

Wise reasoning: Converging evidence for the psychology of sound judgment

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Abstract

Though there are many views on the nature of wisdom, a common thread emerging in philosophical, folk, and scientific discourse is the importance of wise reflection or “reasoning” for sound judgment. In this chapter, we briefly highlight this common thread in historical perspectives on wisdom before moving on to discuss its further development through contemporary personality- and performance-oriented traditions in the empirical study of wisdom. These empirical traditions serve as forerunners to the recent methodological and experimental innovations in the study of wise reasoning. We detail the strengths and weaknesses of existing measures of wisdom, and the subsequent development and validation of the Situated Wise Reasoning Scale to address the limitations of previous approaches. We highlight work demonstrating the importance of the situation for measuring wise reasoning. Further, we address cultural differences in wise reasoning, and highlight ways to boost people’s propensity to reason wisely. Finally, we outline some of the theoretical and practical implications of wise reasoning for wisdom writ large.

Keywords: wisdom, wise reasoning, cognitive strategies, sound judgment, pragmatics, philosophy, meta-cognition, knowledge, situational contingency, person-situation

Wise reasoning: Converging evidence for the psychology of sound judgment

Though there are many views on the nature of wisdom (Staudinger & Glück, 2011), one common thread appears to emerge in philosophy, folk beliefs, and scientific discourse—the notion of wise reflection or “reasoning” for sound judgment. In what follows, we highlight some of the historical background of the theory and research surrounding wise reasoning, and then discuss recent methodological and experimental innovations in the study of wise reasoning. Finally, we outline some of the theoretical and practical implications for the notion of wise reasoning for wisdom writ large.

Historical Background

When defining a broad term like “wisdom,” it is instrumental to consider folk concepts in addition to standard dictionary definitions. In lay terms, wisdom can mean knowledge and experience, reflective abilities (e.g., about the self or the world), and socio-emotional abilities (e.g., empathy, compassion). Such attributes of wisdom are commonly found in studies of folk beliefs about wisdom (Clayton & Birren, 1980; Glück & Bluck, 2011; Sternberg, 1985; see also Weststrate, Bluck, & Glück, this volume), and they seem to occur across a wide range of cultures, including those from North America, Western Europe, and East and South Asia (Grossmann & Kung, in press). Converging with lay definitions, Merriam-Webster’s definition of wisdom cites “knowledge that is gained by having many experiences in life” and “knowledge of what is proper or reasonable: good sense or judgment” (Merriam-Webster, 2017). Arguably, the characteristics that lay people attribute to wisdom reflect the processes involved in making the sort of good judgment that this dictionary definition (and others like it) emphasizes.

However, the folk depictions of such processes are largely underspecified. A more precise articulation of the elements contributing to good judgment can be observed in philosophy¹.

One can find the earliest philosophical conceptualizations of wisdom in ancient writings about the conduct of a good life (Buccellati, 1981; Clifford, 2007; Miller, 2012). Such literature goes as far back as the second or third millennium B.C. (Lambert, 1960; Rudolph, 1987) and is predominantly Near Eastern in origin. Much of it focuses on life pragmatics. For instance, the Babylonian teachings of Shuruppak defined wisdom as the adaptive behaviors of an individual (Alster, 1974, 1991), as did the wisdom teachings of Egypt and Israel of that time (Beaulieu, 2007). Several books from the Old Testament in the Bible (e.g., Proverbs, Job, Ecclesiastes, Leviticus) describe individual characteristics attributed to a wise person, including reflection and reasoning about practices and the conduct of one's life (Murphy, 2002). As Table 1 indicates, all of these works emphasize characteristics like recognizing the uncertainty of one's knowledge and change, perspective-taking, and reciprocity (see Baltes, 2004, for an extensive discussion of these components).

Wisdom is also a topic in the philosophical perspectives associated with the Far East. Chinese Confucianism and Taoism stress experiential learning and acquisition of critical thinking as essential components of wisdom. Confucius is claimed to have said that "to know what you know and what you don't know is the characteristic of one who knows" (Confucius, trans. 2001). This statement suggests that one aspect of wisdom deals with the recognition of the limits of one's knowledge (Birren & Svensson, 2005). Similarly, Taoist writing such as Laozi's *Tao Te Ching* teaches that learning from accumulated experiences is a core feature of attaining

¹ We readily admit that what follows is but a selection of the historical background of wise reasoning. Our goal is to demonstrate some links between historical and current thinking around wise reasoning, without intending to make the claim of holistically representing the vast historical scholarship of wisdom.

wisdom. According to Laozi, wisdom can be acquired by following the *Three Treasures*: compassion, simplicity, and humility (Laotse, 1948). Comparably, Buddhism stresses that one can obtain wisdom via learning through observation, analysis, and self-improvement. The *Four Noble Truths* in Buddhism suggest that selfishness is the key barrier to wisdom. According to this teaching, selfishness leads to conflict and misery. One can overcome selfishness by recognizing how one's desires affect oneself and by seeking a compromise between different desires (Humphreys, 1961).

Researchers who have extensively reviewed the individual characteristics attributed to wisdom suggest that the ancient schools of thought emphasized explicit learning of several common wisdom principles. First, ancient schools of thought emphasized recognition of the uncertainty and ever-changing quality of things (e.g., Baltes, 2004). Second, they emphasized contextualism and the interdependence of things in the world (e.g., Humphreys, 1961). Finally, they suggested that wisdom ultimately concerns an orientation towards the social context and the well-being of others (e.g., Baltes, 2004).

Wisdom has also been extensively discussed in Western philosophy (see Edmondson & Woerner, this volume; Tiberius & Swartwood, this volume). Plato's dialogues about Socrates were among the first Western attempts to characterize wisdom. The oracle of Delphi pronounced Socrates to be the wisest man in Greece, yet Socrates believed this claim to be unjustified. Socrates went on to question his fellow citizens who claimed to possess a great deal of knowledge in their field (politicians, artisans, and poets) and found them all overestimating their knowledge. Plato concluded that his mentor's wisdom stemmed from Socrates recognizing the limits of his own knowledge (Plato, trans. 2010).

In a similar vein, Aristotle, in his *Metaphysics*, suggested that wisdom involves deliberation about what is variable and a deep understanding of the context and causes behind events (vs. the mere knowledge of these events; 2002). From the Aristotelian perspective, wisdom is the cardinal virtue because it helps to balance other human virtues by examining their applicability in a given context². Aristotle suggests that wisdom manifests itself in different forms: *sophia*—the divine ability to discern the truth; and *phronesis*—the human ability to reflect and decide how to live well (Aristotle, 1953). For the Ancient Greeks, this latter practical wisdom was a deeply social virtue: reflective, characterized by good judgment, rooted in conversation and referring to the particulars of a given context (Matson, 1987), with the former—*sophia*—as a necessary precondition for it.

Wisdom was also a central topic in medieval and Renaissance philosophy, both of which were heavily influenced by Platonism and Aristotelianism. Similar to the Aristotelian perspective, for Saint Thomas Aquinas, wisdom or *prudence* was the cause and form of all virtues (Aquinas, trans. 2006). In his view, wisdom included basic cognitive abilities (e.g., good memory, logic), but also such aspects of reasoning as recognition of uncertainties, of alternatives, and of context when making a judgment (Aquinas, trans. 2006). Similarly, for the famous Renaissance humanist theologian, Nicholas of Cusa, wisdom involved the awareness of one's limitations (Rice, 1958).

Several commonalities are apparent when comparing Eastern and classic Western perspectives on wisdom. What is noteworthy about the characteristics depicted in Table 1 is that they constitute a set of qualities contributing to good judgment. This set of qualities appears to include pragmatism, intellectual humility, awareness and management of life's uncertainties,

² Contextualism is also reflected in the (neo-)Aristotelian philosophy as a “priority of the particular” (Nussbaum, 1995).

open-mindedness to different perspectives, contextualism, and a balance of different interests. Another noteworthy aspect of the characteristics depicted in Table 1 is that they can all be measured. As measurement of human characteristics is the forte of psychologists and other behavioral scientists, we turn our attention now to the relevant scholarship in these fields.

