Wisdom: Meaning, structure, types, arguments, and future concerns

Kaili Zhang[1] · Juan Shi[2] · Fengyan Wang[1] · Michel Ferrari[3]

Abstract

Narrowing the debate about the meaning of wisdom requires two different understandings of wisdom. (a) As action or behaviour, wisdom refers to well-motivated actors achieving an altruistic outcome by creatively and successfully solving problems. (b) As a psychological trait, wisdom refers to a global psychological quality that engages intellectual ability, prior knowledge and experience in a way that integrates virtue and wit, and is acquired through life experience and continued practice. Thus, we propose a two-dimensional theory of wisdom that integrates virtue and wit. Wisdom can be further divided into "humane wisdom" and "natural wisdom" according to the types of capability required. At the same time, we propose that wisdom classification should integrate the views of Sternberg and Wang and be divided into three types: domain-specific wisdom, domain-general wisdom, and omniscient/ overall wisdom. We then discuss three pressing questions about wisdom, and consider five issues important to the future of wisdom research in psychology.

Keywords Wisdom · Structure · Humane wisdom · Natural wisdom · Artificial wisdom

Since wisdom research in psychology began in the late 1970s (Clayton, 1975), many scientific theories about wisdom have emerged, including: (a) the Berlin wisdom paradigm (Baltes & Kunzmann, 2004; Baltes & Smith, 2008; Baltes & Staudinger, 1993, 2000; Scheibe et al., 2007), (b) the balance theory of wisdom (Sternberg, 1998, 2018), (c) the self-transcendence wisdom theory (Levenson et al., 2005), (d) the three-dimensional wisdom theory (Ardelt, 2003; Thomas et al., 2015), (e) the H.E.R.O.(E.) model of wisdom (Webster, 2003; Webster et al., 2014, 2017), (f) the process view of wisdom (Yang, 2008, 2013, 2016, 2017), and (g) the integrating virtue and wit[1] theory of wisdom (Chen & Wang, 2013; Wang et al., 2019, pp. 376–378; Wang & Zheng, 2012, 2014, 2015).

However, owing to its complex meaning, cultural embeddedness and variability—not to mention different academic disciplines, research perspectives, and researcher preferences—we have yet to reach a scientific consensus about wisdom. As a result, although widely discussed, we find a wide variety of scientific meanings of wisdom with different dimensions on self-report measures designed to measure wisdom. This not only affects the replicability of wisdom

Kaili Zhang and Juan Shi contributed equally to this work.

✉ Fengyan Wang
 fywangjx8069@163.com

 Kaili Zhang
 kailizhang.nnu@qq.com

 Juan Shi
 psyshijuan@sina.cn

 Michel Ferrari
 michel.ferrari@utoronto.ca

[1] Institute of Moral Education Research & School of Psychology, Nanjing Normal University, No. 122 Ninghai Road, Gulou District, Nanjing 210097, People's Republic of China

[2] Normal College, Qingdao University, No. 16, Qingdao First Road, Shinan District, Qingdao, Shandong 266071, People's Republic of China

[3] Department of Applied Psychology & Human Development, Ontario Institute for Studies in Education, University of Toronto, 252 Bloor Street West, Toronto, Ontario M5S 1V6, Canada

---

[1] The word "wit" in this article should be understood in its archaic sense. According to the *Oxford English Dictionary*, the archaic sense of wit means: "A person of great mental ability; a learned, clever, or intellectual person; a man of talent or intellect; a genius." Although, now it is typically associated with: "Quickness of intellect or liveliness of fancy, with capacity of apt expression; talent for saying brilliant or sparkling things, esp. in an amusing way", historically it is associated with: "good or great mental capacity; intellectual ability; genius, talent, cleverness; mental quickness or sharpness, acumen", as well as "practical talent or cleverness; constructive or mechanical ability; ingenuity, skill", and "wisdom, good judgement, discretion, prudence".

research, but also makes psychological discussion of wisdom increasingly difficult, ultimately affecting the potential development of a science of wisdom. Likewise, although scholars have classified wisdom in various ways, they have hardly considered the relationship between wisdom and professional knowledge. In this paper, we first examine existing definitions of wisdom, and then propose a new integrative definition and two classifications of wisdom. Three arguments were subsequently clarified. Finally, we highlight five issues of concern for the future science of wisdom.

What Is Wisdom?

It is difficult to find a comprehensive general definition of wisdom (Grossmann et al., 2020; Kramer, 2000). Indeed, contemporary psychology has definitions of wisdom that range from a constellation of personality attributes (e.g., Ardelt, 2003; Webster, 2003, 2007), to rational knowledge (Case & Gosling, 2007), to practice or action, to important and practical expertise in fundamental life matters (e.g., Baltes & Smith, 1990; Baltes & Staudinger, 2000), to knowing how to live a good life (Grimm, 2014), and more (Aldwin, 2009; Weststrate & Glück, 2017). And none of the more than twenty definitions of wisdom we found (as shown in Table 1) is universally recognized.

Sternberg (2019a) groups various definitions of wisdom into four types: (a) a personal psychological excellence, (b) a property of the situation, (c) an interaction between person and situation, and (d) a property of action.

It is appropriate to define wisdom as a personal psychological excellence. But, what specifically characterizes wisdom? Is it a special way of thinking (as for Piaget and Neo-Piagetians), a certain type of acquired knowledge (as in the Berlin's wisdom paradigm), a combination of ability and personality (as for Ardelt), or some other individual psychological attribute? This question needs further study.

According to Grossmann (2017a), wisdom is a property characteristic of individuals in situations rather than a personal excellence—whether or not a person is wise depends on the situation, and there is no general wisdom factor (*w* factor) analogous to Spearman's *g* (Sternberg, 2019a). We agree with Grossmann that there is no pan-situational wisdom factor and firmly believe that human wisdom manifests in particular domains. For example, Martin Luther King, Mohandas Gandhi and Albert Einstein show great wisdom in their careers, but not in their personal lives (Sternberg, 2019a), which proving that most people's wisdom is domain specific, with very few possessing general wisdom, let alone universal wisdom in all times and places. And we also believe that situations are an important external moderator of wise behaviour. However, different from Grossmann, we believe that to completely deny the possibility of personal

wisdom seems to make wisdom the object of sociology or law, not psychology. In fact, historically, when psychologists encountered analogous topics, they usually sought some role for individual psychological attributes. For example, when studying moral behaviour—which, like wise behaviour, is greatly influenced by the situation—experts in moral psychology, moral education, ethicists and philosophers all believe that there must be some moral quality behind moral behaviour that it is not completely situationally determined. For example, in Kohlberg's theory, moral behaviour integrates moral judgment (moral motivation) and altruistic behaviour—thus, if an action is not virtuously motivated, it is not moral, even if the result is altruistic (Wang et al., 2019, pp. 201–202). Likewise, since wise behaviour integrates virtue and wit (Wang & Zheng, 2015), an action lacking a virtuous motive cannot be called wise, even if it is talented and very successful. For example, Erich von Manstein unexpectedly ordered his armored forces across the Maginot line, and invaded France from the north, through Luxembourg and the Belgian Ardennes. The battle plan was a great success, and Manstein—along with Rommel and Guderian—was known as one of the three great generals of Nazi Germany. But for all opponents of the Nazis, worldwide, the invasion of France from the Arden Mountains, although ingenious and successful, was not a wise act, nor was Manstein a wise person.

The interactionist view that wisdom is the interaction between person and situation is "sociocultural". Because it considers the sociocultural context within which wisdom occurs. According to Sternberg (2019a), his own balance theory of wisdom is of this type. Sternberg is undoubtedly right to argue that wisdom can involve an interaction between people and situations, and that how different social and cultural backgrounds influence wisdom should be more fully recognized. However, if wisdom is no longer a personal psychological attribute, this is both contrary to common sense and poses the following problem: What psychological quality characterizes people who consistently pursue the common good? In our view, the study of wisdom should focus both on "what wisdom is" and "how wisdom manifests". These two closely related questions are fundamentally different.

Wisdom is also regarded as a property of action, and wisdom research should not focus on individuals but on the actions of individuals or groups (Sternberg, 2019a). Since researchers cannot directly study people's conscious experience, they indirectly infer it from their behaviour. Thus, it is much easier to judge whether an action is wise than an individual. However, wise behaviour cannot be equated with personal experience of wisdom, since defining a psychological concept involves distinguishing its psychological attributes, adding behavioural elements as necessary—not from behaviour alone, as in behaviouristic psychology.

Table 1 Definitions and components of wisdom (adapted from Chen & Wang, 2013; Ferrari & Kim, 2019)

Authors	Definition	Components	
		Virtue	Mind/Intellect/Talent/Wit
Clayton & Birren (1980); Clayton (1982)	Wisdom is the ability to grasp human nature, which is understood to be paradoxical, contradictory, and subject to continual change.	Affective	Cognitive; Reflective
Meacham (1983)	Wisdom is achieved by those who can maintain a balance between the extremes of rigidity and cautiousness, who can continue to acquire knowledge while simultaneously recognizing and constructing new uncertainties, doubts, and questions.	Balanced attitude	The ability to recognize extreme rigidity and extreme caution; The ability to recognize and construct new uncertainties, doubts, and problems
Baltes & Smith (1990, 2008); Baltes & Staudinger (1993, 2000)	Wisdom is an expert knowledge system in the fundamental pragmatics of life permitting exceptional insight, judgment, and advice involving complex and uncertain matters of the human condition.	Motivation to help oneself or others achieve well-being; Value relativism.	Factual and procedural knowledge; Exceptional insight, judgment and advice; Acceptance and management of uncertainty.
Achenbaum & Orwoll (1991)	Wisdom is intrapersonal, interpersonal, and transpersonal experiences in the dimensions of cognition (thought), affect (feeling), and conation (behavior).	Empathy	Understanding; Integrity
Ricoeur (1992)	Wisdom transcends narrative, betrays values the least.	Values	Judgement in light of narrative
Curnow (1995)	Wisdom consists of the four progressively developed features: self-knowledge, detachment, integration, and self-transcendence.	Self-transcendence	Self-knowledge; Detachment; Integration
Sternberg (1998, 2018)	Wisdom is the application of tacit knowledge as mediated by values toward the achievement of a common good through a balance among multiple intrapersonal, interpersonal, and extrapersonal interests in order to achieve a balance among adaptation to existing environments, shaping of existing environments, and selection of new environments.	Values neede to achieve a common good	Intelligence; Creavity; Tacit knowledge
Kramer (2000)	Wisdom is excellent judgment about human affairs.	Good emotions	Excellent judgment about human affairs
Yang (2001, 2008)	Wisdom is a special kind of real-life process that is accomplished after a person: cognitively makes an unusual integration; embodies his or her ideas through action, and thereby generates positive effects for both self and others.	Positive effects to both self and others	Cognitively makes an unusual integration and good action

Table 1 (continued)

Authors	Definition	Components	
		Virtue	Mind/Intellect/Talent/Wit
Ardelt (2003)	Wisdom is a three-dimensional personality characteristic that integrates cognition, reflection and compassion.	Affect/ compassion	Cognitioon; Reflection
Webster (2003)	Wisdom is a multidimensional cohesion of five mutually interdependent factors: critical experience, emotional regulation, reminiscence (reflectiveness), openness, and humor.	Emotional regulation; Humor	Experience; Openness; Reminiscence (reflectiveness)
Brown (2004); Brown & Greene (2006)	Wisdom develops by "learning from life"through the interaction of an orientation towards learning, relevant experiences, and interactions with others—three factors lead individuals to "learn from life", that is, to reflect and integrate experiences and apply that learning. Six factors contribute to wisdom development: Self-knowledge, understanding of others, judgment, life knowledge, life skills, and willingness to learn.	Altruism; Inspirational engagement; Emotional management	Self-Knowledge; Judgment; Life knowledge; Life skills
Bassett (2005, 2012)	Emergent wisdom includes four dimensions: Discerning, a cognitive function and characterized primarily by objectivity; Respecting, characterized by openness and including multiple-perspective taking and empathy; Engaging, characterized by involvement; and Transformative reflecting, characterized by self-awareness.	Engaging, committing to the common good.	Discerning; Respecting; Transforming.
Blatner (2005)	Wisdom should be thought of as a verb or a gerund, as an activity, something one does, rather than a fixed state, as if it were apossession or social status.	Compassion; Humility; Interpersonal sensitivity; Appreciating; Self-questioning	Reevaluating tradition and accepted knowledge; Discerning; Integrating information and skills; Deeper understanding and integrating; Opening to intuition and imagination
Bluck & Glück (2004); Glück & Bluck (2013)	Wisdom is an abstract, highly valued, multi-dimensional human virtue. Life challenges are the main catalysts of the development of wisdom – but only in individuals who bring certain resources with them. These resources are a sense of mastery, openness, reflectivity, and emotion regulation/empathy.	Emotion regulation/ Empathy.	A sense of mastery; Openness; Reflectivity.

