differences in distinctive accuracy: under unitary information richness, older adults' distinctive accuracy was lower than that of younger adults, while under medium and rich information richness, age differences were not significant. This result suggests that older adults can effectively utilize incremental information to reduce their gap with younger adults in distinctive accuracy, contradicting Hypothesis 2. This study reveals that declines in basic cognitive abilities do not necessarily mean declines in social cognitive abilities or diminished ability to process and integrate incremental behavioral information. Additionally, social knowledge and experience are important for

maintaining or even enhancing older adults' social cognitive abilities such as personality judgment. Future research should pay more attention to the value of older adults who have "seen many people" in terms of understanding others.

Discussion

4.1 Stable Age-Related Advantage in Personality Judgment and Normative Accuracy

In situations where individuals are unacquainted, judges' detection and utilization of target characters' specific behavioral information, combined with their understanding and application of personality commonality knowledge of the target's group, jointly determine the accuracy of personality judgments about the target's true personality [**?**]. In this study, both older and younger adults could basically judge a person's personality based on strangers' brief self-introductions, with "self-other agreement" reaching a moderate level [**?**, **?**]. More importantly, older adults' overall personality judgment accuracy (not distinguishing between normative and distinctive accuracy) was significantly higher than that of younger adults across all information richness conditions, demonstrating that this important social cognitive ability not only does not decline with age but actually improves [**?**, **?**].

Based on the Social Accuracy Model, multilevel linear analysis further revealed that the age-related advantage in personality judgment accuracy was primarily due to older adults' superior normative accuracy compared to younger adults. This indicates that with age, knowledge of group personality commonalities as a form of social knowledge and experience steadily increases and significantly benefits older adults' personality judgments. The age-related advantage in normative accuracy was not affected by information richness, echoing the conceptual core of normative accuracy and demonstrating that group personality commonality knowledge represents stable overall cognitive schemas formed about a group, which are applied indiscriminately to different target characters within that group regardless of what specific behaviors the target character currently exhibits or how much information is presented [**?**, **?**]. Even without specific behavioral information about the target character, if one masters knowledge of the group's personality commonalities, basic personality judgments can be made about specific individuals in that group [**?**, **?**]. The vast majority of previous studies have used younger judges and target characters, lacking investigation into the applicability of personality judgment-related theoretical models across different age groups [**?**]. The results of this study theoretically demonstrate that the normative accuracy component proposed by the Social Accuracy Model plays an important role in personality judgment and test the applicability of this theory in older adult populations. Practically, this study suggests that in daily interpersonal relationship establishment and personnel recruitment, more attention should be paid to and reference made to older adults' opinions on personality judgment, especially when relatively limited information is available. However, we should also be vigilant against the possibility that this knowledge

of group personality commonalities may evolve into group stereotypes. Fortunately, increased information richness can improve older adults' personality judgments of target individuals, helping them avoid stereotypical personality judgments and compensate for their gaps in distinctive accuracy compared to younger adults.

4.2 Effects of Information Richness on Personality Judgment and Distinctive Accuracy

Funder (1995, 1999) pointed out that target, personality trait, information, and judge jointly determine personality judgment accuracy. This study standardized and held constant the target (24 target characters) and traits (five personality dimensions), focusing on the effects of information richness and judge (age) on personality judgment accuracy. Under a specific information richness condition, all judges received the same information, with relevance and availability fixed; therefore, this study focused primarily on the information detection and utilization stages where judges could exert influence. Unlike previous studies that manipulated information richness using sequential methods [**?**, **?**, **?**, **?**], this study manipulated the amount of information per unit time by changing the number of information channels presented, examining the different effects of information richness changes on older and younger adults' personality judgments.

This study found that both older and younger adults' personality judgment accuracy increased with target character information richness (i.e., adding audio and video information to text information) [**?**, **?**, **?**]. This may be because audio provides information about target characters' voice quality, pitch, speech rate, and emotional changes, while video provides nonverbal information such as facial expressions, duration of eye contact, body language amplitude, and physical appearance [**?**]. This information helps judges better understand target characters, thereby promoting their personality judgment accuracy. The results of this study indicate that increasing the number of information channels presented per unit time, like increasing contact time with target characters, helps individuals make accurate judgments about others' personalities [**?**].

Although no interaction between information richness and judge age group was found in the overall personality judgment accuracy index of "self-other agreement," multilevel linear analysis revealed that distinctive accuracy was simultaneously affected by the interaction between information richness and judge age group. This suggests that self-other agreement as an overall index of personality judgment accuracy may not be sufficiently nuanced, and it is necessary to further distinguish between normative accuracy and distinctive accuracy [**?**, **?**, **?**]. Distinctive accuracy is a more precise indicator of information detection and utilization [**?**]. This study found that under unitary information richness, older adults' distinctive accuracy was marginally significantly lower than that of younger adults, while under medium and rich information richness, there were no significant age differences. This may be because under unitary

information richness, older adults' ability to process and remember continuously presented text information is not as good as younger adults, showing a "detection disadvantage" that leads to lower distinctive accuracy. Under medium and rich information richness, the addition of audio and image information opens both auditory and visual channels, which may help older adults compensate for their "detection disadvantage" and reduce the gap with younger adults in distinctive accuracy, contradicting our Hypothesis 2 (that older adults cannot fully utilize incremental information).