The Wise Reasoning Approach

Psychologists interested in the concept of wisdom have employed a range of theoretical and methodological perspectives. For an authoritative overview of the diverse range of earlier and contemporary approaches to studying wisdom, we recommend Staudinger and Glück (2011) and relevant chapters in this handbook. In the present chapter, we focus on a prominent subset of scientific models for the study of wisdom, all of which concern the expression of wisdom-related characteristics in the face of difficult life matters (Baltes & Smith, 2008; Baltes & Staudinger, 2000; Grossmann, 2017a; Santos, Huynh, & Grossmann, 2017). This approach goes by a range of names (e.g., see Baltes & Staudinger, 2000), with most recent interpretations emphasizing the notion of pragmatic (meta-)cognitive strategies captured in the term “wise reasoning” (e.g., Grossmann et al., 2010; Grossmann, Na, Varnum, Kitayama, & Nisbett, 2013). This latter focus on reasoning dovetails with the common features of Eastern and Western philosophical perspectives depicted in Table 1 (Bangen, Meeks, & Jeste, 2013; Grossmann & Kung, in press).

Table 1

Philosophical Perspectives on Wisdom.

Feature	<i>Near and Far Eastern Perspectives</i>	<i>Classic Western Philosophical Perspectives</i>
Pragmatism	<ul style="list-style-type: none"> ● Confucian critical thinking (Lin, 1994) ● Taoist critical thinking (Brown, 1938) ● Buddhist Dhammapadam (Mascaró, 2004, v. 256) 	<ul style="list-style-type: none"> ● Ability to reflect on deep causes of events and decide on life matters (Aristotle, 2002)
Intellectual humility	<ul style="list-style-type: none"> ● Analects (Confucius, 2001) ● One of “three treasures” (Laotse, 1948) ● Old Testament - Job (Murphy, 1981) 	<ul style="list-style-type: none"> ● Socrates’ limits of knowledge (Plato, 2010) ● Cusa’s awareness of one’s limitations (Rice, 1958)
Recognition of uncertainty and change	<ul style="list-style-type: none"> ● Buddhist principle of impermanence of reality (Humphreys, 1961) 	<ul style="list-style-type: none"> ● Deliberation on what is variable (Aristotle, 2002) ● Recognition of uncertainties of life (Aquinas, 2006)
Perspective-taking and contextualism	<ul style="list-style-type: none"> ● Compassion (Laotse, 1948) ● Perspective-taking (Leviticus, 19:18 in Milgrom, 2000) ● Buddhist contextualism (Humphreys, 1961) 	<ul style="list-style-type: none"> ● Aristotelian priority of the particular (Nussbaum, 1995) ● Recognition of alternatives and context when making judgment (Aquinas, 2006)
Balance of different cognitions/interests	<ul style="list-style-type: none"> ● Golden rule of reciprocity (Leviticus, 19:18 in Milgrom, 2000) ● Confucian golden rule (Mei, 1984) 	<ul style="list-style-type: none"> ● Aristotelian balance of different virtues (Schwartz & Sharpe, 2006)

Note. Discussion of the Book of Solomon is omitted, as there is a debate about the influence of the translated text by the later Greek (vs. Hebrew) philosophical perspectives. To focus on the individual, the discussion of religious or divine wisdom is also omitted. For further commonalities and differences in importance of religion, see Baltes (2004).

The wise reasoning approach builds on several theoretical models of human development that viewed wisdom as a later form of cognitive development, one that afforded mastery of uncertainty, and included cognitive processes involving the recognition of relativism and contextualism of life matters (e.g., Basseches, 1984; Kramer, 1983). Among others, the wise reasoning approach incorporates ideas about cognitive schemas involved in mature thinking, as discussed by researchers within the neo-Piagetian or post-formalist school of human development (e.g., Basseches, 1980; Kramer, 1983; Riegel, 1973; for a review see Grossmann, 2018). These schemas include acknowledgment of others' points of view, appreciation of contexts broader than the issue at hand, sensitivity to the possibility of change in social relations, acknowledgment of the likelihood of multiple outcomes of a conflict, preference for compromise in resolving opposing viewpoints, and concern with conflict resolution. In addition to earlier theories by neo-Piagetian developmental psychology, the wise reasoning approach builds on a related approach proposed by Baltes and colleagues (for reviews, see Baltes & Staudinger, 2000; Baltes & Smith, 2008), who defined wisdom as a combination of expert knowledge and cognitive strategies useful for dealing with life's problems. These strategies included awareness of the varied contexts of life and how they change over time, recognition that values and goals differ among people, and acknowledgment of the uncertainties of life (together with ways to manage such uncertainties).

Based on earlier work, Grossmann and colleagues proposed a (meta-cognitive) framework of wise reasoning to study the expression of wisdom in everyday life (e.g., Grossmann, 2017a, 2017b; Grossmann et al., 2013; Santos et al., 2017). These aspects include intellectual humility (or recognition of the limits of one's knowledge), appreciation of

perspectives broader than the issue at hand, sensitivity to the possibility of change in social relations, and compromise or integration of different opinions (see Figure 1).

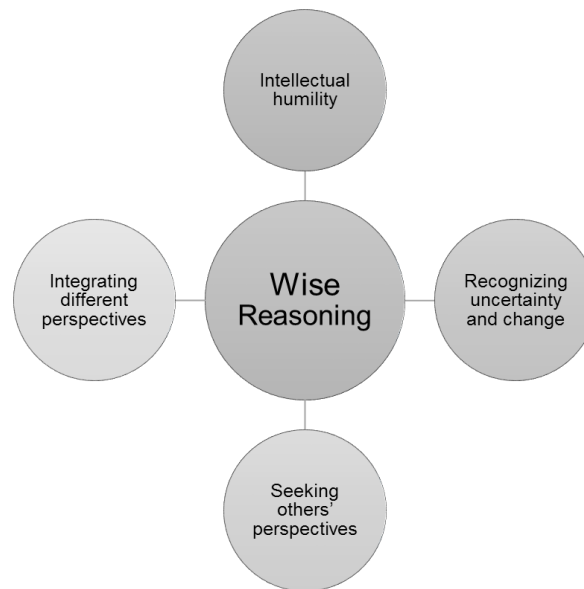


Figure 1. Example characteristics of wise reasoning in everyday life, represented by frequently co-occurring aspects of cognition. Adopted from Grossmann (2017a).

Wise Reasoning Represents a Functional Perspective on Wisdom

Though speculative, it is possible that both behavioral scientists and philosophers zeroed in on the aspects of reasoning outlined above because they recognized that domain-general cognitive abilities (e.g., propositional logic or other aspects of fluid intelligence) might be insufficient for understanding how people master the complexities of social life. Indeed, both Clayton (1982) and Baltes (Baltes & Kunzmann, 2004; Staudinger, Lopez, & Baltes, 1997) distinguished wisdom-related characteristics from domain-general cognitive abilities characterizing rational and analytical thought (e.g., intelligence). These cognitive abilities emphasize symbolic rules and procedures such as propositional logic (Inhelder & Piaget, trans. 1958), and are well suited for solving well-structured problems (e.g., Haugeland, 1989). However, they may not be well suited for working through ill-structured problems (Santos et al., 2017), which often involve value trade-offs, lack vital pieces of information necessary to form a

decision, and lack clarity about the goals or means necessary to form a solution (Jonassen, 1997). Ill-structured problems have a dynamic component, requiring sensitivity to the particulars of a given context. This feature of ill-structured problems presents a challenge for domain-general aspects of intelligence concerning symbolic and propositional logic. Instead of domain-general cognitive ability, then, these problems require an appreciation for the nuances of the situation and the dynamic nature of information (Clayton, 1982; Sinnott, 1989). Notably, many social problems encountered in daily life tend to be ill-structured (Mienaltowski, 2011).

To appreciate the challenge of reasoning through ill-structured issues, consider the following situation depicted in a letter to an advice columnist:

My husband is very political, and around election time he becomes engrossed in news shows. He has a habit of showing his favorite political news clips to friends when they visit. I am uncomfortable with this, as I feel our friends are too polite to decline, and they allow my husband to preach politics to them out of courtesy to the host. They are like-minded, politically speaking, and the few who aren't are not going to be swayed by comedy news shows. I excuse myself from the room when he begins his sermons. I have asked him to stop doing this when friends visit, but he refuses. How can I persuade him to just have "friends time" with no politics? (adopted from Santos et al., 2017)

According to the wise reasoning approach, a wise way for the spouse to make sense of the situation is to recognize the limits of her knowledge about the motives and interests driving her husband's behavior. She could realize the uncertainty involved in understanding and predicting her husband's future behavior (e.g., he may not always act this way). Moreover, she could be open-minded to the perspectives of other people involved in the situation, considering whether it might be possible to accommodate both their friends' and her husband's interests. She might also question her reasons for being so upset about the situation, but ultimately, what we are illustrating with this example is that the cognitive principles involved in the wise reasoning approach do not necessarily suggest a single solution or desired outcome. Instead, they afford a

metacognitive framework for working through the contingencies and elements playing a role in a given situation, promoting a bigger picture view—and thereby, more accurate understanding—of the situation.