Table 1 (continued)

Authors	Definition	Components	
		Virtue	Mind/Intellect/Talent/Wit
Kahn (2005)	Wisdom actually refers to a widespread set of beliefs and rules for behavior that help individuals adapt to normal situations and situations of great change and enhance human welfare.	Enhance human welfare	The ability to adapt to normal situations and situations of great change
Mickler & Staudinger (2008)	Personal wisdom integrates rich self-knowledge, heuristics of growth and self-regulation, interrelating the self, self-relativism, and tolerance of ambiguity to realize one's personal potential and the well-being of others and society at large.	The well-being of others and society was considered a necessary goal of personal wisdom	Rich self-knowledge; Heuristics of growth and self-regulation; Interrelating the self; Self-relativism; Tolerance of ambiguity.
Aldwin (2009)	Wisdom is a practice that reflects the developmental process by which individuals increase in self-knowledge, self-integration, nonattachment, self-transcendence, and compassion, as well as a deeper understanding of life. This practice involves better self-regulation and ethical choices, resulting in greater good for oneself and others.	Compassion; Self-regulation; Self-transcendence; Ethical choices; Resulting in greater good for oneself and others.	Self-knowledge; Self-integration; Nonattachment; Deeper understanding of life.
Meeks & Jeste (2009)	Wisdom mainly consists of six subcomponents: prosocial attitudes/behaviors, social decision-making/pragmatic knowledge of life, emotional homeostasis, reflection/self-understanding, value relativism/tolerance, acknowledgement of and dealing effectively with uncertainty/ambiguity.	Prosocial attitudes/ behaviors; Value relativism /tolerance; Emotional homeostasis;	Social decision-making/pragmatic knowledge of life; Reflection/self-understanding; Acknowledgement of and dealing effectively with uncertainty/ambiguity.
Hall (2010)	Wisdom includes emotional regulation, knowing what's important, moral reasoning, compassion, humility, altruism, patience, and dealing with uncertainty.	Emotional regulation; Compassion; Humility; Altruism; Patience	Knowing what's important; Moral reasoning; Dealing with uncertainty
Grossmann et al. (2010, 2013); Grossmann (2017b)	Wisdom includes intellectual humility, recognition of uncertainty and change, other's perspectives/broader contexts and compromise.	Intellectual humility	Recognition of uncertainty and change; Other's perspectives/ broader contexts; Compromise.
Chen et al. (2011, 2014)	Insightful knowledge, implementation of ideals, achieving positive results affecting other people, feedback-adjusted actions as facilitated by work experiences, life experiences, social interactions, observations, family teachings, professional development, religion, and reading.	Positive results affecting other people.	Intrapsychic integration; Actions in service of problem solving and ideal implementation; Feedback and adjustments.

Table 1 (continued)

Authors	Definition	Components	
		Virtue	Mind/Intellect/Talent/Wit
Wang & Zheng (2012, 2014); Chen & Wang (2013)	Wisdom is a comprehensive psychological quality that combines virtue and wit, both acquired through experience and practice based on and personal intelligence and knowledge.	Virtue, which embodies temperance, responsibility, honesty, benevolence, fairness, and justice.	Wit, which refers to normal or even high levels of intelligence, ample practical knowledge, and good thinking modes.
Grimm (2014)	Wisdom in more general sense is constituted by knowledge of how to live well.	Concerned for others	Knowledge of what is good/important for well-being; Knowledge of one's standing; Knowledge of a strategy for well-being.
Walsh (2015)	Wisdom is deep accurate insight and understanding of oneself and the central existential issues of life, plus skillful benevolent responsiveness.	Prosocial attitudes and behaviors; Value relativism / tolerance; Emotional homeostasis	Social decision making/ pragmatic knowledge of life; Reflection/ self-understanding; Recognition of and effectiveness with uncertainty and ambiguity; Perspicacity.
Nayak (2016)	Wisdom is a balance between active agency and passivity and the acceptance of finding oneself in difficult situations and recognising one's moral responsibilities.	Recognising one's moral responsibilities.	Finding oneself in difficult situations; balance between active agency and passivity.
Weststrate & Glück (2017)	Wisdom as a body of experience-based knowledge about the fundamental issues of human life that is both broad and deep, and implicit and explicit.	Emotion regulation; Empathy	Mastery; Openness; Reflectivity
Jeste & Lee (2019)	Wisdom may be defined as a complex human trait with several specific components: Social decision making, emotion regulation, prosocial behaviors, self-reflection, acceptance of uncertainty, decisiveness, and spirituality.	Social decision making; Emotion regulation; Prosocial behaviors	Self-reflection; Decisiveness; Aspirituality Acceptance of uncertainty;
Grossmann et al. (2020)	Wisdom is morally-grounded excellence in certain aspects of meta-cognition.	Moral-grounded excellence	Meta-coginiton

All in all, while these four ways of defining wisdom certainly have some merits, none of them is comprehensive.

Why do we need a unified definition of wisdom? We believe that a shared understanding of wisdom is important. Otherwise, how can wisdom scales based on different understandings of wisdom be evaluated relative to each other? Given the necessity and importance of a unified definition of wisdom, the following question is worth studying. How can a universally accepted definition of wisdom be found? To answer this question requires that existing definitions of wisdom be carefully examined.

Definitions and Components of Wisdom According to Previous Studies

Although different wisdom researchers define wisdom in different ways, they all share two common themes (as shown in Table 1): (a) Most definitions of wisdom emphasize cognition, meaning, and affect (Aldwin, 2009; Clayton & Birren, 1980). (b) Concerning for the welfare of humanity, including behaviour that support human life and the biological ecosystems that humans share (Kahn, 2005; Nayak, 2016).

In other words, most definitions point to wisdom as essential to creating a better world. For example, Sternberg (2019b) argued that the goal of wisdom, which involves intelligence, creativity, and knowledge base, is the common good. The view that wisdom is an integration of virtue and wit is recognized by all wisdom theories. However, it is only a veil that has yet to be lifted. For example, Baltes and Staudinger (2000) argues that wisdom is "the perfect integration of mind and virtue". Similarly, Grossmann et al. (2020) proposed a common wisdom model, which includes two elements: Meta-cognition and moral aspirations. They defined wisdom in empirical sciences as "morally-grounded excellence in certain aspects of meta-cognition".

Two Meanings of Wisdom: Wise Behaviour and Wise Experience

According to our polyculture theory of wisdom, people adopt different principles according to their personal, social, and objective worldviews, and coordinate these principles to deal with problems and promote the long-term survival and prosperity of human civilization (Li et al., 2019). In other words, personal worldview and values are very important to one's understanding of wisdom, and these are affected by culture. Therefore, integrating the essence of existing cultural definitions of wisdom is critical to constructing a more comprehensive understanding of wisdom

(Ferrari & Alhosseini, 2019). With this idea in mind, Wang has been continuously optimizing his definition of wisdom originally proposed in 2004. After several refinements,[2] in 2017, Wang proposed defining wisdom within two distinct frames of reference: ordinary life (that is, life lived without experiencing any major difficulties or turbulence), and extraordinary life (that is, a life lived with some major difficulty, turbulence, or complex problems) (Wang & Fu, 2017). Most recently, Wang (2019) advocates defining wisdom as behaviour and psychological qualities that integrate virtue and wit. As behaviour, wisdom is attributed to behaviour through which a well-motivated actor solves a problem creatively and successfully to achieve an altruistic outcome (Wang & Fu, 2017). As a comprehensive psychological quality, wisdom integrates virtue and wit through intelligence, knowledge, and experience, all acquired through continuous practice (Wang & Fu, 2017). Individuals with this quality are insightful about people and things around them, managing and open-mindedly experiencing their life wisely. Motivated by good intentions, these individuals use their wits to correctly recognize, understand, and efficiently solve complex problems they encountered through correct, novel, innovative, and ethical methods, permanently enhancing the well-being of others, society and themselves (Wang & Fu, 2017).

Figure 1 depicts wisdom as a psychological quality that necessarily integrates one's wits and virtue: (a) wits refer to normal or even extraordinary intelligence, positive modes of thinking, and rich procedural knowledge; (b) virtue refers to an individual's good-heartedness. An empirical study using mouse-tracking, a technique that measures individuals' mental processing in real time by tracking their reaction times and moving trajectory as they move a computer mouse, demonstrated the view that wisdom integrates virtue and wit (Li & Wang, 2017a). This study found that compared with unwise personality related to immorality and incompetence, wise personality related to virtue and competence showed shorter reaction time and more direct movement trajectory when associated with "wisdom". Further comparing the two dimensions of wise personality, this study also found that the association between competence and wisdom showed shorter reaction time and more direct movement trajectory than the association between virtue and wisdom. This

---

[2] From 2004 to 2007, Wang defined wisdom as an ability—specifically, a novel, ingenious ability to accurately solve complex problems, on the basis of their intelligence and knowledge, acquired through experience and practice (Wang, 2007, p.140; Zheng & Wang, 2007). From 2008 to 2016, Wang defined wisdom as a comprehensive psychological quality—specifically, as a combination of virtue and intellect acquired through experience and practice, based on one's intelligence and knowledge (Chen & Wang, 2013; Wang & Yan, 2011, pp. 304–314; Wang & Zheng, 2008, pp. 261–285, 2012, 2014, p.189, 2015).

Fig. 1 Schematic diagram of the connotation of wisdom as a psychological quality (adapted from Wang & Zheng, 2014, p.189)
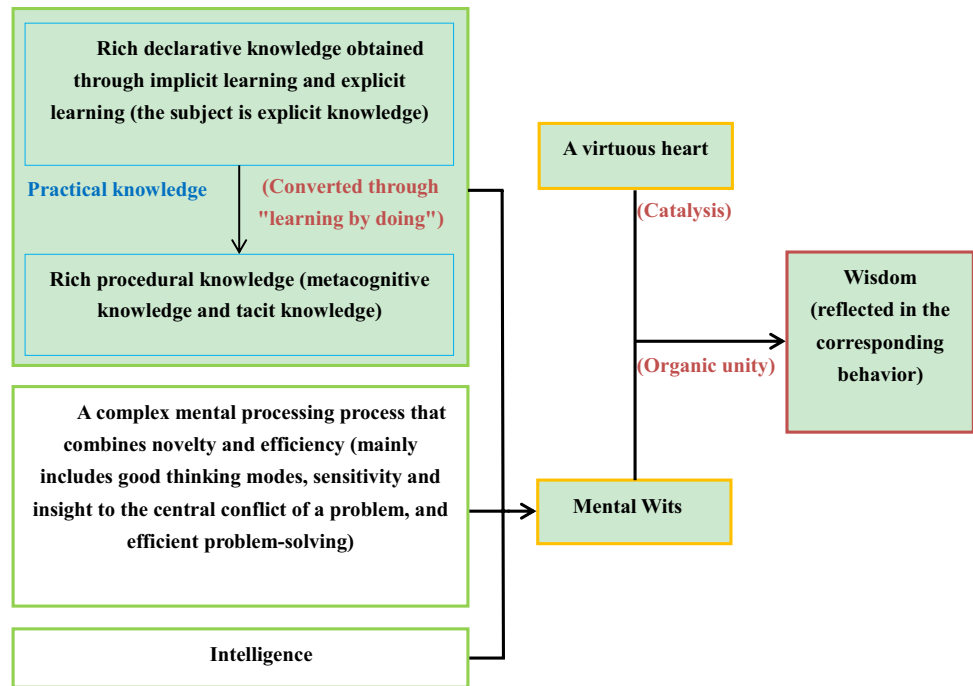
suggested that, wisdom was more closely linked with competence than virtue (Li & Wang, 2017a).