Several possible reasons may explain this contradiction. First, the presentation of sound and image information makes more and more vivid effective information available. Even if older adults cannot process and integrate all information from different channels [**?**, **?**], they can still effectively capture and utilize some effective cues for personality judgment [**?**, **?**, **?**]. Moreover, the situation with added audio and image information is more similar to older adults' real-life social interaction contexts (e.g., phone calls, video chats, or face-to-face communication), which helps them utilize their rich social knowledge and experience [**?**, **?**], thereby compensating for their gap with younger adults in distinctive accuracy. Schlegel et al. (2020) used face-to-face real interaction scenarios with high ecological validity and also found age similarity in distinctive accuracy, consistent with the results of medium and rich information richness conditions in this study. Second, the increase in information richness in this study remained within the processing capacity of older adults, and it cannot be ruled out that with further increases in information richness, the gap between older and younger adults might widen. Third, the experimental materials used in this study had no contradictions between different types of information (i.e., text, audio, video) or between different time periods (e.g., early vs. late); they presented consistent personality information about the target character. In other words, participants only needed to base their judgments on partial effective information to make relatively accurate personality judgments, without needing to integrate all information, making the negative impact of older adults' cognitive resource declines on their personality judgments less apparent.

4.3 Limitations and Future Directions

This study has three main limitations. First, treating target characters' personality self-report scores as their true personality and using them to calculate personality judgment accuracy may not be entirely accurate. Individuals' self-perception has limitations, and self-reports may be influenced by social desirability, leading to some discrepancy between self-reported personality and true personality. Although individuals are usually the best judges of themselves, future research could consider collecting both self-report and other-report scores (e.g., from family and friends) for target characters and synthesizing them into more reliable true personality scores [**?**]. Second, this study manipulated target character information richness by changing the number of information channels, but information from different channels varies in validity for reflecting individ-

ual personality. In addition to the text, audio, and image information used in this study, information with significant identity markers in online environments, such as status updates, emojis, likes, and comments, are also valuable personality information [**?**]. Future research could further explore the validity of different types, qualities, and quantities of behavioral information for personality judgment. Third, distinctive accuracy is a comprehensive reflection of judges' detection and utilization of information. Future research could use recognition tasks to measure judges' information detection performance and calculate cue sensitivity to quantify their information utilization performance, further exploring whether age characteristics of distinctive accuracy under different information richness conditions originate from the detection or utilization stage, thereby deepening the explanation of the underlying mechanisms of age differences.

4.4 Conclusions

Overall, older adults are more accurate than younger adults in judging strangers' personalities, primarily due to their significantly higher normative accuracy, indicating that older adults' understanding and application of personality commonalities across different groups are superior to those of younger adults. Meanwhile, personality judgment accuracy increased with information richness. When distinguishing between normative accuracy and distinctive accuracy, information richness only moderated age differences in distinctive accuracy. Specifically, under unitary information richness, older adults' distinctive accuracy was lower than that of younger adults, but under medium and rich information richness, there were no age differences in distinctive accuracy. This suggests that increased target character information richness can, in some cases, facilitate the utilization of older adults' rich social knowledge and experience, compensating for their disadvantage in information detection.

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Appendix 1: Chinese Version of the Ten-Item Personality Inventory (TIPI-C)

Instructions: If you use the following descriptions to describe yourself (self-report version) or the person in the material (other-report version), do you agree? Please use a seven-point scale, where 1 = “strongly disagree,” 2 = “disagree,” 3 = “somewhat disagree,” 4 = “neutral,” 5 = “somewhat agree,” 6 = “agree,” and 7 = “strongly agree.”

Appendix 2: Big Five Inventory-2 (BFI-2)

Instructions: Below are some descriptions of personal characteristics; some may apply to you, and some may not. For example, do you agree that "I am a person who likes to be with others"? Please use the corresponding numbers after each sentence to indicate how much you agree or disagree that this description applies to you, where 1 = "strongly disagree," 2 = "disagree," 3 = "neutral," 4 = "agree," and 5 = "strongly agree."

Appendix 3: Implicit Personality Beliefs Questionnaire

Instructions: Below are two viewpoints; please select the one you agree with more.

Viewpoint A: A person's behavior is almost entirely determined by their personality. Regardless of environmental changes, a person's personality expects and guides them to act in certain specific ways. In a sense, behavior is a reflection of personality. Since behavior is determined by personality, a person's behavior is very stable across different times and places. Therefore, if we understand a person's personality, we can easily predict and explain their behavior.

Viewpoint B: A person's behavior is almost entirely determined by their environment. The influence of environment on behavior is so great that it exceeds the role of personality. Usually, certain behaviors appear in certain specific environments, with little relationship to personality. Therefore, to predict and explain a person's behavior, we must focus on the environment rather than personality. The role of personality is much weaker than we anticipate.

Note: Figure translations are in progress. See original paper for figures.