Measuring Wise Reasoning

Global Self-Reports

At first glance, it may appear straightforward to conceptualize the social and cognitive strategies discussed so far as a set of stable characteristics. Indeed, several attempts have been made to assess individual characteristics capturing multiple aspects of wise reasoning through single-shot tests in the form of self-report questionnaires (e.g., Ardel, 2003; Glück et al., 2013; Greene & Brown, 2009; Levenson, Jennings, Aldwin, & Shiraishi, 2005; Thomas, Bangen, Palmer, et al., 2017; Thomas, Bangen, Ardel, & Jeste, 2017; Webster, 2003)³. In such tests, individuals are asked to assess their wisdom-related qualities globally. For example, Webster's (2003) Self-Assessed Wisdom Scale includes such items as, "I have experienced many moral dilemmas," and "I am good at identifying subtle emotions within myself", while Ardel's (2003) Three-Dimensional Wisdom Scale includes such items as, "I can be comfortable with all kinds of people," and "I always try to look at all sides of a problem" (as cited in Glück et al., 2013, Table 1). Despite the dominance of this approach in the empirical wisdom scholarship of the last 15 years, it suffers from several drawbacks.

One of the key limitations of the self-report assessments of wise reasoning, as with self-report assessments more generally, is their reliance on global, decontextualized self-evaluations (Bangen et al., 2013; Glück et al., 2013; Grossmann, 2017a, 2017b). Due to this limitation,

³ Global self-report scales aiming to capture wisdom often claim to cover a broader range of individual characteristics than those captured in Table 1 and Figure 1. Nevertheless, concepts of reflection and reasoning are central to many of these scales. Moreover, the present limitations of de-contextualized single-shot questionnaires extend to the assessment of emotion regulation and social skills not captured within the wise reasoning framework.

existing self-reports of wisdom are susceptible to many biases such as memory bias (Kahneman, Krueger, Schkade, Schwarz, & Stone, 2004), self-presentation and social desirability bias—especially for highly desirable qualities such as wisdom—(Brienza, Kung, Santos, Bobocel, & Grossmann, 2017b; Taylor, Bates, & Webster, 2011; Zacher, McKenna, & Rooney, 2012), and others. Further, global, decontextualized self-report measures leave several important questions unanswered. For example, which situations do people think of when making their global assessments of their wisdom-related qualities (e.g., most salient or most typical)? Might people's answers change if one asked them to reflect on a different set of situations? Further, how does the complexity of different situations factor into people's global assessments of their wisdom? Because these questions tend to go unanswered in self-report measures, the latter are unable to answer questions about how wisdom may vary across situations.

It is worth pointing out that the attempts to conceptualize wisdom-related characteristics as intra-individually stable are in good company. The assumption of wisdom-related characteristics possessing trait-like stability across different situations is apparent in contemporary virtue epistemology, which assumes that features such as intellectual humility or open-mindedness represent stable character traits. At the same time, research in personality and social psychology on cross-situational variability in character traits has called this assumption into question (for reviews, see Doris, 2002; Tanesini, 2016). Similarly, research on wise reasoning shows wisdom-related characteristics are subject to substantial variability across situations (as we show later; also see Grossmann, Kung, & Santos, this volume). This research calls into question the foundation of assumed stability that de-contextualized single-shot measures of wisdom are built on.

Third-Party Ratings

In contrast to global self-reports, developmental psychologists in the 1980s established a content analysis approach to measuring wisdom-related cognitions. Researchers analyzed the content of participants' recorded "stream-of-thought" reflections for evidence of wisdom-related cognitions. In the late 1980s, Paul Baltes and colleagues formalized this approach to systematically study wisdom-related cognitions about ill-structured situations (Baltes & Kunzmann, 2004; Baltes & Smith, 2008; Baltes & Staudinger, 1993, 2000; Kunzmann & Baltes, 2003; Smith, Staudinger, & Baltes, 1994; Staudinger et al., 1997). Participants were instructed to provide "stream-of-thought" reflections on what could be considered and done in response to hypothetical scenarios (e.g., a dilemma between one's family and one's job). Subsequently, trained coders scored participants' responses on the application of certain aspects of wisdom-related cognition. Similarly, in a paradigm developed by Grossmann and colleagues to zero in on wise reasoning (Grossmann et al., 2012, 2013; Kross & Grossmann, 2012; for review see Grossmann, 2017b), participants responded to a set of prompts designed to facilitate their verbal reflections on interpersonal or intergroup conflict scenarios (e.g., What do you think will happen next? Why will it happen in that way? What do you think should be done in the situation?). Akin to procedures employed by Baltes and colleagues, trained coders rated participants' narratives across various aspects of wise reasoning.

The coder-based evaluations in both these approaches avoid some key limitations of global self-reports. First, they focus on how people reason in the context of concrete situations (Baltes & Staudinger, 1996; Grossmann & Kross, 2014; Kross & Grossmann, 2012; Thomas & Kunzmann, 2014). Second, self-presentation bias is minimized because trained coders evaluate participants' wisdom. Third, because this approach focuses on people's *performance* in a given

situation, responses are not subject to memory bias. Despite these advantages of the coder-based ratings of wise reasoning, this approach to assessing wise reasoning also has several drawbacks.

First and foremost, coder-based evaluations are labor-intensive, which can make the method costly and impractical (Glück et al., 2013). Substantial investment must be made into coder training to establish interrater reliability. Second, the coder-based method involves recording stream-of-thought reflections, which may not be viable in the face of acute social challenges, which limits the utility of the method for ecological assessments of wise reasoning. Finally, coder-based evaluations often require iterative development of distinct coding systems for different situations not initially captured by the codebook. While codebooks may overlap in their overarching content, the specific categories reflecting each research project are highly diverse, making it difficult to compare codes—even for similar categories—across studies.

Situated Wise Reasoning Scale (SWIS)

To account for these limitations, Brienza and colleagues (2017) recently introduced a hybrid state-level method for assessing social and cognitive characteristics attributed to wisdom, which integrates the situation-sensitivity of observer-based evaluations with the ease of administering common self-report assessments, calling it the Situated Wise Reasoning Scale (SWIS). To avoid the possible biases associated with decontextualized global reports, this method utilizes recent advances in survey methodology concerning the reconstruction of individuals' experiences (Kahneman, Krueger, Schkade, Schwarz, & Stone, 2004; Schwarz et al., 2009). To attenuate memory bias and desirability-related distortions in people's responses (Kahneman et al., 2004; Schwarz et al., 2009), survey methodologists recommend supporting episodic memory recall by asking people to reconstruct the contextualized details (i.e., detailed

"what," "where," "when," and "how") of a recalled experience (Robinson & Clore, 2002; Wagenaar, 1986).

The SWIS (Brienza et al., 2017) includes event-reconstruction of social experiences (Schwarz et al., 2009) to avoid typical biases associated with abstract self-reports of wisdom. Specifically, participants first recall a recent interpersonal conflict. Respondents are subsequently guided to reconstruct concrete details of the conflict experience by answering questions about the situation, including the thoughts and feelings they experienced. Finally, participants are prompted to answer a set of questions designed to assess wise reasoning. Sampling SWIS across multiple situations can provide insights about both situation-specific and trait-level distributions of individual differences in wise reasoning.

Psychometric tests of the SWIS, as well as de-contextualized and observer-based methods for assessing wisdom, have uncovered a range of exciting phenomena. First, large-scale exploratory and confirmatory testing of the factor structure of wisdom ($N = 4,463$) has revealed that a single second-order latent factor with five first-order factors (intellectual humility, recognition of multiple ways a situation may unfold and change, perspective-taking, search for a compromise and conflict resolution, and application of an outsider's vantage point) provides an optimal model fit for the structure of wisdom in reflection on interpersonal conflicts as compared to a wide range of other possible models (Brienza et al., 2017; Study 1). Second, SWIS revealed a remarkably similar factor structure and reliability across regions varying in socio-economic and demographic characteristics, suggesting a certain degree of ecological generalizability of the SWIS method (Brienza et al., 2017; Studies 2 and 8). Third, scores obtained with the SWIS method converged with global self-reports and observer-based ratings of wisdom (Brienza et al., 2017; Study 3). Fourth, SWIS yielded accurate responses that were either unrelated or inversely

related to a wide range of social and cognitive biases, including social desirability biases (impression management and self-deception), attributional bias and bias blind-spot. Conversely, global self-report measures for assessing wisdom were subject to these psychological biases (Brienza et al., 2017; Studies 3-6). Finally, the SWIS method has revealed a new set of systematic state-specific effects concerning the sex of the other person involved in the conflict participants reflected on. Specifically, men were more likely to express wisdom if the other person involved in the situation was a woman (Brienza et al., 2017; Study 7).