Wisdom can also refer to a wise person, someone who has performed wise acts in their areas of competence with no foolish acts that completely destroying their claim to wisdom. People who do only one wise thing in their lives are not usually considered wise, just ordinary or even unwise. Ordinary people occasionally act wisely, too. As the Chinese saying goes, "A wise man must sometimes lose, a fool must sometimes win/gain." Although foolish men may sometimes act wisely, it happens rarely, few benefit and only for a short time.

Of course, judging an individual wise does not just depend on the number of wise actions but also on their impact. If someone makes a wise choice when confronted with a life and death situation that improves the well-being of many people for a long time, it is easy to regard that person as wise. For example, Xuan Wang, the founder of the Chinese character laser phototypesetting system, achieved only one great thing in his life, however, this one achievement led to the end of manual typesetting of Chinese characters—to the benefit of all Chinese-speaking people—so Xuan Wang is considered as a wise man.

In addition, wisdom integrates virtue and wit. Therefore, intellect, resourcefulness, and intellectual capacity alone are not sufficient for wisdom, nor are instinct, expert knowledge, or any particular mental process (Sternberg, 1998; Wang & Zheng, 2015).

Points to Consider when Evaluating Wisdom

The Relationship between Wisdom and Culture

Ferrari and Alhosseini (2019) argued that some wisdom (e.g., the Golden Rule) is shared across a range of cultures, some wisdom characteristic of one culture can be shared with others (e.g., Buddhist wisdom), and some wisdom is unique to certain cultures (e.g., wise mythical beings). We have an explanation for why this is so: cultural universality and relativity of wisdom are attributed to the universality and relativity of the virtue and wit contained in wisdom. In other words, culturally relative wisdom has specific meaning that differs in different periods and regions, while culturally universal wisdom is considered wises regardless of how people understand virtue and wit. We believe that universal wisdom always requires their integration. Therefore, how the actor's culture views wit and virtue should be considered when evaluating wisdom.

The Delay in Evaluating Wisdom

True wisdom, especially great wisdom, is ultimately expressed by striving for the welfare of the majority, and it takes time to verify whether the majority truly benefit. Shortsighted behaviours that seem wise in the moment can come to seem foolish from a long-term perspective. By contrast, some behaviours that seem quite foolish in the short term (such as how an old Chinese man, Yokong,

moved mountains using a pick, as well as how the man in Jean Giono's The Man Who Planted Trees (Homme qui plantait des arbres) replanted a forest tree by tree over many years until the forest returned) can be acknowledged as wise as times goes by—the actions of a person or team are often better evaluated by posterity than by their contemporaries. To accurately capture the value and historical contribution of particular people, we need to be separated by generations from their entanglements and interference to their vital interests. Only time will tell whether someone is truly considered wise, because wisdom is ultimately measured by one's contribution to civilization and not by one's power or fame within their lifetime. To better seek wisdom, it is important not to over-emphasize timely and effective action in the immediate situation (Grossmann, 2017a), and properly balance "temporary success and long-term failure" in pursuit of the common good.

The Structure of Wisdom

Sternberg (1998) proposed that wisdom involves patterns of behaviour favoured by society because they embody excellent psychological qualities, more specifically: *knowledge* (tacit and metacognitive), characteristic thinking (balanced, dialectical, etc.), personality traits (tolerance, strong will, etc.), positive emotional responses (compassion, gratitude), and correct motivation (mastery-oriented, altruistic). While, the Berlin wisdom model values expertise (Baltes & Smith, 1990, 2008; Baltes & Staudinger, 1993, 2000), the balance theory of wisdom values intelligence, creativity and skillful application (Sternberg, 1998); Neo-Piagetians, Grossmann and Ardelt value emotionally-informed good thinking (Ardelt, 2003; Grossmann, 2017a; Kramer, 2000; Labouvie-Vief, 1990). To make sense of this, and other definitions of wisdom listed in Table 1, we propose a two-dimensional structural view of wisdom, which essentially integrates virtue and wit.

Wisdom Needs Sufficient Wit

Only wisdom that contains sufficient wit in certain areas of expertise can ensure that an individual or group correctly recognizes and understands the complex problems they encountered and can solve them efficiently and effectively, using correct, innovative, and ethical methods.

What Is Wit as Related to Wisdom?

In general, wit, as related to wisdom, refers to one's overall ability to deploy fluid intelligence to properly integrate crystallized intelligence (acquired through learning) to efficiently and effectively find and solve problems. On the basis of the factors related to wit in the balance theory of wisdom (Sternberg, 1998), we further summarize three main aspects of wit in wisdom: (a) normal to high levels of intelligence; (b) sufficient practical knowledge (including metacognitive and tacit knowledge); and (c) effective ways of thinking (e.g. strategies for identifying problems and solving them efficiently). Similarly, one's wits, as implicated in wisdom, can be divided into these same three aspects, which are unevenly distributed between or within individuals. In other words, a wise person's wits are "clumps of intelligence or ability", in which one or more aspect of wit dominates. People who possess at least one outstanding aspect of wit and no apparent deficiency in any other aspect, can also be called wise. However, without an effective thinking style as a catalyst, deep practical knowledge is difficult to use to maximum effect. Without fluid intelligence and practical expertise, thinking is less effective. Therefore, optimally, wit combines the above three aspects.

Clearly, crystallized expert knowledge is not wisdom. Although knowledge is certainly a necessary condition for wisdom, only individuals able to use knowledge creatively for the benefit of many people are called wise. At least three kinds of people have profound knowledge will not be considered wise: (a) people with outdated knowledge; (b) people with a lot of textbook knowledge, but unable to use it in practice; and (c) people with a lot of textbook knowledge who can use it flexibly and effectively, but only to benefit themselves, or those close to them, at the expense of the common good. Sternberg's (1998) celebrated theory thus clearly distinguishes wisdom from knowledge, while the Berlin wisdom paradigm considers expert knowledge necessary for wisdom (Baltes & Smith, 1990, 2008; Baltes & Staudinger, 1993, 2000).

According to Piaget (1950), and in modern cognitive psychology more generally, knowledge is neither a record nor copy of external objects, nor generated by subjects' transcendental consciousness, but is constructed through an interaction between subject and environment. In this way, the knowledge created is individual knowledge; knowledge sometimes stored collectively as public knowledge using shared symbol systems (Gardner; Vygotsky). According to this definition, the scope of "knowledge" is very broad, including what Anderson calls declarative knowledge (knowing what) and procedural knowledge (knowing how), what Vervaeke calls perspectival knowledge ('knowing to') and what Polanyi (1976) calls explicit and tacit knowledge. Therefore, although some illiterate people can't well-articulate what they know in writing or sometimes even in words, they may be quick-witted, with a wealth of perspectival, procedural and tacit knowledge about life—even people who have read little and have no expert knowledge can sometimes act wisely.

The Measure of Individual Wit

Accurately measuring an individual's wit, must take a variety of factors into account, including demographic factors, degree of creativity, time, and long-term beneficial impact. Empirical studies of psychology typically involve college students with normal intelligence and budding professional expertise. Existing measures of individual wit among college students include the Three Dimensional Wisdom Scale (3D-WS, Ardelt, 2003), Self-Assessed Wisdom Scale (SAWS, Webster, 2007), and Adult Self-Transcendence Inventory (Levenson et al., 2005). More directly, the Integrative Wisdom Scale (IWS, Fu & Wang, 2020), uses four measures of individual wit: dialectical thinking, reflective thinking, innovative thinking, and critical thinking.

Wisdom Needs Sufficient Virtue

Virtue is another necessary condition for wisdom. Sternberg and Glück (2019) stated that morality and ethics are integral to wisdom: only virtuous individuals can ensure that their actions in complex situations will improve the public welfare over the long term, and not harm the legitimate rights and interests of others. This is an important prerequisite to distinguish wisdom from wit or social and emotional intelligence (Sternberg, 1998; Wang & Zheng, 2015).

Virtue in Wisdom

What virtues are contained in wisdom? To answer this question, the principles of virtue screening need to be established, and there are three main principles: (a) *Uniqueness* means that the selected virtue has its unique attribute that can clearly distinguish itself from other virtues. (b) *Conciseness* requires to achieve the best expression effect with the least virtue; (c) The *combination of indigenous and international* requires the selected virtues should not only reflect the local cultural consciousness, characteristics and spirit, but also be open, progressive and international. Based on the above three principles, from the perspective of positive moral qualities, virtues in wisdom mainly include the following six aspects, namely, awe (Keltner & Piff, 2020), temperance, responsibility, honesty, benevolence, and justice (Sternberg & Glück, 2019; Wang & Zheng, 2014, p. 316). Only wit actions containing one or more of these virtues can be regarded as wise.

The wise virtue is mainly reflected in virtuous motivation, means, and results (benefit to others, or to oneself and others; Chen & Wang, 2013; Wang & Zheng, 2014, pp. 207–214). In general, "virtuous means" are easy to quickly determine, but "virtuous motivations" and "virtuous results" are more difficult to judge. Motivation is internal and difficult for others to correctly perceive, and behavioural results

take time to be acknowledged—a good short-term result does not necessarily mean a good result in the long run, and vice versa. Wise problem solving generally possess all the above three aspects. In some specific instances (such as the famous ticking time bomb thought experiment), it is sometimes regarded as ethical to choose the lesser of two evils that is relatively more advantageous to the vast majority of people (Levin, 1982).

There are currently three views of the relationship between wisdom and virtue: (a) The linear relationship insists a moderate or high positive correlation between wisdom-related abilities (e.g., critical thinking) and virtue-related abilities (e.g., moral reasoning) (Pasupathi & Staudinger, 2001). (b) The threshold relationship insists that virtue is a necessary but not sufficient condition for wisdom, and peak levels of wisdom is unlikely among individuals with very low levels of virtue (Pasupathi & Staudinger, 2001). (c) The subordinate relationship suggests that wisdom is a sub-dimension of virtue or vice versa (Grossmann & Kung, 2019; Zhang et al., 2019).

We believe that virtue is the threshold of and subordinate to wisdom for two reasons. (a) Each subtype of wisdom requires different types and levels of virtue and wit. Humane wisdom, displayed by individuals or groups when dealing with life problems in the humanities and social sciences, requires a moderate or high degree of virtue. However, as the wisdom displayed in studying objective laws of nature or adapting to (or transforming) the environment, natural wisdom only needs to reach a minimum threshold of virtue. Under the premise of basic virtue, a higher level of natural wisdom requires only a higher level of intellect. Therefore, the linear relationship between virtue and wisdom lacks sufficient theoretical and empirical support. (b) Wisdom is not an aspect of virtue because virtue and wit are both necessary conditions for wisdom. A person without virtue can't be wise (but can be quick-witted); however, a person with virtue may not be wise (there are good people who are not quick-witted); in other words, both virtue and wit are necessary but not sufficient conditions for wisdom.

Measuring Wise Virtue

As previously mentioned, virtue in wisdom can be measured as individual moral character, or as the motivation, means, and result of wise behaviour. Virtue in wisdom measured as moral character is expressed through a set of positive qualities, like awe, abstinence, responsibility, honesty, love, and fairness, which can be taken as measure indicators. In addition to awe, the last five moral characteristics have been included in the IWS (Fu & Wang, 2020). The revised IWS will add items to measure awe.

The difficulty in measuring virtue in wisdom varies according to the motivations, means, and results of wise

behaviours: means are external and can be judged easily, but motivations are intrinsic and difficult to accurately detect and judge. However, motivation can be regarded as good with enough evidence to prove that an individual's behaviour is not "hollow altruism," "coincidental altruism," or "a lucky accident" (Wang & Zheng, 2014, pp. 208). Although the result is external, it is also not easy to judge accurately. Owing to the historical limitations of behaviour evaluation, some behaviours cannot be judged as moral or wise in the short term; the social, historical, and cultural background of individual behaviours must be fully considered. Virtue has obvious individual differences; an individual's age, role, and historical period as well as the specific situation must also be considered, to make a more accurate assessment (Wang & Zheng, 2015).

Wit and Virtue in Wisdom Must Be Integrated

Why is it necessary and important for wisdom to integrate virtue and wit? Virtue and wit belong to two different categories: virtue concerns values or "what should be done", whereas wit concerns knowing or science of "what is". The British philosopher G. E. Moore (1903, pp. 8-10) argued it is a "naturalist fallacy" to define goodness by extending natural attributes from "what is" to "what ought to be", because goodness is an attribute that is unique and non-deterministic, not something natural (Wang & Ren, 2017). In fact, the existence of quick-witted people with little virtue and virtuous people who are slow-witted shows that virtue and wit can be separated. People who have not developed the habit and ability to analyze, and solve problems in ways that integrate virtue and wit often fail. For example, without thinking of the right way to help the drowning person, a virtuous college student might dive into the water at the risk of drowning, without considering more effective means of rescue. But quick-witted people lacking virtue and acting with the wrong motivations may use unethical means that harm the legitimate rights and interests of others. Of course there are differing degrees of public and private virtue: sometimes wit can be divorced from private (small-scale) morality and united with public (large-scale) morality, and sometimes the reverse is true. All of this shows that virtue and wit are not necessarily integrated.

In sum, all these suggests that virtue and wit can be fully integrated only through proper wisdom education. Furthermore, because wise virtue seeks the common good, the wise integration of virtue and wit typically refers to (large-scale) public virtue. Even wise people are not perfect. It is a mistake to demand perfection and expect wise people to excel in private and public virtue and be quick-witted about everything. Confucius was not a genius in the natural sciences. Nor are individuals with both talent and wit necessarily

wise, unless their virtue and wit are fully integrated. Thus, individuals who wish to become wise should develop the ability to habitually consider and solve problems from the perspective of both virtue and wit—actin in ways that promote the long-term public good.

Three researches have validated this two-dimensional structural view of wisdom: One study explored the implicit theory of a wise person. Hierarchical cluster analysis, multidimensional scaling, and social network analysis revealed three aspects of a wise person: virtue, competence, and achievement (Li & Wang, 2017b). Achievement refer to the effects of wise behaviour. Therefore, from the perspective of disposition or personality, wisdom has two aspects: wit and virtue. In another study, Implicit Association Test (IAT) and Single Category Implicit Association Test (SC-IAT) were used to explore the implicit cognition of wisdom, and the results revealed that wisdom is the integration of good moral - humane quality and high intelligence (Chen & Wang, 2014). The third study aimed to empirically explore the structure of wisdom in Chinese culture, and results show that wisdom is a multi-level and multi-dimensional structure, consisting of two second-order factors, namely wit and virtue, and six complementary first-order factors, including super intelligence, creative thinking rich knowledge and good motivation, good effect, good methods (Chen & Wang, 2020).

Types of Wisdom

In order to study wisdom thoroughly and meticulously, it is necessary to deepen the research on classification of wisdom.

Current Classifications of Wisdom

Theoretical and Practical Wisdom

The *Platonic Dialogues* referred to three types of wisdom: (a) the contemplative or theoretical wisdom of philosophers who pursue the truth; (b) the practical wisdom of politicians and legislators, which allows them to make informed choices without passion or deception of the senses; (c) the cognitive or intellectual wisdom (episteme) of those who understand things rationally and scientifically developed by those who understand the nature of things and the principles of behaviour control (Robinson, 1989, 1990; Sternberg, 1998).

Refining Plato's ideas, Aristotle proposed two types of wisdom: contemplative philosophical wisdom (also called *theoretikes [Sophia]*), and practical wisdom (*phronesis*). Theoretical wisdom seeks ultimate scientific and metaphysical truth. Practical wisdom uses appropriate means

to appraise and deal with current situations and promotes the common good through appropriate choices (Clayton & Birren, 1980). In Aristotle's view, taken up by Christian theologians, philosophical wisdom (Sophia) is the highest form of knowledge: Only God can possess such knowledge completely. Practical wisdom is judgment and behaviour/action relating to good and bad things in an individuals' pursuit of a better life (Sternberg, 1998; Yang, 2008).

Conventional and Emergent Wisdom

Kahn (2005) divides wisdom into "conventional wisdom" and "emergent wisdom" depending on whether one is operating in a relatively normal or abnormal environment from the perspective of evolutionary psychology. Conventional wisdom refers to behavioural beliefs and norms used to promote human well-being in physical and societal environments. Conventional wisdom is often the result of education and social adaptation; as such it is often unrecognized and unconsciously influences people's thoughts and actions. When environments can provide sustainable and stable personal benefits, wisdom that people usually use and rely on is conventional wisdom. As a result, when the natural, technological or the social environment change dramatically, people need another type of wisdom: emergent wisdom. Emergent wisdom is needed to develop new beliefs and rules for behaviours. Unlike conventional wisdom that helps people adapt to a normal environment, emergent wisdom seeks to creatively transform thinking and action. People must first take a step back from their current action to gain a broader perspective. Vision is then improved through deeper insight into the functions of various components in the field of vision. Finally, a new method must be developed that is feasible in practice (Kahn, 2005).

According to Kahn's definition, wisdom refers to a set of behavioural beliefs and norms that help individuals adapt to normal or changing situations to promote human well-being. Two points with respect to Kahn's wisdom classification require further discussion: (1) "conventional wisdom" seems like the normal application of (perhaps different kinds of) practical knowledge, but not necessarily wisdom because it lacks an important characteristic of wisdom—novelty. (2) If wisdom is categorized only according to whether behavioural beliefs and norms adapted to the environment, without reference to mental processes, the essence of wisdom is lost; it becomes easy to confuse wisdom with intelligence, since intelligence can also help individuals better adapt to changes in their environment over time.

Personal and General Wisdom

Staudinger (1999, 2019; see also Staudinger and Glück, 2011) divides wisdom into "personal wisdom" and "general wisdom" based on whether they rely on first-person or third-person ontology, respectively. Personal wisdom is a person's insight into his or her own life; that is, "the wisdom that a person shows when dealing with uncertain events and problems in his or her own life." General wisdom is the wisdom that a person shows when dealing with general life problems of others.

On this view, wisdom, as defined by Erikson, Ardelt, and Labouvie-Vief are largely concerned with personal wisdom, whereas Neo-Piagetians, the Berlin wisdom paradigm, and Sternberg's balanced theory are largely concerned with general wisdom. This distinction should help resolve 'the Solomon Paradox' (named after the biblical King Solomon) in which people are wiser when considering interpersonal conflicts of others (general wisdom), than they are their own (Grossmann & Kross, 2014). As the Chinese proverb says, "Spectators see the chess game better than the players." And some wise people are good at resolving their own problems (personal wisdom) but not at advising others—as in chapter 33 of the Tao Te Ching: "He who knows much about others may be learned but he who understands himself is enlightened."

However, these two kinds of wisdom can easily be misunderstood—"personal wisdom" is misperceived as wisdom applied to solving personal problems and "general wisdom" as wisdom applied to solving general problems (Chen & Wang, 2013; Wang & Zheng, 2014, pp. 182–183)—so this important distinction needs further refinement.

Domain Generality and Depth of Wisdom

Sternberg (2019b) divides wisdom into four types, based on domain generality and depth. (1) *Deep domain-general wisdom* is what first comes to mind when thinking about wisdom: People who can ponder complex matters deeply and comprehensively and generate deeply insightful advice across domains of inquiry. (2) *Shallow domain-general wisdom* generally manifests as the advice of the old to the young: People with this wisdom can generate modestly insightful advice across domains of inquiry. (3) *Deep domain-specific wisdom* refers to deep thinking about complex matters within a single domain of inquiry—for example, people who make wise choices about their careers, but mess up their personal lives. (4) *Shallow domain-specific wisdom* is superficial and modestly insightful knowledge or decisions within a single domain of inquiry.

Sternberg's classification of wisdom resembles that of Wang and Fu (2017), who propose that wisdom can be classified based on domain generality and degree of omniscience. However, Sternberg and Wang have a different understanding of "domain-specific wisdom". Wang's "domain-specific wisdom" includes multiple subtypes, more specifically: (1) wisdom in specific fields (Sternberg's

domain-specific wisdom), and (2) wisdom in several specific fields (Sternberg's domain-general wisdom). In general, Sternberg's classification has more explanatory power because he adds the dimension of "depth". However, Wang's classification is more range, because of the addition of omniscient wisdom.

Humane and Natural Wisdom: A New Classification

Societal development promotes a diversity of talent; however, prevailing mainstream morality in different countries and regions is culturally universal, although some differences remain. For this reason, we propose a new classification of wisdom according to specific kind of wit referenced by wisdom: humane and natural wisdom. This classification helps to understand how these two types of wisdom develop in Eastern and Western cultures, and helps with wisdom education.

Defining Humane and Natural Wisdom

"Natural wisdom" was first proposed by Wang in 2007 in contrast to "moral wisdom" (Zheng & Wang, 2007). The term "moral wisdom" derives from *Mencius*, who said "When people have moral wisdom and practical knowledge, it is usually because they have spent a long time in difficulty/ struggled for a long time" (In Chinese, *Ren zhi you de hui shu zhi zhe, heng cun chen ji*.). However, "natural wisdom" is the genus, and "moral wisdom" is the species, whose scope is smaller and more specific. In other words, these two concepts are not well-matched. Therefore, the pairing of "natural wisdom" and "moral wisdom" was used until the spring of 2013 (Chen & Wang, 2013). In his *Theoretical exploration and applied research of wisdom psychology* (Wang & Zheng, 2014, p.236), Wang later proposed contrasting "humane wisdom" and "natural wisdom".

Broadly speaking, humane wisdom is just shorthand for human wisdom which, in this paper, we simply call "wisdom"—in contrast to divine-, animal-, or artificial-wisdom (i.e., a possible future development of artificial intelligence). Narrowly construed, humane wisdom refers to a comprehensive psychological quality integrating virtue and wit, acquired through experience and practice, based on one's intelligence and social science knowledge. As stated earlier, humane wisdom is displayed in dealing with life problems in the humanities and social sciences. According to Rosch's (1975) prototype theory, people such as Confucius, Mahatma Gandhi, and Martin Luther King are prototypical exemplars of humane wisdom (Weststrate et al., 2016). Typically, a person with humane wisdom is a 'humanist sociologist' of good moral character. Natural wisdom refers to a comprehensive psychological quality integrating virtue and

wit, acquired through experience and practice, but based on an individual's intelligence and knowledge of natural science. Einstein is a prototypical exemplar of a person with natural wisdom. Typically, someone with natural wisdom is a natural scientist of good moral character (see Paulhus et al., 2002). Prototypes of natural wisdom and scientific intelligence are essentially the same concept differently named (Wang & Zheng, 2014, p. 236)—a general problem for the emerging science of wisdom, and for the social sciences more generally (Grossmann et al., 2020).

Relating Humane and Natural Wisdom

As two distinct types of wisdom: How are humane and natural wisdom related? On the one hand, people with a compassionate attitude and great humane wisdom are better able to probe things deeply, and therefore likely able to also develop high levels of natural wisdom. On the other hand, someone with a thorough understanding of the objective laws of nature facing complex interpersonal problems, can frame humane wisdom wthin a deep experience of those laws, rather than be limited by them (see Fig. 2).