Nomological Network of Wise Reasoning

Researchers in the last decade have identified a range of unique associations of wise reasoning. The construct of wise reasoning has shown convergent validity through positive associations to interpersonal well-being (Grossmann et al., 2013), superior emotion regulation (Grossmann, Gerlach, & Denissen, 2016), eudaimonic virtues (e.g., cooperative intentions, contribution to others, growth orientation; Brienza et al., 2017; Grossmann, Brienza, & Bobocel, 2017; Huynh, Oakes, Shay, & McGregor, 2017; Kunzmann & Baltes, 2003; Wink & Staudinger, 2016), prosocial behavior (Grossmann et al., 2017), and openness to diverse viewpoints during political elections in the US (Kross & Grossmann, 2012).

Some empirical studies have also shown a robust inverse relationship between wise reasoning and negative emotions (Grossmann et al., 2013; Kunzmann & Baltes, 2003). The relationship between wise reasoning and positive emotions or life satisfaction is less clear, fluctuating across samples and research paradigms (Baltes, Staudinger, Maercker, & Smith, 1995; Grossmann, Gerlach et al., 2016; Grossmann et al., 2013; Mickler & Staudinger, 2008). Notably, most of this work uses cross-sectional observations, limiting inferences about the directionality of the observed effects.

To address this limitation, Santos and Grossmann (in prep) recently examined the longitudinal relationship between wise reasoning and affective well-being. In a representative sample of Americans aged 25-75 at survey onset ($N = 4,963$), they identified that having a wise outlook on life (i.e., being intellectually humble, recognizing constant change in the world, and considering different perspectives) predicted an increase in the ratio of positive to negative emotions 20 years later, independent of age-cohort. There was no clear pattern for the reverse relationship (from affect to wisdom). These observations support the philosophical model of wisdom as a set of features that promote a “good” life (Bangen et al., 2013; Kekes, 1995; Tiberius, 2008).

At the same time, there is also evidence of wise reasoning’s discriminant validity. As discussed earlier, wise reasoning has been conceptualized theoretically as distinct from domain-general cognitive abilities. This conceptualization is supported by empirical scholarship showing only weak relations between wise reasoning and standard measures of intelligence and related physiological processes (Grossmann et al., 2010, 2013; Grossmann, Sahdra, & Ciarrochi, 2016; Staudinger et al., 1997).

Regarding predictive validity, aspects of wise reasoning such as intellectual humility are also known to attenuate bias in politics (Leary et al., 2017). These authors found that people who reported greater intellectual humility tended to hold less prejudice toward individuals with different views from their own, and reported greater tolerance of ambiguity. Moreover, aspects of wise reasoning reflecting open-mindedness (see Figure 1) can be of advantage when forecasting the development of societal events (Tetlock, 2005).

Wise Reasoning and Balancing of Interests and Goals

As compared to other models of wisdom discussed in this handbook, wise reasoning appears to be uniquely linked to a key criterion of wisdom in behavioral sciences: balancing different interests and different goals. The notion of balancing interests unites different theoretical models of wisdom in general and wise reasoning in particular. For instance, Sternberg's (1998) balance theory of wisdom stressed the importance of balancing i) various intrapersonal, interpersonal, and extra-personal goals across long- and short-term plans, and ii) goals of adjusting to—versus influencing—one's environment. Moreover, Staudinger and Glück (2011) concluded their overview of psychological wisdom research by stating:

Wisdom concerns mastering the basic dialectics shaping human existence, such as the dialectic between good and bad, positivity and negativity, dependency and independence, certainty and doubt, control and lack of control, finiteness and eternity, strength and weakness, and selfishness and altruism. (p. 217)

Recent work has begun to explore the empirical relationship of wise reasoning to various forms of balance in people's interests, goals, and causal inferences (Brienza et al., 2017). Across several studies, wise reasoning (assessed via the SWIS) was positively related to balancing the interests, trade-offs, and inferences one makes about the social world. Wise reasoning was also related to greater balance between self- and other-oriented intentions in classic decision-making tasks, and on tasks assessing people's likelihood of striking a balance between their influence and adjustment goals and their attributions of blame to the self vs. another party in their conflicts (Brienza et al., 2017; also see Grossmann, Sahdra, et al., 2016). Conversely, global self-report measures of wisdom were either unrelated or, more often, inversely related to these markers of balance.

Intra- and Inter-Individual Stability of Wise Reasoning

Aside from tests of the nomological network of wise reasoning, research from the last decade has started to explore how variable wise reasoning is across the range of situations and contexts people encounter in their lives. Understanding the degree of this variability can be useful for a normative theory of wisdom-related virtues or epistemology, and for the psychological assessment of wisdom-related character. On the one hand, virtue theorists in philosophy consider virtuous character to be stable. On the other hand, theorists of wisdom in behavioral sciences point out that an individual's wisdom can fluctuate throughout their life (e.g., Baltes & Staudinger, 2000; Staudinger & Glück, 2011) and that people may be differentially wise across different domains of their life (Schwartz & Sharpe, 2006). Indeed, the biographies of sages and leaders to whom people tend to attribute a great deal of wisdom show inconsistency in their virtuous behavior and wisdom across different life domains. For instance, the Biblical King Solomon demonstrated great wisdom when judging others' problems, but showed little wisdom when dealing with his own (Grossmann & Kross, 2014; Sternberg, 2013).

Along similar lines, some empirical research does suggest that wise reasoning has a stable latent component (Brienza et al., 2017; also see Grossmann, Gerlach, et al., 2016; Grossmann, Kung, & Santos, this volume). At the same time, other empirical work shows that wise reasoning is variable, even among people identified as having high levels of wisdom. In one empirical study, Austrian researchers asked the general public through newspaper and radio ads to nominate a particularly wise person to a team of researchers (self-nominations were not accepted; Glück et al., 2015). These wise nominees and an age-parallel comparison sample were invited to take part in a study in which they were interviewed on multiple days about challenging experiences from their past. Their responses were analyzed for various aspects of wisdom. The

results indicated a considerable degree of consistency across different aspects of wisdom, $r = .70$, yet only a modest degree of convergence in nominees' responses across interview days, $r = .30$.

In another study, a group of adults from Berlin, Germany, were asked to fill out a 9-day diary (Grossmann, Gerlach, et al., 2016). Each day, participants reflected on the most challenging situation encountered during the day, reconstructed the experience following a procedure similar to the event reconstruction protocol mentioned earlier and answered questions concerning wise reasoning about the situation. On average, researchers observed a modest intra-person association of wise reasoning across diary days, $r = .20$. Subsequent analyses revealed at least as much, if not more, variability in wise reasoning *within* the same person across different diary days (i.e., intra-person variability) as variability in wisdom *between* people (i.e., between-person variability). Further comparison of the intra-person variance in wisdom to established personality constructs (Grossmann, 2017b) indicated that between 66% to 94% of the wisdom variance was accounted for by intra-person variability (Santos, Huynh, et al., 2017).

Comparably, a modest degree of intra-person stability was found in a different set of studies (Brienza et al., 2017) when comparing wise reasoning about distinct interpersonal situations from the recent past or when examining how wise reasoning varies over a period of several years. Using the SWIS method across multiple situations, the researchers observed a moderate degree of convergence (over time: $r = .48$; across distinct situations: $r = .31$).

The Power of the Situation for Wise Reasoning

The evidence of intra-person variability in wise reasoning raises several questions. How systematic is this variability? Which situations can boost or inhibit one's propensity for wise reasoning? One factor that has an impact on wise reasoning concerns the degree to which a person focuses on the context as opposed to the self. In hypothetical transgression scenarios

concerning infidelity and trust betrayal, Grossmann and Kross (2014) have shown that reflections on a transgression involving a close friend produced wiser reasoning as compared to reflections on a transgression involving the self. Similarly, other studies found that being placed in the position of providing advice for others, as opposed to deliberating on one's problems, led to behaviors related to wise reasoning (e.g., seeking balanced information for and against one's preferences; Huynh, Santos, Tse, & Grossmann, 2017; for more information, see Grossmann, Kung, and Santos chapter in the present handbook).

These studies suggest that wise reasoning tends to be characterized by an asymmetry such that people are more likely to reason wisely about other people's problems than their own. This observation is noteworthy, as it is consistent with the theoretical argument that *general* wisdom, which concerns reflections on others, tends to be conceptually distinct from *personal* wisdom, which concerns reflections on the self (cf. Mickler & Staudinger, 2008). Further, these results suggest that people's capacity to reason wisely is often higher than suggested by the decisions they make about their own lives (Grossmann, 2017a). Egocentrism, therefore, may prevent people from utilizing their capacity for wise reasoning to manage their problems.