Nevertheless, natural wisdom involves objective things and a person's will and interest cannot change it. Besides, it is culturally universal and implies similar meanings in different cultures. Humane wisdom, however, is culturally specific and interindividually variable. An empirical study using mouse-tracking techniques demonstrated that natural wisdom is more strongly associated with competence rather than with virtue, while humane wisdom has a stronger association with virtue than with competence (Li & Wang, 2017a). In another empirical study, in order to explore the classification of wisdom in the mind of laypeople, 51 participants were recruited to classify words that described wisdom on the basis of semantic similarity of words, and classify wisdom nominees on the basis of characteristic similarity of nominees (Chen & Wang, 2016). Results showed that, (a) semantic space of words describing wisdom included two dimensions, namely "humanities and social sciences abilities" vs "natural science and technology abilities" and "inherent qualities" vs "external performances", and three categories, namely, talents shown in humanities, social sciences, and natural science & technology; (b) The semantic space of wisdom nominees included two dimensions, namely "natural scientists" vs "humanities and social scientists", and "scientists engaged in intrapersonal matters" vs "scientists engaged in interpersonal matters", and three categories, namely natural wise people, social wise people and humanities wise people (Chen & Wang, 2016). In conclusion, according to the characteristics of talents or abilities contained in wisdom, wisdom can be classified into two categories of humane wisdom and natural wisdom (Chen & Wang, 2016).

Fig. 2 Diagram of the relationship between human and natural wisdom (as adapted from Wang & Zheng, 2014, p. 251)
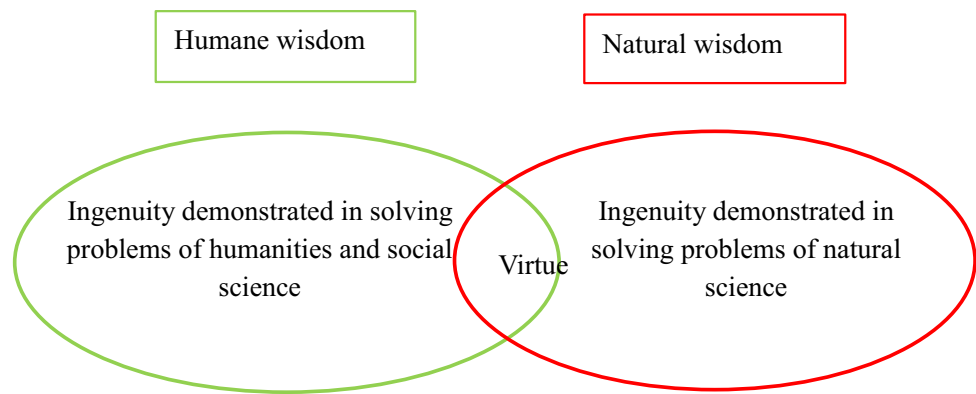
The Importance of Distinguishing Humane and Natural Wisdom

There are at least two important reasons to distinguish humane and natural wisdom. First, this distinction helps further expand and unify the field of wisdom research. Most current wisdom research—with the notable exception of Wang or Weststrate and colleagues, and a few others—mainly refer to humane wisdom and not natural wisdom. From the broader perspective, wisdom is not just about excellent moral qualities, personality traits or beneficial ways of thinking, but is closely related to professional knowledge.

Distinguishing between humane and natural wisdom generate a series of new research topics regarding the theorization, measurement, and application of wisdom. For example—allowing for the moderating effect of contextual variables like fatigue or self-distancing—measurement of humane wisdom should be relatively stable across time, space, and social situations; however, measurement of natural wisdom requires a great deal of professional expertise, so although an individual may be reflective, compassionate and well-intentioned, once out of their area of expertise, they will not exhibit natural wisdom.

Second, this distinction helps individualize teaching; as long as professional expertise and virtue are integrated, new subtypes of natural wisdom can be generated according to different wits. Thus, multiple wisdoms can be cultivated because every type of intellectual achievement can be made wise, when used for good. Although fluid intelligence is innate, other kinds of intellectual achievement are acquired (e.g., practical knowledge, effective ways of thinking, and good moral character) and provide a theoretical basis for teaching students in accordance according to their abilities.

Three Questions for Wisdom Research

Three controversial issues still need to be answered to avoid future argument/confusion in research on wisdom.

Question 1: Is Wisdom an Excellence Quality to Everyone, or a Rare Quality Possessed Only by Rare Individuals, like the Buddha?

People who hold that there is only one type and level of wisdom, inevitably see wisdom as a rare quality possessed only by those with truly great wisdom, like the Buddha or ultimately God—perhaps impossible for ordinary people to achieve (Baltes & Smith, 1990; Grossmann, 2017b; Grossmann et al., 2019; Kramer, 2000). However, excepting God, even people with great wisdom, like Confucius or Newton, cannot always behave wisely everywhere and at all times. When such individuals encounter unfamiliar problems, they may exhibit very little wisdom. For example, according to *the Analects of Confucius* (Zhu, 2016, p. 143), Confucius was unable to give wise advice about how to grow crops and how to garden.

The multiple wisdom view we proposed holds that there are different types and levels of wisdom (see Fig. 3). For example, although both Confucius and Michael Faraday had wisdom, they had different types of wisdom. And, although Confucius and Mencius both had humane wisdom, Confucius had greater wisdom than Mencius—thus Confucius is called a sage (in Chinese, *sheng ren*) whereas Mencius only superior man (in Chinese, *ya sheng*). The multiple wisdom view not only preserves the rare quality of great wisdom, it also provides a path for ordinary individuals potentially to acquire it. Both good moral character and wit have infinite space for development, but only when they are integrated can wisdom be generated. Although this might seem simple, wisdom is not easy to develop; many people do not engage in continuous moral cultivation, and many do not develop the habit (and corresponding skill) to coordinate reflection and problem solving. However, once an individual understands that wisdom is simply the perfect integration of virtue and wit, not something ineffable, and once they understand the diversity and levels of wisdom, they can more confidently and conscientiously practice to cultivate wisdom. Thus, although great wisdom is rare and difficult for ordinary people to achieve, it is by no
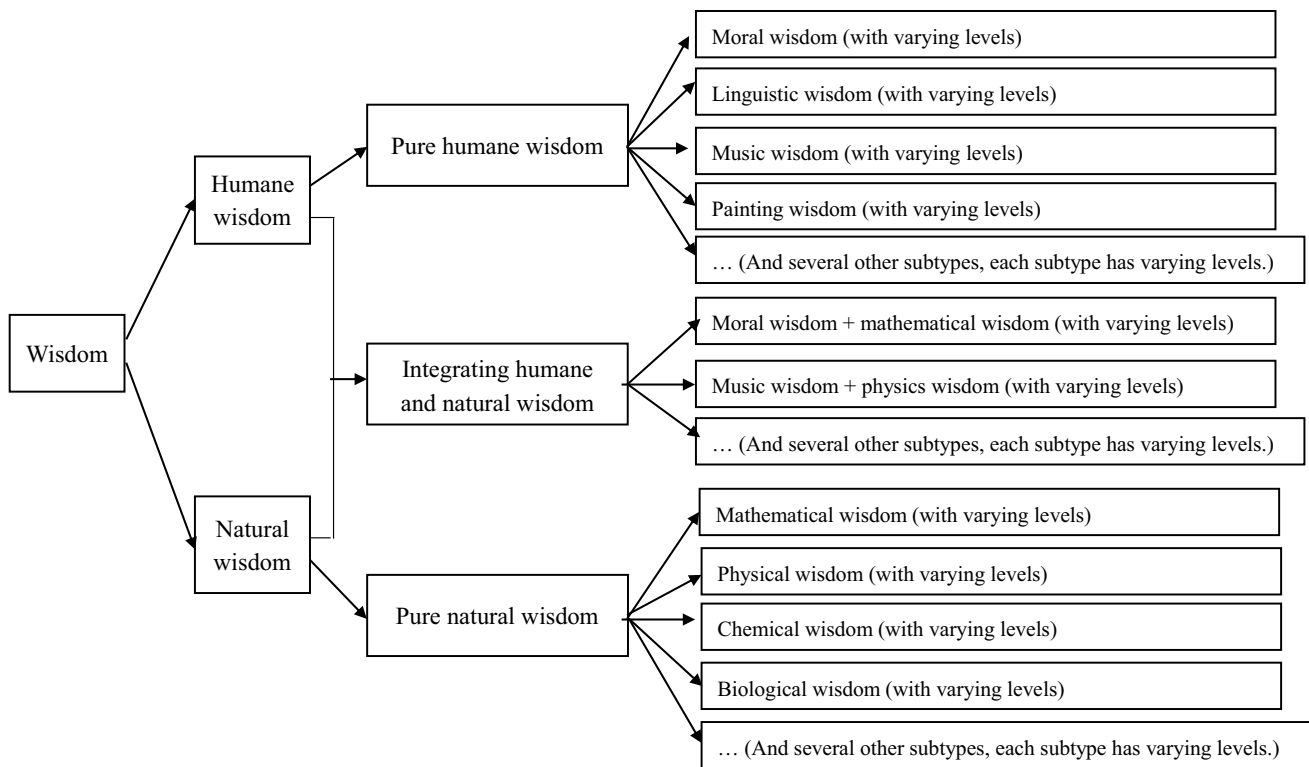
Fig. 3 Diagram of multiple wisdom (as adapted from Wang & Zheng, 2014, p. 261)

means impossible (Wang et al., 2019, pp.381–383; Wang & Zheng, 2014, pp.260–268).

Question 2: Why Are People Wise Only in some Situations, but Not in all?

Answering this question requires consideration of both internal factors (domains and levels of wisdom) and external conditions.

First of all, wisdom is the confluence of people, tasks, and situations (Grossmann, 2017a; Sternberg, 2004a): a person who is wise in one situation is not necessarily wise in another—some people may be wiser than others, but almost no one is always wise (Sternberg, 2004a). This suggests that the wisdom of ordinary people tends to have a certain domain specific. Both Sternberg (2019b)—who classified wisdom according to domain generality and depth—and Wang (Wang & Fu, 2017)—who divided wisdom into domain-specific and omniscient—emphasize the domain of wisdom. Therefore, we propose wisdom classification should integrate Sternberg and Wang and divide wisdom into three types: domain-specific wisdom, domain-general wisdom, and omniscient/overall wisdom. (a) Domain-specific wisdom cannot be transferred to any other domain—an individual or group may have wisdom in a few domains, but if that wisdom cannot

be transferred to another domain, it is still domain-specific wisdom. (b) Domain-general wisdom refers to the wisdom that can be transferred and applied in multiple domains, but not all domains. (c) Omniscient or overall wisdom, refers to the wisdom that can be transferred and applied in all domains. Each of the three types can be further divided into two deep and shallow generating six types of wisdom (see Table 2).

By definition, wise people are more likely to act wisely in their areas of expertise than are novices and laypeople (Wang & Fu, 2017), but this relatively stable performance of wisdom may indicate trait (or trait-like) domain-specific wisdom or domain-general wisdom (Keshavan et al., 1992). But no matter how wise they are, individuals or groups cannot be completely wise in all situations, but will always has a certain degree of expertise or situational highly positively correlated with their expertise (Grossmann, 2017a, 2017b).[3] In fact, any individual's wisdom must have what

---

[3] This is because, moral character, practical knowledge, and good thinking are all varied and constrained by time, background, social and cultural environment, human life span, and individual factors like IQ, education level, way of thinking, personality characteristics, physical and mental health status, and age. Accordingly, everyone is a character bundle, no one is good at everything, because no one can possess universally high levels of thinking, moral character, and practical knowledge.

Table 2 *Kind of wisdom* (as adapted from Sternberg, 2019b)

Domain generality	Depth of wisdom	
	Deep	Shallow
Domain-specific	Domain-specific deep wisdom	Domain-specific shallow wisdom
Domain-general	Domain-general deep wisdom	Domain-general shallow wisdom
Domain-overall	Overall deep wisdom	Overall shallow wisdom

Warren E. Buffett calls a "circle of competence", beyond which the individual knows little or nothing. Warren E. Buffett's motto is "It's not terribly important how big the circle is. But it is terribly important that you know where the perimeter is" (Dobelli, 2013, p. 16).

Only the Buddha, God, Allah—and their current mythical equivalent, strong artificial wisdom—have omniscient wisdom (Wang & Wei, 2018). In human society, most people's wisdom is domain-specific, a few have domain-general wisdom, but it is virtually impossible for humans to be universally wise. Thus, any individual, group, or organization that confidently claims universal wisdom lacks intellectual and epistemic humility, and will eventually be shown to be foolish (Grossmann, 2017b; Sternberg, 2004b).

Second, an individual's level of talent and morality can constrain their level of wisdom. Level of wisdom is limited by the level of an individual's wit and training. A professional expert in one or more specific areas of skill will have only domain-specific or domain-general wisdom. And their level of expertise may be deep or shallow. Typical experts have relatively shallow domain-specific or domain-general wisdom, and can only easily solve complex matters in their narrow area of professional competence. However, top experts, what Dreyfus (2004) calls "masters", with domain-specific or domain-general deep wisdom, can solve novel problems of high difficulty in their field or expertise. Of course, 'no one is perfect', meaning that even people with deep wisdom sometimes can also encounter insurmountable challenges in their domain of expertise. However, generally, people with deep wisdom can solve problems better and faster than those with shallow wisdom. This shows that deep wisdom is relatively more stable. In this sense, the Berlin wisdom model has a certain rationality because it regards wisdom as an expert knowledge system. At the same time, even the greatest experts are limited by the culture of their time and, confronted with a great problem that on one of their time can solve, they may not solve it either. For example, no expert has yet been able to scientifically explain the origin of the universe, or the origin of consciousness.

Level of wisdom is also limited by an individual's virtue. Even experts with comparable levels of expertise in the same field may make different choices when confronted with the same self-interested context, owing to their different moral development. When it comes to self-interest, experts with more developed conscience will sacrifice their own interests for the benefit of the majority, which is an act of humane wisdom, though it may seem foolish to other people who are less wise. However, experts of low moral development will do things to benefit themselves and harm the public, which is an act of folly in the long run from a humanistic standpoint, but the actor may consider it wise at the time (Sternberg, 2004b). Thus, precisely because that one's wisdom is limited by one's level of wit and virtue, individuals show fluctuation of wise behaviour in their field of expertise.

Third, external objective conditions can also affect individual wisdom. To be specific, if the external conditions experienced by an individual in one situation are unavailable in another one, they may not show wisdom to the same extent, or at all. For instance, when a patient on an airplane requires a complex surgery, a skilled surgeon could not perform the operation no matter how much they wanted to. Because they lack the necessary medical equipment and operating conditions.

To sum up, fluctuations of wisdom are caused by a variety of factors—the domain of wisdom, the level of wit and morality, as well as the external conditions, without any need to appeal to trait and state theory.

Question 3: Can Foolishness Transform into Wisdom, and Vice Versa?

Some people become wise in later life while they were just average or were even foolish when younger. For others it is the opposite: they seemed wise in their early life but acted foolishly later in life. Does these mean that wisdom and foolishness can transform into each other? We think it does. That is because that wisdom involves the integration of virtue and wit. Unless someone achieves a high level of moral development, people's virtue is unstable, culturally relative, and easily affected by environment. Wit includes normal or even extraordinary intelligence (including fluid and crystallized intelligence), positive modes of thinking, and rich procedural knowledge. Among them, crystallized intelligence, thinking mode and procedural knowledge all need to be acquired through long-term education and life experience. Therefore, it is difficult for most people, except for a very few who possess a very high level of moral cultivation and wit, to maintain steady wisdom at all times. In addition,

most wisdom is domain-specific, so people who act recklessly in unfamiliar territory are liable to be foolish.

About the relationship between wisdom and age, most scholars believe that wisdom becomes potentially available during adolescence and early adulthood (Brugman, 2006; Sternberg, 2005). However, the relationship between age and wisdom during adulthood remains controversial. There are four general possibilities: positive increase, decline, stability, and plateau. Among these possibilities, positive increase and decline model have less empirical support than stability and plateau (Wang & Wang, 2018). In other words, the relationship between wisdom and age is moderated by individual and situational differences depending upon internal factors (heredity, maturity, and subjectivity) and external factors (environment and education).

Prospects for Wisdom Research: Five Problems Worth Studying

Wisdom is an expression of the optimal human psychological development. It is a high-quality mental resource that can benefit both human society and individuals who use it. Despite its significance, the history of scientific research on wisdom is very short, only about 40 years since its beginnings in the 1970s (Weststrate & Glück, 2017). Looking to the future, five main issues constitute an important direction for the development of wisdom psychology research for the next 5 to 10 years.

The Biological Basis of Wisdom

Wisdom is a complex, multicomponent psychological trait that necessarily has a neurobiological basis that includes neuroanatomy, neurotransmitters, and neural circuits (Lee & Jeste, 2019). Speculative models of the neurobiology of wisdom have been proposed by Jeste and his colleagues (Jeste & Lee, 2019; Meeks & Jeste, 2009) and Narvaez (2014), based on the neurobiological studies related to subcomponents of wisdom and how these subcomponents are developed and engaged through culturally-inculcated moral imagination. However, these exploratory analyses are based on the study of the brain mechanism of varies components of wisdom, not explicitly purporting to measuring it (Lee & Jeste, 2019). Disagreement over the components of wisdom and differences in defining each component will provide important ways to study the brain mechanism of wisdom, so it is very important to identify a valid wisdom phenotypes (Narvaez, 2014). From our perspective, it is also important to consider whether the neurophysiological mechanisms of humane

wisdom and natural wisdom reside in the same or in different parts of the brain and develop in the same way? If the latter, is there any overlap? How are the neurophysiological mechanisms of wisdom, virtue, and creativity correlated? Research on such questions may require advanced technologies, like event-related potential and functional MRI.

"Artificial Wisdom"

In an era of rapidly developing artificial intelligence (AI), researchers increasingly realize that AI necessarily incorporate values (Conn, 2017)—what Wang and Wei (2018) call artificial wisdom (AW) incorporates communal values, which is important to what Narvaez (2014) calls "primal wisdom". With AI's rapid development in knowledge representation, expert systems and planning, we believe some aspects of AW can be realized (Grossmann et al., 2020). How can the results of wisdom research be used to help AI evolve into AW? So far, Wang and Wei (2018), Jeste et al. (2020) and one commentary about the paper by Jeste et al. (Nusbaum, 2020) are the only three psychological papers that have explored this issue. Among them, *Developing Artificial Wisdom to Deal With the Threat of Artificial Intelligence*, from Wang and Wei (2018), is the first article on AW published in the field of psychology, and firstly proposed and defined the concept of AW. According to the integrating virtue and wit theory, Wang and Wei (2018) proposed that, the AI will be updated to the AW once it obtained the integrating virtue and wit performance. The AW will use its wit to cognize and understand currently faced complicated problems correctly and timely under the guidance or inspiration of the algorithm or principle of virtue. Furthermore, the correct, novel that give the impression of flexible and ingenious, and ethical ways will be used by the AW to solve these complicated problems efficiently. Meanwhile, the AW actions will not harm the legitimate rights and interests of other people, society or mankind, in contrast to promote their welfares for a long time. In this way, theoretically, one of the best ways to prevent AI from endangering human beings is to transform AI into AW by integrating virtue and wit in its virtual moral imagination. More specifically, they proposed for the first time the "Wang's wisdom test" to assess whether AW has been achieved. Then they divide AW into weak and strong, and discussed the possible ways to realize these two kinds of AW. However, this theoretical exploration leaves some important questions unanswered. For example, what specific rules should be followed by strong and weak AW in particular situations? What moral imagination expresses the ultimate development of strong AW? And how to be sure that AW solutions can fully integrate virtue and wit?

Accepting Wise Advice

The topic of wise advice-taking, in which individuals show wisdom by correctly weighing advice from others, has become increasingly important (Wei et al., 2019). History has often shown that the ability to weigh advice wisely is critical to individual or organizational success. Of course, just as important is the wise advice itself—the general wisdom involved in giving advice from a second- or third-person perspective—the very basis of wise advice-taking. The quality of the advice giving (e.g., whether the advice-giver can identify the appropriate time and method of delivery) clearly affects how easily and how well advice is accepted.

How to study wise advice-taking? A four-stage model has been proposed: (a) Dissent tolerance, allowing others to express opinions that differ from your own; (b) Accurately distinguish the differences of opinions; (c) Timely adoption of quality advice; (d) Take quick action on wise advice-taking and achieve good results for the public good. The wise advice-taking is no longer wise, if—after accepting wise advice, one sacrifices the legitimate rights and interests of most people for the benefit of oneself or one's clique—violating the principle that wisdom requires virtue. Of course, how wise advice-taking relates to age, culture and other relevant variables also needs in-depth study.

Wisdom Development

There are three ways to explore wisdom development. The first is to explore animal wit and/or intelligence from the perspective of biological evolution. In other words, determine whether animals have wisdom, and if they do how it resembles and differs from human wisdom. Second, how does human wisdom come into being and develop from the perspective of the subject? Third, what general trajectories and laws govern the generation and development of individual wisdom? Are their stages in the development of individual wisdom? If so, are they based on the development level of post-formal operational thinking, as proposed by Loevinger (1966)? These and other questions remain to be explored. To investigate the level of wisdom development, we need to develop a scale with good reliability and validity and norms to measure the development and coordination of wit and virtue in adults and children. Otherwise, researchers will be unable to effectively evaluate the quality of wisdom education and accurately determine the developmental level of wisdom of individuals and groups. All current wisdom scales only measure the conceptions and dispositions for wisdom, rather than level of wisdom. How can we create a normed scale with good reliability and validity to measure the development levels of wit and virtue in adults and children? This is an important question for future research.

Using Wisdom to Deal with Regional, National, and Global Issue of Development and Survival

As we enter the twenty-first century, the world is facing a proliferation of ultra-nationalist movements, deepening friction and conflicts among different cultures, and the rise of individualism, egotism, and excessive narcissism (e.g., Santos et al., 2017; Sternberg, 2018). Problems like Australian bushfires, the East African locust plague, and melting of Arctic glaciers and the current global pandemic of COVID-19 are problems that affect all of humanity. It is urgent for people to analyze and solve problems from the perspective of the long-term interests of the vast majority of people, that is, to analyze and solve them wisely (Maxwell, 2019).

Problems relating to local, national, and even global development (and survival) can be placed into two moral categories: The first are factual questions—such as whether hydroxychloroquine is an effective treatment against COVID-19. To answer such questions, individuals and groups, especially leaders, must rely on findings that are a product of natural wisdom and adhere to a scientific that is spirit truth-seeking, humane, and responsible to society and the world. The second are issues related to different cultures. For example, *Beliefs and values* (e.g., making autonomy or community a prime concern), *aesthetic tastes* (e.g., preference for Chinese freehand brushwork in painting or Western realist painting), *social rules and conventions* (e.g., driving on different sides of the road), and *social customs* (eating with chopsticks, as in China, or eating with a knife and fork, as in the West). Individuals and groups—and especially their leaders—must demonstrate wisdom to remain humane, able to rationally discern right from wrong, promote good and combat evil, respect cultural diversity, and take effective measures that are truly benefit most people. And for all this they need humane and natural wisdom.

To conclude, after almost half a century, wisdom research is at an important juncture. A lot of important work has been done, but confusion around how to define wisdom risks fragmenting the field and making it harder to apply the findings of wisdom research to pressing global problems to improve the material and social conditions needed to optimize human flourishing. We hope our paper is a first step in an ongoing discussion of how to understand, develop, and apply wisdom to the urgent personal, national and global problems that now confront us all.