Wise Reasoning across Cultures

Wise reasoning also appears to vary as a function of culture. A large body of research has indicated that culture-specific approaches to interpersonal relationships can shape how people reason about social problems. Some cultural groups, such as Chinese, Japanese, or Russians, tend to be more oriented to the social context when thinking about interpersonal experiences than other cultural groups, such as European Americans, who tend to focus on the individual when reflecting on similar experiences (Grossmann & Na, 2014). If cultures differ in their focus on the social context and interpersonal harmony vs. the individual and personal achievement, it seems

logical to expect parallel differences in wise reasoning about social conflicts. Specifically, people from cultures that encourage a focus on social contexts (e.g., Japan) may show a greater ability to reason wisely than people from cultures that promote an individual-centered focus (e.g., US).

These ideas were tested in a multi-session study involving age- and social class-heterogeneous samples of Americans from the Midwest and Japanese from the Tokyo Metropolitan area (age range: 25-75 years; Grossmann et al., 2012). Participants read newspaper articles describing a series of intergroup and interpersonal conflicts (Grossmann et al., 2010). An interviewer asked participants to reflect aloud on the future development of the issues described in the article, using such probes as “What do you think will happen next? Why do you think it will happen as you just said? What do you think should be done?” Participants’ responses were transcribed and content-analyzed by independent coders for aspects of wise reasoning. Results indicated that younger and middle-aged Japanese showed greater ability to reason wisely about societal and interpersonal conflicts than their American counterparts. These results held when controlling for cognitive abilities, occupational prestige, and response length. It is not clear how such cross-cultural differences generalize beyond US-Japan comparisons, however. Nor is it possible to separate developmental vs. cohort effects. Nevertheless, together these results paint a consistent picture that contexts promoting a focus on the self as independent from others inhibit one’s ability to reason wisely.

Cultural differences in social orientation are not limited to differences between countries, but can also involve different social groups within a country, for instance when comparing different social classes. Many researchers have started to approach social class as a form of culture (Grossmann & Huynh, 2013; Kraus, Piff, & Keltner, 2011), observing systematic social class differences in the degree to which people are attuned to others. Both cross-sectional and

longitudinal studies indicate that lower socioeconomic status (SES) is associated with a greater likelihood of defining one's self and personal goals through relationships with others (Grossmann & Varnum, 2011, 2015; Santos, Varnum, & Grossmann, 2017; Stephens, Fryberg, & Markus, 2011). It is also associated with greater accuracy in discerning others' emotions and having compassion for them (Kraus, Côté, & Keltner, 2010; Stellar, Manzo, Kraus, & Keltner, 2012). Behavioral (Dietze & Knowles, 2016) and neuroscientific studies (Varnum, Blais, Hampton, & Brewer, 2015) indicate that people with low SES are also more likely to be vigilant about their social environment.

Drawing on these observations, Brienza and Grossmann (2017) hypothesized that people with lower SES would express wiser reasoning about interpersonal conflict situations. To address this question, they surveyed over two thousand adults from U.S. regions that differed in SES. Using the SWIS method, they found that both state- and individual-level estimates of social class were related to people's propensity for wise reasoning when reflecting on recent interpersonal transgressions. Specifically, higher SES was associated with significantly lower wise reasoning scores. The effect of individual status on wise reasoning was robust when controlling for gender and age, social desirability, and emotional intelligence. Moreover, the effect of social class on wise reasoning was at least in part accounted for by a greater sense of interdependence expressed by participants with lower SES.

In another study, Brienza and Grossmann (2017) analyzed the observer-based wise reasoning scores of a random sample of adult Midwesterners from the US. Here, participants with a high school level of education showed wiser reasoning about interpersonal problems than participants with a college-level education. Curiously, this difference was bound to the domain of interpersonal conflicts; little difference emerged across educational levels in the domain of

societal conflicts. Because reasoning about societal conflicts may be less central to survival in lower SES environments in the US, the specialization hypothesis suggests there may be little reason for the working class to adopt a wiser reasoning style in this domain (as compared to the more survival-relevant interpersonal domain). Overall, it appears that in spite of the association between higher SES and superior performance on intelligence tests (e.g., Bridges & Lillian, 1917; Witkin, 1969), higher SES is associated with less wise reasoning about interpersonal conflict.

Boosting Wise Reasoning

Given the intra-person variability of wise reasoning across situations, researchers have begun looking for ways to enhance people's use of this quality. Experimental evidence suggests that reducing one's focus on the self is one way to achieve this boost in wise reasoning (for a review, see Santos et al., 2017). The primary tool that researchers rely on to boost wise reasoning is ego-decentering (i.e., self-distancing), which involves reflecting on an issue from the perspective of a distanced observer (Kross & Ayduk, 2011). This technique has been shown to help people work through negative experiences by lowering their emotional reactivity and increasing behavior that contributes to constructive problem solving (Grossmann & Kross, 2010). Specific to wise reasoning, Kross and Grossmann (2012) demonstrated that ego-decentered (vs. egocentric) participants expressed greater wise reasoning in reflections on their future career, political election results, and interpersonal and marital transgressions (Grossmann & Kross, 2014; Grossmann & Oakes, 2017; Huynh, Yang, & Grossmann, 2016). In sum, it appears that ego-decentering instructions enhance participants' ability to reason wisely across fictitious and real interpersonal events, and across interpersonal and societal conflicts (for more details, see Grossmann, Kung, & Santos, current volume).

These findings open up promising avenues for future research to investigate other ways to develop and enhance wisdom-related cognition. Notably, the ease with which wise reasoning appears to be facilitated or inhibited raises a provocative suggestion about the nature of wise reasoning. Rather than viewing wise reasoning as a stable competence similar to intelligence, it appears best conceptualized as a set of strategies that may be available across—but that do not appear to be consistently utilized—across various situations people encounter in their lives.

Theoretical and Practical Implications

Research so far has only started to uncover the wealth of situational factors inhibiting or promoting people's propensity for wise reasoning. Yet, what has been revealed has already led to a revision in the framework for understanding wisdom-related characteristics. The variability in wise reasoning across situations and timepoints presents a challenge for earlier theories of wisdom-related character, which assume that wisdom-related traits represent stable characteristics. Rather than viewing them as stable dispositions, evidence of cross-situational and intra-individual variability in wise reasoning appears to provide a better fit for probabilistic models of how latent traits may be expressed across situations (Fleeson, 2004; Grossmann, Gerlach, et al., 2016). These insights suggest that wise reasoning is best conceptualized within a systemic-ecological framework of various contingencies (e.g., life history, type of situation, culture) that influence thoughts, feelings, and behaviors. Attention to such contextual factors can dramatically enrich theorizing about wisdom-related processes and how they can be enhanced (Grossmann, 2017a).

Practically speaking, situating wise reasoning in the context of concrete experiences can provide a more precise and less biased assessment of wisdom-related characteristics (Brienza et al., 2017). Moreover, gaining greater insight into the contexts affording vs. inhibiting wise

reasoning can aid in the creation of environments that foster wisdom. Researchers and practitioners could utilize situational cues to create wisdom-enhancing “nudges” (Thaler & Sunstein, 2009) and boosts. Pragmatically, one can capitalize on emerging research suggesting that contexts that cultivate an ego-decentered mindset can be effective for enhancing wise reasoning in everyday life.

Future Directions

Future research assessing wise reasoning may benefit from the design of interventions facilitating wisdom in the face of critical interpersonal or societal challenges. Some preliminary work by Brienza, Kung, & Chao (2017) suggests that instructions to apply wisdom-related strategies in reflections on a long-standing ideological conflict can improve intergroup attitudes. In four initial correlational studies conducted during heightened intergroup conflicts around the world (i.e., 2014 Umbrella Movement protests in Hong Kong; 2015 Baltimore protests), they found that wise reasoning related to more positivity toward outgroups and attenuated intergroup attitude polarization. A follow-up experiment showed that participants who were given an instructional wise reasoning session responded with more positivity to outgroup members, were more likely to show support for equality for the outgroup, and showed greater motivation to have personal contact with the outgroup. Overall, the findings suggested that wise reasoning interventions may help to quell a wide variety of societal challenges and may even be useful for conflict prevention.

Another key question for future research concerns the role of affective processes for wise reasoning. Do emotions interfere with or enable wise reasoning? When examining specific social contexts, it is possible that wise thought benefits from emotional down-regulation (Gross, 2015). At the same time, it is also possible that wise reasoning may benefit from a more differentiated

and balanced emotional experience (Grossmann, Huynh, & Ellsworth, 2016). Indeed, preliminary evidence suggests that wise reasoning is associated with a balanced experience of multiple, diverse emotions (Grossmann et al., 2016; Grossmann & Oakes, 2017). This raises novel questions concerning the functional-informational value of positive and negative emotions for wise reasoning (Nesse & Ellsworth, 2009).

Finally, focus on how wise reasoning unfolds in specific situations enables researchers to examine the neurophysiology of wisdom, including visceral functioning (Grossmann, Sahdra, et al., 2016) and functioning of prefrontal cortical regions (Meeks & Jeste, 2009). Future work will benefit from exploring the relationship of wise reasoning to human neurobiology, thereby enabling researchers to situate wise reasoning within a systemic framework of social, cognitive, and neurophysiological processes (Grossmann, 2017a).

Conclusion

Wise reasoning concerns reflective processes facilitating sound judgment, in line with standard dictionary definitions, folk concepts, and following a long history of theorizing about wisdom in philosophy. These reflective processes are context-specific, and modifiable via experimental manipulations such as those involving ego-decentering. Scholars interested in wise reasoning would benefit from studying not only its components and their utility for improving the quality of people's judgments and for promoting well-being, but also the contexts affording and inhibiting the expression of wise reasoning in daily life.

References

- Alster, B. (1974). *The instructions of Suruppak: A Sumerian proverb collection*. Copenhagen: Akademisk forlag.
- Alster, B. (1991). Väterliche Weisheit in Mesopotamien. In A. Assmann (Ed.), *Weisheit: Archäologie der literarischen Kommunikation III* (pp. 103–115). München: Wilhelm Fink Verlag.
- Aquinas, T. (2006). *Summa Theologica* (Vol. 36: Pruden). Cambridge, UK: Cambridge University Press.
- Ardelt, M. (2003). Empirical assessment of a three-dimensional wisdom scale. *Research on Aging*, 25, 275–324. <http://doi.org/10.1177/0164027503025003004>
- Aristotle. (1953). *Ethics: The Nicomachean ethics*. London, UK: Allen & Unwin.
- Aristotle. (2002). *Aristotle's metaphysics*. Santa Fe, NM: Green Lion Press.
- Baltes, P. B. (2004). *Wisdom as orchestration of mind and virtue*. Berlin: Max Planck Institute for Human Development. Retrieved from <http://www.baltes-paul.de/overview.htm>
- 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. <http://doi.org/10.1159/000079156>
- Baltes, P. B., & Smith, J. (2008). The fascination of wisdom: Its nature, ontogeny, and function. *Perspectives on Psychological Science*, 3, 56–64. <http://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*, 2, 75–80. <https://doi.org/10.1111%2F1467->

8721.ep10770914

Baltes, P. B., & Staudinger, U. M. (1996). Interactive minds in a life-span perspective: Prologue.

In P. B. Baltes & U. M. Staudinger (Eds.), *Interactive minds. Life-span perspectives on the social foundation of cognition* (pp. 1–34). New York, NY: Cambridge University Press.

Baltes, P. B., & Staudinger, U. M. (2000). Wisdom: A metaheuristic (pragmatic) to orchestrate mind and virtue toward excellence. *The American Psychologist*, *55*, 122–136.

<http://doi.org/10.1037//0003-066X.55.1.122>

Baltes, P. B., Staudinger, U. M., Maercker, A., & Smith, J. (1995). People nominated as wise: A comparative study of wisdom-related knowledge. *Psychology and Aging*, *10*, 155–166.

<http://doi.org/10.1037/0882-7974.10.2.155>

Bangen, K. J., Meeks, T. W., & Jeste, D. V. (2013). Defining and assessing wisdom: A review of the literature. *The American Journal of Geriatric Psychiatry*, *21*, 1254–1266.

[doi:10.1016/j.jagp.2012.11.020](https://doi.org/10.1016/j.jagp.2012.11.020)

Basseches, M. (1980). Dialectical schemata: A framework for the empirical study of the development of dialectical thinking. *Human Development*, *23*, 400–421.

<https://doi.org/10.1159/000272600>

Basseches, M. (1984). *Dialectical thinking and adult development*. New Jersey, NJ: Ablex.

Beaulieu, P.-A. (2007). The social and intellectual setting of Babylonian wisdom literature. In R.

J. Clifford (Ed.), *Wisdom literature in Mesopotamia and Israel* (pp. 3–19). Atlanta, GA:

Society of Biblical Literature.

Birren, J. E., & Svensson, C. M. (2005). Wisdom in history. In R. J. Sternberg & J. Jordan

(Eds.), *A handbook of wisdom: Psychological perspectives* (pp. 3–31). New York, NY:

Cambridge University Press.

- Bridges, J. W., & Lillian, E. C. (1917). The relation of intelligence to social status. *Psychological Review*, 24, 1-31. <http://psycnet.apa.org/doi/10.1037/h0072945>
- Brienza, J. P., & Grossmann, I. (2017). Social class and wise reasoning style across regions, persons and situations. *Proceedings of the Royal Society B: Biological Sciences*. doi:10.1098/rspb.2017.1870
- Brienza, J. P., Kung, F. Y. H., & Chao, M. M. (2017). *Wise reasoning reduces intergroup bias*. Manuscript submitted for publication. University of Waterloo, Waterloo, Ontario, Canada.
- Brienza, J. P., Kung, F. Y. H., Santos, H. C., Bobocel, D. R., & Grossmann, I. (2017). Wisdom, bias, and balance: Toward a process-sensitive measurement of wisdom-related cognition. *Journal of Personality and Social Psychology*. <http://doi.org/10.1037/pspp0000171>
- Brown, B. (1938). *The wisdom of the Chinese: Their philosophy in sayings and in proverbs*. Garden City, NY: Garden City Publishing.
- Buccellati, G. (1981). Wisdom and not: The case of Mesopotamia. *Journal of the American Oriental Society*, 101, 35–47. doi:10.2307/602163
- Clayton, V. P. (1982). Wisdom and intelligence: The nature and function of knowledge in the later years. *The International Journal of Aging and Human Development*, 15, 315–321. <https://doi.org/10.2190%2F17TQ-BW3Y-P8J4-TG40>
- Clayton, V. P., & Birren, J. E. (1980). The development of wisdom across the life span: A reexamination of an ancient topic. In P. B. Baltes & O. G. Brim (Eds.), *Life-span development and behavior* (Vol. 3, pp. 103–135). New York, NY: Academic Press.
- Clifford, R. J. (2007). *Wisdom literature in Mesopotamia and Israel*. Atlanta, GA: Society of Biblical Literature.
- Confucius. (2001). *Analects* (A. Waley, Trans.). New York, NY: Alfred A. Knopf, Inc.

- Dietze, P., & Knowles, E. D. (2016). Social class and the motivational relevance of other human beings. *Psychological Science*, *27*, 1517–1527. <http://doi.org/10.1177/0956797616667721>
- Doris, J. M. (2002). *Lack of character: Personality and moral behavior*. New York, NY: Cambridge University Press.
- Fleeson, W. (2004). Moving personality beyond the person-situation debate: The challenge and the opportunity of within-person variability. *Current Directions in Psychological Science*, *13*, 83–87. <http://doi.org/10.1111/j.0963-7214.2004.00280.x>
- Glück, J., & Bluck, S. (2011). Laypeople's conceptions of wisdom and its development: Cognitive and integrative views. *The Journals of Gerontology. Series B, Psychological Sciences and Social Sciences*, *66*, 321–324. <http://doi.org/10.1093/geronb/gbr011>
- Glück, J., König, S., Naschenweng, K., Redzanowski, U., Dorner-Hörig, L., Strasser, I., ... Wiedermann, W. (2013). How to measure wisdom: Content, reliability, and validity of five measures. *Frontiers in Psychology*, *4*(405), 1-13. <http://doi.org/10.3389/fpsyg.2013.00405>
- Glück, J., König, S., Naschenweng, K., Redzanowski, U., Dorner, L., & Strasser, I. (2015). State wisdom vs. trait wisdom: Do situations influence wisdom more than individuals do? *The Gerontologist*, *55*(Suppl 2), 592. <http://doi.org/10.1093/geront/gnv304.01>
- Greene, J. A., & Brown, S. C. (2009). The Wisdom Development Scale: Further validity investigations. *The International Journal of Aging and Human Development*, *68*, 289–320. <http://doi.org/10.2190/AG.68.4.b>
- Gross, J. J. (2015). Emotion regulation: Current status and future prospects. *Psychological Inquiry*, *26*, 1–26. <http://doi.org/10.1080/1047840X.2014.940781>
- Grossmann, I. (2017a). Wisdom and how to cultivate it: Review of emerging evidence for a constructivist model of wise thinking. *European Psychologist*, *22*, 233–246.

doi:10.1027/1016-9040/a000302

Grossmann, I. (2017b). Wisdom in context. *Perspectives on Psychological Science*, *12*, 233–257.