Declarations

Conflict of Interests The authors declared that they had no conflicts of interest with respect to their authorship or the publication of the article.

Ethical Approval Not applicable.

Informed Consent Not applicable.

Data Availability Statement Not applicable.

References

Achenbaum, W. A., & Orwoll, L. (1991). Becoming wise: A psycho-gerontological interpretation of the book of job. *International Journal of Aging and Human Development, 32*(1), 21–39. https://doi.org/10.2190/419R-X8FC-Q6NE-0M85

Aldwin, C. M. (2009). Gender and wisdom: A brief overview. *Research in Human Development, 6*(1), 1–8. https://doi.org/10.1080/15427600902779347

Ardelt, M. (2003). Empirical assessment of a three–dimensional wisdom scale. *Research on Aging, 25*(3), 275–324. https://doi.org/10.1177/0164027503025003004

Baltes, P. B., & Kunzmann, U. (2004). The two faces of wisdom: Wisdom as a general theory of knowledge and judgment about excellence in mind and virtue vs. wisdom as everyday realization in people and products. *Human Development, 47*, 290–299. https://doi.org/10.1159/000079156

Baltes, P. B., & Smith, J. (1990). Toward a psychology of wisdom and its ontogenesis. In R. J. Sternberg (Ed.), *Wisdom: Its nature, origins, and development* (pp. 87–120). Cambridge University Press.

Baltes, P. B., & Smith, J. (2008). The fascination of wisdom: Its nature, ontogeny, and function. *Perspectives on Psychological Science, 3*(1), 56–64. https://doi.org/10.1111/j.1745-6916.2008.00062.x

Baltes, P. B., & Staudinger, U. M. (1993). The search for a psychology of wisdom. *Current Directions in Psychological Science*, Published by Cambridge University Press, 2, 75–80. https://doi.org/10.1111/1467-8721.ep10770914.

Baltes, P. B., & Staudinger, U. M. (2000). Wisdom: A metaheuristic (pragmatic) to orchestrate mind and virtue toward excellence. *American Psychologist, 55*(1), 122–136. https://doi.org/10.1037/0003-066X.55.1.122

Bassett, C. L. (2005). Emergent wisdom: Living a life in widening circles. *Revision, 27*(4), 6–11.

Bassett, C. L. (2012). Wisdom and its development. In C. Hoare (Ed.), *the Oxford handbook of reciprocal adult development and learning* (online). https://doi.org/10.1093/oxfordhb/9780199736300.013.0082

Blatner, A. (2005). *Perspectives on wisdom. ReVision, 28*(1), 29–33.

Bluck, S., & Glück, J. (2004). Making things better and learning a lesson: Experiencing wisdom across the lifespan. *Journal of Personality, 72*(3), 543–572. https://doi.org/10.1111/j.0022-3506.2004.00272.x

Brown, S. C. (2004). Learning across campus: How college facilitates the development of wisdom. *Journal of College Student Development, 45*, 134–148. https://doi.org/10.1353/csd.2004.0020

Brown, S. C., & Greene, J. A. (2006). The wisdom development scale: Translating the conceptual to the concrete. *Journal of College Student Development, 47*(1), 1–19. https://doi.org/10.1353/csd.2006.0002

Brugman, G. M. (2006). Wisdom and aging. In J. E. Birren, K. W. Schaie, R. P. Abeles, M. Gatz, & T. A. Salthouse (Eds.), *Handbook of the psychology of aging* (6th ed., pp. 445–476). Academic Press.

Case, P., & Gosling, J. (2007). Wisdom of the moment: Pre-modern perspectives on organizational action. *Social Epistemology, 21*(2), 87–111. https://doi.org/10.1080/02691720701393426

Chen, H. B., & Wang, F. Y. (2013). Wisdom: Structure, category, measurement and relationships to related variables. *Advances in Psychological Science, 21*(1), 108–117. https://doi.org/10.3724/SP.J.1042.2013.00108

Chen, H. B., & Wang, F. Y. (2014). The experimental research on college students' implicit cognition of wisdom. *Psychological Development and Education, 4*, 363–370. https://doi.org/10.16187/j.cnki.issn1001-4918.2014.04.018

Chen, H. B., & Wang, F. Y. (2016). Human Wisdom and Natural Wisdom:A Classification Based on Wisdom——descriptive Words and Wisdom Nominees. *Psychological Exploration, 36*(3), 203–210.

Chen, H. B., & Wang, F. Y. (2020). An exploration on the structure of wisdom in Chinese culture. *Psychological Exploration, 40*(1), 42–49.

Chen, L. M., Cheng, Y. Y., Wu, P. J., & Hsueh, H. I. (2014). Educators' implicit perspectives on wisdom: A comparison between interpersonal and intrapersonal perspectives. *International Journal of Psychology, 49*(6), 425–433.

Chen, L. M., Wu, P. J., Cheng, Y. Y., & Hsueh, H. I. (2011). A qualitative inquiry of wisdom development: Educators' perspectives. *The International Journal of Aging and Human Development, 72*(3), 171–187.

Clayton, V. (1975). Erikson's theory of human development as it applies to the aged: Wisdom as contradictive cognition. *Human Development, 18*, 119–128. https://doi.org/10.1159/000271479

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. https://doi.org/10.2190/17TQ-BW3Y-P8J4-TG40

Clayton, V., & Birren, J. E. (1980). The development of wisdom across the lifespan: A reexamination of an ancient topic. In P. B. Baltes & O. G. Brim Jr. (Eds.), *Life–span development and behavior* (Vol. 3, pp. 103–135). Academic Press.

Conn, A. (2017). How do we align artificial intelligence with human values? *Future of life*. https: //futureoflife.org/2017/02/03/align-artificial-intelligence-with-human-values/.

Curnow, T. (1995). *Wisdom, intuition and ethics*. University of Lancaster.

Dobelli, R. (2013). *The art of thinking clearly: Better thinking, better decision*. Hodder & Stoughton Ltd..

Dreyfus, S. E. (2004). Five-stage model of adult skill acquisition. *Bulletin of Science Technology & Society, 24*(3), 177–181. https://doi.org/10.1177/0270467604264992

Ferrari, M., & Alhosseini, F. (2019). Cultures differences in wisdom and conceptions of wisdom. In R. J. Sternberg & J. Glück (Eds.), *The Cambridge handbook of wisdom* (pp. 409–428). Cambridge University Press.

Ferrari, M., & Kim, J. (2019). Educating for wisdom. In R. J. Sternberg, & J. Glück (Eds.), *The Cambridge handbook of wisdom* (pp. 347–371). Cambridge University Press.

Fu, X. R., & Wang, F. Y. (2020). Reliability and validity of an integrative wisdom scale in Chinese culture. *Psychological Exploration, 40*(1), 50–57.

Glück, J., & Bluck, S. (2013). The MORE life experience model: A theory of the development of personal wisdom. In M. Ferrari & N. Weststrate (Eds.), *The scientific study of personal wisdom* (pp. 75–97). Springer. https://doi.org/10.1007/978-94-007-7987-7_4

Grimm, S. R. (2014). Wisdom. *Australasian Journal of Philosophy, 93*(1), 139–154. https://doi.org/10.1080/00048402.2014.937449

Grossmann, I. (2017a). Wisdom in context. *Perspectives on Psychological Science, 12*(2), 233–257. https://doi.org/10.1177/1745691616672066

Grossmann, I. (2017b). Wisdom and how to cultivate it: Review of emerging evidence for a constructivist model of wise thinking. *European Psychologist, 22*(4), 233–246. https://doi.org/10.1027/1016-9040/a000302

Grossmann, I., & Kross, E. (2014). Exploring Solomon's paradox: Self-distancing eliminates the self-other asymmetry in wise reasoning about close relationships in younger and older adults. *Psychological Science, 25*, 1571–1580. https://doi.org/10.1177/0956797614535400

Grossmann, I., & Kung, F. Y. M. (2019). Wisdom and culture. In D. Cohen & S. Kitayama (Eds.), *Handbook of cultural psychology* (pp. 343–364). The Guilford Press.

Grossmann, I., Na, J., Varnum, M. E. W., Park, D. C., Kitayama, S., & Nisbett, R. E. (2010). Reasoning about social conflicts improves into old age. *Proceedings of the National Academy of Sciences of the United States of America*, 107(16), 7246–7250. https://doi.org/10.1073/pnas.1001715107

Grossmann, I., Na, J., Varnum, M. E. W., Kitayama, S., & Nisbett, R. E. (2013). A route to well–being: Intelligence versus wise reasoning. *Journal of Experimental Psychology: General, 142*, 944–953. https://doi.org/10.1037/a0029560

Grossmann, I., Kung, F. Y. H., & Santos, H. C. (2019). Wisdom as state versus trait. In R. J. Sternberg & J. Glück (Eds.), *The Cambridge handbook of wisdom* (pp. 249–274). Cambridge University Press.

Grossmann, I., Weststrate, N. M., Ardelt, M., Brienza, J. P., Dong, M., Ferrari, M., Fourniere, A. M., Hug, C. S., Nusbaumh, H. C., & Vervaekei, J. (2020). The science of wisdom in a polarized world: Knowns and unknowns. *Psychological Inquiry, 31*(2), 103–133. https://doi.org/10.1080/1047840X.2020.1750917

Hall, S. S. (2010). *Wisdom: From philosophy to neuroscience*. Random House of Canada Limited.

Jeste, D. V., Graham, S. A., Nguyen, T. T., Depp, C. A., Lee, E. E., & Kim, H.-C. (2020). Beyond artificial intelligence: Exploring artificial wisdom. *International Psychogeriatrics, 32*(8), 993–1001. https://doi.org/10.1017/S1041610220000927

Jeste, D. V., & Lee, E. E. (2019). The emerging empirical science of wisdom: Definition, measurement, neurobiology, longevity, and interventions. *Harvard Review of Psychiatry, 27*(3), 127–140. https://doi.org/10.1097/HRP.0000000000000205

Kahn, A. R. (2005). A way to wisdom: The next step. *ReVision, 28*(1), 42–45.

Keltner, D., & Piff, P. K. (2020). Self-transcendent awe as a moral grounding of wisdom. *Psychological Inquiry, 31*(2), 160–163. https://doi.org/10.1080/1047840X.2020.1750927

Keshavan, M. S., Reynolds, C. F., Montrose, D., Miewald, J., & Kupfer, D. J. (1992). Trait-like abnormalities in the sleep of patients with psychoses. *Clinical Neuropharmacology, 15*, 297A–298A. https://doi.org/10.1097/00002826-199201001-00154

Kramer, D. A. (2000). Wisdom as a classical source of human strength: Conceptualization and empirical inquiry. *Journal of Social and Clinical Psychology, 19*, 83–101. https://doi.org/10.1521/jscp.2000.19.1.83

Labouvie-Vief, G. (1990). Wisdom as integrated thought: Historical and developmental perspectives. In R. J. Sternberg (Ed.), *Wisdom: Its nature, origins, and development* (pp. 52–83). Cambridge University Press.

Lee, E. E., & Jeste, D. V. (2019). Neurobiology of wisdom. In R. J. Sternberg & J. Glück (Eds.), *The Cambridge handbook of wisdom* (pp. 69–93). Cambridge University Press.

Levenson, M. R., Jennings, P. A., Aldwin, C. M., & Shiraishi, R. W. (2005). Self–transcendence: Conceptualization and measurement. *International Journal of Aging and Human Development, 60*(2), 127–143. https://doi.org/10.2190/XRXM-FYRA-7U0X-GRC0

Levin, M. (1982). The Case for torture. *Newsweek* (June 7, 1982).

Li, H. Q., & Wang, F. Y. (2017a). Real-time measurement of wise personality cognition: Evidence from mouse tracking. *Current Psychology*. https://doi.org/10.1007/s12144-017-9732-3

Li, H. Q., & Wang, F. Y. (2017b). A three-dimensional model of the wise personality: A free classification perspective. *Social Behavior and Personality, 45*(11), 1879–1888. https://doi.org/10.2224/sbp.6691

Li, K., Wang, F. Y., Wang, Z. D., Shi, J., & Xiong, M. M. (2019). A polycultural theory of wisdom based on Habermas's worldview. *Culture & Psychology, 0*, 1–21. https://dôi.org/10.1177/1354067X19877915

Loevinger, J. (1966). The meaning and measurement of ego development. *American Psychologist, 21*(3), 195–206.

Maxwell, N. (2019). The urgent need for social wisdom. In R. J. Sternberg & J. Glück (Eds.), *The Cambridge handbook of wisdom* (pp. 754–780). Cambridge University Press.

Meacham, J. A. (1983). Wisdom and the context of knowledge: Knowing that one doesn't know. In D. Kuhn & J. A. Meacham (Eds.), *On the development of developmental psychology* (pp. 111–134). Karger.

Meeks, T. W., & Jeste, D. V. (2009). Neurobiology of wisdom: A literature overview. *Archives of General Psychiatry, 66*(4), 355–365. https://doi.org/10.1001/archgenpsychiatry.2009.8

Mickler, C., & Staudinger, U. M. (2008). Personal wisdom: Validation and age-related differences of a performance measure. *Psychology and Aging*, 23(4), 787–799. https://doi.org/10.1037/a0013928

Moore, G. E. (1903). *Principia Ethica*. Cambridge University Press.

Narvaez, D. (2014). *Neurobiology and the development of human morality: Evolution*. W. W. Norton & Company.

Nayak, A. (2016). Wisdom and the tragic question: Moral learning and emotional perception in leadership and organisations. *Journal of Business Ethics, 137*, 1–13. https://doi.org/10.1007/s10551-015-2540-5

Nusbaum, H. C. (2020). How to make artificial wisdom possible. *International Psychogeriatrics, 32*(8), 909–911. https://doi.org/10.1017/S1041610220001684

Pasupathi, M., & Staudinger, U. M. (2001). Do advanced moral reasoners also show wisdom? Linking moral reasoning and wisdom-related knowledge and judgement. *International Journal of Behavioral Development, 25*(5), 401–415. https://doi.org/10.1080/01650250042000519

Paulhus, D. L., Wehr, P., Harms, P. D., & Strasser, D. I. (2002). Use of exemplar surveys to reveal implicit types of intelligence. *Personality and Social Psychology Bulletin, 28*, 1051–1062. https://doi.org/10.1177/01461672022811004

Piaget, J. (1950). *The psychology of intelligence*. Routledge & Kegan Paul.

Polanyi, M. (1976). Tacit knowledge. In M. Marx & F. Goodson (Eds.), *Theories in contemporary psychology* (pp. 330–344). Macmillan.

Ricoeur, P. (1992). *Oneself as another*. (Blarney, K. trans). University of Chicago Press. (translation of *Soi-Même Comme un Autre*. 1990, Paris: Le Seuil).

Robinson, D. N. (1989). *Aristotle's psychology*. Columbia University Press.

Robinson, D. N. (1990). Wisdom through the ages. In R. J. Sternberg (Ed.), *Wisdom: Its nature, origins, and development* (pp. 13–24). Cambridge University Press.

Rosch, E. (1975). Cognitive representations of semantic categories. *Journal of Experimental Psychology: General, 104*(3), 192–233. https://doi.org/10.1037/0096-3445.104.3.192

Santos, H. C., Huynh, A. C., & Grossmann, I. (2017). Wisdom in a complex world: A situated account of wise reasoning and its development. *Social and Personality Psychology Compass, 11*, 1–13. https://doi.org/10.1111/spc3.12341

Scheibe, S., Kunzmann, U., & Baltes, P. B. (2007). Wisdom, life longings, and optimal development. In J. A. Blackburn & C. N. Dulmus (Eds.), *Handbook of gerontology: Evidence-based approaches to theory, practice, and policy* (pp. 117–142). John Wiley & Sons Inc.

Staudinger, U. M. (1999). Social cognition and a psychological approach to an art of life. In F. Blanchard-Fields & T. Hess (Eds.), *Social cognition, adult development and aging* (pp. 343–375). Academic Press.

Staudinger, U. M. (2019). The distinction between personal and general wisdom: How far have we come? In R. J. Sternberg & J. Glück (Eds.), *The Cambridge handbook of wisdom* (pp. 182–201). Cambridge University Press.

Staudinger, U. M., & Glück, J. (2011). Psychological wisdom research: Commonalities and differences in a growing field. *Annual Review of Psychology, 62*, 215–241. https://doi.org/10.1146/annurev.psych.121208.131659

Sternberg, R. J. (1998). A balance theory of wisdom. *Review of General Psychology, 2*(4), 347–365. https://doi.org/10.1037/1089-2680.2.4.347

Sternberg, R. J. (2004a). Words to the wise about wisdom? A commentary on Ardelt's critique of Baltes. *Human Development, 47*, 286–289. https://doi.org/10.1159/000079155

Sternberg, R. J. (2004b). Why smart people can be so foolish. *European Psychologist, 9*(3), 145–150. https://doi.org/10.1027/1016-9040.9.3.145

Sternberg, R. J. (2005). Older but not wiser? The relationship between age and wisdom. *Ageing International, 30*(1), 5–26. https://doi.org/10.1007/bf02681005

Sternberg, R. J. (2018). Wisdom, foolishness, and toxicity in human development. *Research in Human Development, 15*, 200–210. https://doi.org/10.1080/15427609.2018.1491216

Sternberg, R. J. (2019a). Four ways to conceive of wisdom: Wisdom as a function of person, situation, person/situation interaction, or action. *The Journal of Value Inquiry, 53*, 479–485.

Sternberg, R. J. (2019b). Race to Samarra: The critical importance of wisdom in the world today. In R. J. Sternberg & J. Glück (Eds.), *The Cambridge handbook of wisdom* (pp. 3–9). Cambridge University Press.

Sternberg, R. J., & Glück, J. (2019). Wisdom, morality, and ethics. In R. J. Sternberg & J. Glück (Eds.), *The Cambridge handbook of wisdom* (pp. 551–574). Cambridge University Press.

Thomas, M. L., Bangen, K. J., Ardelt, M., & Jeste, D. V. (2015). Development of a 12–item abbreviated three-dimensional wisdom scale (3D–WS–12): Item selection and psychometric properties. *Assessment, 24*(1), 1–12. https://doi.org/10.1177/1073191115595714

Walsh, R. (2015). What is wisdom? Cross–cultural and cross–disciplinary syntheses. *Review of General Psychology, 19*(3), 278–293. https://doi.org/10.1037/gpr0000045

Wang, F. Y., & Fu, X. R. (2017). Wisdom: The integrated psychological quality of virtue and talent. *Chinese Social Sciences Today.* (Oct. 30th, 2017).

Wang, F. Y., & Wei, X. D. (2018). Developing artificial wisdom to deal with the threat of artificial intelligence. *Journal of dialectics of. Nature, 40*, 9–14. https://doi.org/10.15994/j.1000-0763.2018.04.002

Wang, F. Y., & Yan, L. S. (2011). *A new look of educational psychology* (3rd ed.). Jinan University Press.

Wang, F. Y., Yan, L. S., & Zheng, H. (2019). *A new look of educational psychology* (5th ed.). Jinan University Press.

Wang, F. Y., & Zheng, H. (2008). *Chinese cultural psychology* (3rd ed.). Jinan University Press.

Wang, F. Y., & Zheng, H. (2012). A new theory of wisdom: Integrating intelligence and morality. *Psychology Research, 2*(1), 64–75.

Wang, F. Y., & Zheng, H. (2014). *Theoretical exploration and applied research of wisdom psychology*. Shanghai Education Press.

Wang, F. Y., & Zheng, H. (2015). Morality and artificial intelligence integration: The essence and category of wisdom. *Nanjing Journal of Social Sciences, 3*, 127–133. https://doi.org/10.3969/j.issn.1001-8263.2015.03.019

Wang, Y. L., & Ren, Q. H. (2017). On the anti-realism of morality and its logic of argumentation. *Morality and Civilization, 5*, 146–151. https://doi.org/10.19484/j.cnki.1000-8934.2017.05.003

Wang, Y. L., & Wang, F. Y. (2018). Older and wiser? The relationship between wisdom and age among adults. *Advances in Psychological Science, 26*(1), 1–11. https://doi.org/10.3724/SP.J.1042.2018.01

Webster, J. D. (2003). An exploratory analysis of a self–assessed wisdom scale. *Journal of Adult Development, 10*(1), 13–22. https://doi.org/10.1023/A:1020782619051

Webster, J. D. (2007). Measuring the character strength of wisdom. *International Journal of Aging and Human Development, 65*(2), 163–183. https://doi.org/10.2190/AG.65.2.d

Webster, J. D., Bohlmeijer, E. T., & Westerhof, G. J. (2014). Time to flourish: The relationship of temporal perspective to well-being and wisdom across adulthood. *Aging & Mental Health, 18*(8), 1046–1056. https://doi.org/10.1080/13607863.2014.908458

Webster, J. D., Weststrate, N. M., Ferrari, M., Munroe, M., & Pierce, T. W. (2017). Wisdom and meaning in emerging adulthood. *Emerging Adulthood, 6*(2), 1–19. https://doi.org/10.1177/2167696817707662

Wei, X. D., Xu, W. T., & Wang, F. Y. (2019). Wise reasoning: Concept, measurement, influence factors and future research. *Journal of Psychological Science, 42*(2), 343–349. https://doi.org/10.16719/j.cnki.1671-6981.20190213

Weststrate, N. M., Ferrari, M., & Ardelt, M. (2016). The many faces of wisdom: An investigation of cultural-historical wisdom exemplars reveals practical, philosophical, and benevolent prototypes. *Personality and Social Psychology Bulletin, 42*, 662–676. https://doi.org/10.1177/0146167216638075

Weststrate, N. M., & Glück, J. (2017). Hard–earned wisdom: Exploratory processing of difficult life experience is positively associated with wisdom. *Developmental Psychology, 53*(4), 800–814. https://doi.org/10.1037/dev0000286

Yang, S. Y. (2001). Conceptions of wisdom among Taiwanese Chinese. *Journal of Cross-Cultural Psychology, 32*, 662–680. https://doi.org/10.1177/0022022101032006002

Yang, S. Y. (2008). A process view of wisdom. *Journal of Adult Development, 15*(2), 62–75. https://doi.org/10.1007/s10804-008-9037-8

Yang, S. Y. (2013). Wisdom and good lives: A process perspective. *New Ideas in Psychology, 31*, 194–201. https://doi.org/10.1016/j.newideapsych.2013.03.001

Yang, S. Y. (2016). Exploring wisdom in the Confucian tradition: Wisdom as manifested by fan Zhongyan. *New Ideas in Psychology, 41*, 1–7. https://doi.org/10.1016/j.newideapsych.2015.11.001

Yang, S. Y. (2017). The complex relations between wisdom and significant life learning. *Journal of Adult Development, 5*, 1–12. https://doi.org/10.1007/s10804-017-9261-1

Zhang, H. T., Huang, J. H., Huang, C. L., Wang, W., & Hu, C. (2019). Are wise men necessarily benevolent? A reflection upon the relationship between wisdom and virtue. *Journal of Psychological Science, 42*(3), 461–467. https://doi.org/10.16719/j.cnki.1671-6981.20190336

Zheng, H., & Wang, F. Y. (2007). On the essential types and cultivation methods of wisdom. *Jiangxi Educational Research, 5*, 10–13. https://doi.org/10.16477/j.cnki.issn1674-2311.2007.05.003

Zhu, X. (2016). *The chapter variorum of the four books*. Zhonghua Book Company.