<http://doi.org/10.1177/1745691616672066>

Grossmann, I. (2018). Dialecticism across the lifespan: Towards a deeper understanding of ontogenetic and cultural origins of dialectical thinking and emotional experience. In J. Spencer-Rogers & K. Peng (Eds.), *The psychological and cultural foundations of East Asian cognition: Contradiction, change, and holism*. Oxford, UK: Oxford University Press.

Grossmann, I., Brienza, J. P., & Bobocel, D. R. (2017). Wise deliberation sustains cooperation.

Nature Human Behaviour, *1*(61). <http://doi.org/10.1038/s41562-017-0061>

Grossmann, I., Gerlach, T. M., & Denissen, J. J. A. (2016). Wise reasoning in the face of everyday life challenges. *Social Psychological and Personality Science*, *7*, 611–622.

<http://doi.org/10.1177/1948550616652206>

Grossmann, I., & Huynh, A. C. (2013). Where is the culture in social class? *Psychological Inquiry*, *24*, 112–119. <http://doi.org/10.1080/1047840X.2013.792568>

Grossmann, I., Huynh, A. C., & Ellsworth, P. C. (2016). Emotional complexity: Clarifying definitions and cultural correlates. *Journal of Personality and Social Psychology*, *111*, 895–916. <http://doi.org/10.1037/pspp0000084>

Grossmann, I., Karasawa, M., Izumi, S., Na, J., Varnum, M. E. W., Kitayama, S., & Nisbett, R. E. (2012). Aging and wisdom: Culture matters. *Psychological Science*, *23*, 1059–1066.

<http://doi.org/10.1177/0956797612446025>

Grossmann, I., & Kross, E. (2010). The impact of culture on adaptive versus maladaptive self-reflection. *Psychological Science*, *21*, 1150–1157.

<http://doi.org/10.1177/0956797610376655>

- 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. <http://doi.org/10.1177/0956797614535400>
- Grossmann, I., & Kung, F. Y. H. (in press). Wisdom and culture. In S. Kitayama & D. Cohen (Eds.), *Handbook of cultural psychology* (2nd ed.). New York, NY: Guilford Press.
- Grossmann, I., & Na, J. (2014). Research in culture and psychology: Past lessons and future challenges. *Wiley Interdisciplinary Reviews: Cognitive Science, 5*, 1–14. <http://doi.org/10.1002/wcs.1267>
- 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. <http://doi.org/10.1037/a0029560>
- 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*, 7246–7250. <http://doi.org/10.1073/pnas.1001715107>
- Grossmann, I., & Oakes, H. (2017). *Wisdom, self-distance, and emotions in the face of real-life interpersonal conflicts*. Manuscript in preparation. University of Waterloo, Waterloo, Ontario, Canada.
- Grossmann, I., Sahdra, B. K., & Ciarrochi, J. (2016). A heart and a mind: Self-distancing facilitates the association between heart rate variability and wise reasoning. *Frontiers in Behavioral Neuroscience, 10*, 1-10. <http://doi.org/10.3389/fnbeh.2016.00068>
- Grossmann, I., & Varnum, M. E. W. (2011). Social class, culture, and cognition. *Social Psychological and Personality Science, 2*, 81–89.

<http://doi.org/10.1177/1948550610377119>

Grossmann, I., & Varnum, M. E. W. (2015). Social structure, infectious diseases, disasters, secularism, and cultural change in America. *Psychological Science*, *26*, 311–324.

<http://doi.org/10.1177/0956797614563765>

Haugeland, J. (1989). *Artificial intelligence: The very idea*. Cambridge, MA: The MIT Press.

Humphreys, S. (1961). *The wisdom of Buddhism*. New York, NY: Random House.

Huynh, A. C., Oakes, H., Shay, G., & McGregor, I. (2017). The wisdom in virtue: Pursuit of virtue predicts wise reasoning about personal conflicts. *Psychological Science*.

<http://doi.org/10.1177/0956797617722621>

Huynh, A. C., Santos, H., Tse, C., & Grossmann, I. (2017). *The Socrates Effect: How a teacher's mindset impacts political reasoning*. Manuscript in preparation. University of Waterloo, Waterloo, Ontario, Canada.

Huynh, A. C., Yang, D. Y.-J., & Grossmann, I. (2016). The value of prospective reasoning for close relationships. *Social Psychological and Personality Science*, *7*, 893–902.

<http://doi.org/10.1177/1948550616660591>

Jonassen, D. H. (1997). Instructional design models for well-structured and III-structured problem-solving learning outcomes. *Educational Technology Research and Development*, *45*, 65–94. <http://doi.org/10.1007/BF02299613>

Kahneman, D., Krueger, A. B., Schkade, D. A., Schwarz, N., & Stone, A. A. (2004). A survey method for characterizing daily life experience: The day reconstruction method. *Science*, *306*(5702), 1776–1780. doi:10.1126/science.1103572

Kekes, J. (1995). *Moral wisdom and good lives*. Ithaca, NY: Cornell University Press.

Kramer, D. A. (1983). Post-formal operations? A need for further conceptualization. *Human*

Development, 26, 91–105. doi:10.1159/000272873

Kraus, M. W., Côté, S., & Keltner, D. (2010). Social class, contextualism, and empathic accuracy. *Psychological Science*, 21, 1716–1723.

<http://doi.org/10.1177/0956797610387613>

Kraus, M. W., Piff, P. K., & Keltner, D. (2011). Social class as culture. *Current Directions in Psychological Science*, 20, 246–250. <http://doi.org/10.1177/0963721411414654>

Kross, E., & Ayduk, O. (2011). Making meaning out of negative experiences by self-distancing. *Current Directions in Psychological Science*, 20, 187–191.

<http://doi.org/10.1177/0963721411408883>

Kross, E., & Grossmann, I. (2012). Boosting wisdom: Distance from the self enhances wise reasoning, attitudes, and behavior. *Journal of Experimental Psychology: General*, 141, 43–48. <http://doi.org/10.1037/a0024158>

Kunzmann, U., & Baltes, P. B. (2003). Wisdom-related knowledge: Affective, motivational, and interpersonal correlates. *Personality & Social Psychology Bulletin*, 29, 1104–1119.

<http://doi.org/10.1177/0146167203254506>

Lambert, W. G. (1960). *Babylonian wisdom literature*. Oxford, UK: Clarendon Press.

Laotse. (1948). *The wisdom of Laotse*. (Y. Lin, Ed.). New York, NY: Modern Library.

Leary, M. R., Diebels, K. J., Davisson, E. K., Jongman-Sereno, K. P., Isherwood, J. C., Raimi, K. T., ... Hoyle, R. H. (2017). Cognitive and interpersonal features of intellectual humility.

Personality and Social Psychology Bulletin, 43, 793–813.

<http://doi.org/10.1177/0146167217697695>

Levenson, M. R., Jennings, P. A., Aldwin, C. M., & Shiraishi, R. W. (2005). Self-transcendence: Conceptualization and measurement. *The International Journal of Aging and Human*

- Development*, 60, 127–143. <https://doi.org/10.2190%2FXRXM-FYRA-7U0X-GRC0>
- Lin, Y. (1994). *The wisdom of Confucius*. New York, NY: Modern Library.
- Mascaró, J. (2004). *The Dhammapada*. London, UK: Penguin UK.
- Matson, W. I. (1987). *Ancient & medieval. A new history of philosophy* (Vol. 1). San Diego, CA: Harcourt Brace Jovanovich.
- Meeks, T. W., & Jeste, D. V. (2009). Neurobiology of wisdom: A literature overview. *Archives of General Psychiatry*, 66, 355–365. <http://doi.org/10.1001/archgenpsychiatry.2009.8>
- Mei, Y. P. (1984). Confucianism. In R. P. Gwinn, C. E. Swanson, & P. W. Goetz (Eds.), *The new Encyclopaedia Britannica* (15th ed., Vol. 4, pp. 1091–1109). Chicago, IL: Encyclopaedia Britannica.
- Mickler, C., & Staudinger, U. M. (2008). Personal wisdom: Validation and age-related differences of a performance measure. *Psychology and Aging*, 23, 787–799. doi:10.1037/a0013928.
- Mienaltowski, A. (2011). Everyday problem solving across the adult life span: Solution diversity and efficacy. *Annals of the New York Academy of Sciences*, 1235, 75–85. <http://doi.org/10.1111/j.1749-6632.2011.06207.x>
- Milgrom, J. (2000). *Leviticus 17-22: A new translation with introduction and commentary*. New York, NY: Doubleday.
- Miller, C. W. (2012). Wisdom literature, Jewish. In R. S. Bagnall, K. Brodersen, C. B. Champion, & A. Erskine (Eds.), *The encyclopedia of ancient history*. Hoboken, NJ: John Wiley & Sons, Inc.
- Murphy, R. E. (1981). *The wisdom literature: Job, Proverbs, Ruth, Canticles, Ecclesiastes, and Esther* (Vol. 13). Grand Rapids, MI: Wm. B. Eerdmans Publishing.

- Murphy, R. E. (2002). *The tree of life: An exploration of biblical wisdom literature*. Grand Rapids, Michigan: Wm. B. Eerdmans Publishing.
- Nesse, R. M., & Ellsworth, P. C. (2009). Evolution, emotions, and emotional disorders. *American Psychologist, 64*, 129–139. <http://doi.org/10.1037/a0013503>
- Nussbaum, M. C. (1995). *Poetic justice: The literary imagination and public life*. Boston, MA: Beacon Press.
- Inhelder, B., & Piaget, J. (1958). *An essay on the construction of formal operational structures. The growth of logical thinking: From childhood to adolescence* (A. Parsons & S. Milgram, Trans.) London, UK: Routledge and Kegan Paul Ltd.
- Plato. (2010). *The last days of Socrates* (C. Rowe, Trans.). New York, NY: Penguin Books.
- Rice, E. F. (1958). *The renaissance idea of wisdom*. Cambridge, MA: Harvard University Press.
- Riegel, K. F. (1973). Dialectic operations: The final period of cognitive development. *Human Development, 16*, 346–370. doi:10.1002/j.2333-8504.1973.tb00199.x
- Rudolph, K. (1987). Wisdom. In M. Eliade (Ed.), *The encyclopedia of religion* (Vol. 15, pp. 393–401). New York, NY: Macmillan.
- Santos, H. C., & Grossmann, I. (2017). *Cultivating the good life: How a wise outlook leads to increased positive wellbeing over 20 years*. Manuscript in preparation. University of Waterloo, Waterloo, Ontario, Canada.
- 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*, e12341. <http://doi.org/10.1111/spc3.12341>
- Santos, H. C., Varnum, M. E. W., & Grossmann, I. (2017). Global increases in individualism. *Psychological Science, 28*, 1228-1239. <http://doi.org/10.1177/0956797617700622>

- Schwartz, B., & Sharpe, K. E. (2006). Practical wisdom: Aristotle meets positive psychology. *Journal of Happiness Studies*, 7, 377–395. <https://doi.org/10.1007/s10902-005-3651-y>
- Schwarz, N., Kahneman, D. & Xu, J. (2009). Global and episodic reports of hedonic experience. In R. F. Belli, F. P. Stafford, & D. F. Alwin (Eds.), *Calendar and time diary* (pp. 156-174). Thousand Oaks, CA: SAGE Publications Ltd.
- Sinnott, J. D. (1989). A model for solution of ill-structured problems: Implications for everyday and abstract problem solving. In J. D. Sinnott (Ed.), *Everyday problem solving: Theory and application* (pp. 72–99). New York, NY: Praeger Publishers.
- Smith, J., Staudinger, U. M., & Baltes, P. B. (1994). Occupational settings facilitating wisdom-related knowledge: The sample case of clinical psychologists. *Journal of Consulting and Clinical Psychology*, 62, 989–999. <http://doi.org/10.1037/0022-006x.62.5.989>
- Staudinger, U. M., & Baltes, P. B. (1996). Interactive minds: A facilitative setting for wisdom-related performance? *Journal of Personality and Social Psychology*, 71, 746–762. <http://psycnet.apa.org/doi/10.1037/0022-3514.71.4.746>
- Staudinger, U. M., & Glück, J. (2011). Psychological wisdom research: Commonalities and differences in a growing field. *Annual Review of Psychology*, 62, 215–241. <http://doi.org/10.1146/annurev.psych.121208.131659>
- Staudinger, U. M., Lopez, D., & Baltes, P. B. (1997). The psychometric location of wisdom-related performance: Intelligence, personality, and more? *Personality and Social Psychology Bulletin*, 23, 1200–1214. <https://doi.org/10.1177%2F01461672972311007>
- Stellar, J. E., Manzo, V. M., Kraus, M. W., & Keltner, D. (2012). Class and compassion: Socioeconomic factors predict responses to suffering. *Emotion*, 12, 449–459. <http://doi.org/10.1037/a0026508>

- Stephens, N. M., Fryberg, S. A., & Markus, H. R. (2011). When choice does not equal freedom: A sociocultural analysis of agency in working-class American contexts. *Social Psychological and Personality Science*, 2, 33–41.
<http://doi.org/10.1177/1948550610378757>
- Sternberg, R. J. (1985). Implicit theories of intelligence, creativity, and wisdom. *Journal of Personality and Social Psychology*, 49, 607–627. <http://psycnet.apa.org/doi/10.1037/0022-3514.49.3.607>
- Sternberg, R. J. (1998). A balance theory of wisdom. *Review of General Psychology*, 2, 347–365. <http://psycnet.apa.org/doi/10.1037/1089-2680.2.4.347>
- Sternberg, R. J. (2013). Personal wisdom in the balance. In M. Ferrari & N. M. Weststrate (Eds.), *The scientific study of personal wisdom: From contemplative traditions to neuroscience*. Dordrecht: Springer Netherlands.
- Tanesini, A. (2016). Intellectual humility as attitude. *Philosophy and Phenomenological Research*. <http://doi.org/10.1111/phpr.12326>
- Taylor, M., Bates, G., & Webster, J. D. (2011). Comparing the psychometric properties of two measures of wisdom: Predicting forgiveness and psychological well-being with the Self-Assessed Wisdom Scale (SAWS) and the Three-Dimensional Wisdom Scale (3D-WS). *Experimental Aging Research*, 37, 129–141. <http://doi.org/10.1080/0361073X.2011.554508>
- Tetlock, P. E. (2005). *Expert political judgement: How good is it?* Princeton, NJ: Princeton University Press.
- Thaler, R. H., & Sunstein, C. R. (2009). *Nudge: Improving decisions about health, wealth, and happiness*. New York, NY: Penguin Books.
- Thomas, M. L., Bangen, K. J., Ardelt, M., & Jeste, D. V. (2017). Development of a 12-Item

- Abbreviated Three-Dimensional Wisdom Scale (3D-WS-12). *Assessment*, 24, 71–82.
<http://doi.org/10.1177/1073191115595714>
- Thomas, M. L., Bangen, K. J., Palmer, B. W., Sirkin, A., Avanzino, J. A., Depp, C. A., ... Jeste, D. V. (2017). A new scale for assessing wisdom based on common domains and a neurobiological model: The San Diego Wisdom Scale (SD-WISE). *Journal of Psychiatric Research*. <http://doi.org/10.1016/j.jpsychires.2017.09.005>
- Thomas, S., & Kunzmann, U. (2014). Age differences in wisdom-related knowledge: Does the age relevance of the task matter? *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, 69, 897–905. <http://doi.org/10.1093/geronb/gbt076>
- Tiberius, V. (2008). *Reflective wisdom: Living wisely with our limits*. Cambridge, UK: Oxford University Press.
- Varnum, M. E. W., Blais, C., Hampton, R. S., & Brewer, G. A. (2015). Social class affects neural empathic responses. *Culture and Brain*, 3, 122–130. <http://doi.org/10.1007/s40167-015-0031-2>
- Webster, J. D. (2003). An exploratory analysis of a self-assessed wisdom scale. *Journal of Adult Development*, 10, 13–22. <https://doi.org/10.1023/A:1020782619051>
- Wink, P., & Staudinger, U. M. (2016). Wisdom and psychosocial functioning in later life. *Journal of Personality*, 84, 306–318. <http://doi.org/10.1111/jopy.12160>
- Wisdom. (2017). In *Merriam-Webster.com*. Retrieved from <https://www.merriam-webster.com/dictionary/wisdom>
- Witkin, H. A. (1969). Social influences in the development of cognitive style. In D. A. Goslin, (Ed.), *Handbook of socialization theory and research*. New York, NY: Rand McNally.

Zacher, H., McKenna, B., & Rooney, D. (2012). Effects of self-reported wisdom on happiness: Not much more than emotional intelligence? *Journal of Happiness Studies, 14*, 1697–1716. <http://doi.org/10.1007/s10902-012-9404-9>