



The Journal of Positive Psychology

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ISSN: (Print) (Online) Journal homepage: <https://www.tandfonline.com/loi/rpos20>

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To cite this article: Tamera R. Schneider, Howard C. Nusbaum, Yena Kim, Morgan R. Borders & Tyler J. Ryan (2021): Emotional intelligence predicts wise reasoning, The Journal of Positive Psychology, DOI: [10.1080/17439760.2021.1991448](https://doi.org/10.1080/17439760.2021.1991448)

To link to this article: <https://doi.org/10.1080/17439760.2021.1991448>



Published online: 28 Oct 2021.



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Emotional intelligence predicts wise reasoning

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ABSTRACT

Emotional intelligence (EI) and wisdom are psychological capacities claimed to be important foundations for positive social interactions, thus promoting human flourishing. Prior theorizations suggest these constructs are related, but there is no empirical evidence for this. Two studies examined the relationship of EI and wisdom, and meta-cognitive and interpersonal mediators. Study 1 was conducted online ($N = 99$) and focused on meta-cognitive mediators. Study 2 was conducted in person ($N = 150$) and added interpersonal mediators. Across two studies and different populations, findings showed that only the emotional management branch of EI correlated with wise reasoning. Greater epistemic humility, need for cognition, empathic concern, and perspective taking accounted for this relationship. This suggests that competency in emotion management is important in wise reasoning – recognition of a changing world, self-transcendence, consideration of diverse perspectives, and search for compromise. The EI-wisdom relationship may occur through thoughtful, prosocial consideration of others and their perspectives.

ARTICLE HISTORY

Received 1 March 2021

Accepted 1 October 2021

KEYWORDS

Emotional intelligence; wisdom; epistemic humility; need for cognition; perspective taking

Aristotle suggested that wisdom is practical decision-making that leads to human flourishing. In this regard, human flourishing is viewed as prosocial interactions that extend beyond personal well-being. However, theorists of practical wisdom have yet to reach a consensus on the importance of social-emotional information in decision-making as it pertains to boosting human flourishing. Some perspectives suggest that these emotional responses signal important information for making wise decisions (Tiberius, 2008). Others suggest that positive affective experiences as aspects of human life should be downregulated to avoid biased decisions (Grossmann et al., 2020). Accordingly, prior work has placed importance on self-distancing from affective responses to presumably afford more objectivity in making wise decisions (e.g., Grossmann, 2017; Kross & Grossmann, 2012). Early research on rationality and decision-making assumed emotions are detrimental to cognition (see Schneider & Forgas, 2015; Stanovich, 2011). By contrast, Salovey and Mayer (2016, 1997, 1990) consider emotional competencies, namely emotional intelligence (EI), as crucial inputs for rational cognition. Wisdom and EI individually are understood as operating guides for presenting and resolving intra- and inter-personal conflict, but the role of emotional competencies in practical decision-making is far from clear.

EI theory is grounded in the premise that emotion and cognition are intertwined and that both allow for optimal social functioning. Emotions can influence decision-making before a decision is required (Zajonc, 1998), such as when implicit emotional imprints manifest from contextual factors (Stanovich, 2011). Emotions can refine decisions via reappraisal processes (Lazarus, 1999; Gross & John, 2003). The ability to understand and use emotional information may be the foundation for making good decisions (Mayer et al., 2016; Mayer & Salovey, 1997), to the extent that wise reasoning helps address intra- and interpersonal conflicts. Although wisdom and EI both have implications for human flourishing, they have not been studied jointly and may involve overlapping psychological processes. In this paper, we examine the empirical relationship between wisdom and EI by exploring meta-cognitive and interpersonal mediators through which we believe they may be related to and influence social decision-making.

Emotional Intelligence

The ability model of EI considers the integration of cognition and emotion as key for optimal social functioning and well-being (Mayer et al., 2016; Mayer & Salovey, 1997; Salovey & Mayer, 1990). The ability model is distinguished from the trait model, which involves self-report measures of

individual dispositions and perceived abilities (Bar-On, 1997; Boyatzis et al., 2000; Petrides & Furnham, 2003; Schutte et al., 1998). Such self-report measures are prone to social desirability response bias (Paulhus, 1991) and do not strongly correlate with the performance model of EI (Brackett & Mayer, 2003). Prior work also suggests that performance measures of EI are more predictive of real-time interpersonal competence, whereas self-report measures of EI are not (Brackett et al., 2006).

According to the ability model, EI is characterized by four emotional abilities: (1) perceiving emotions accurately, (2) using emotional experience, (3) understanding the influence of emotions on thinking, and (4) managing emotional experience. These abilities provide flexibility in adapting to situational or cultural contexts and foster intra- and interpersonal well-being, as well as prosociality (Brackett et al., 2011; Mayer et al., 2008; Salovey et al., 2004). Emotional competencies provide the self with personal insights and the capacity to observe and empathize with others as the human condition unfolds over time.

Prior research has examined the relationship between EI and interpersonal factors, such as other-oriented personality traits and willingness to engage with others. Higher EI is related to openness and agreeableness (Mayer et al., 2004), social sensitivity and quality interactions (Lopes et al., 2005; Tolegenova et al., 2015), more cooperation and trust (Arfara & Samanta, 2016; Serrat, 2017), and social competencies (Brackett et al., 2012; Serrat, 2017). Those higher in EI feel more connected to their group, put greater focus on the motivational needs of others (Rivers et al., 2013), and provide more emotional and organizational support (Hagelskamp et al., 2013).

Research has also shown a positive relationship between EI and general cognition. Those higher in EI have approach-oriented (vs. avoidant) stress responses (Lyons & Schneider, 2005; Schneider et al., 2013). Additionally, higher EI abilities predict better academic performance (Brackett et al., 2012) and more efficient and effective team task performance, (Druskat & Wolff, 2001). In contrast, lower EI has been associated with negative consequences that reflect poor emotional management and social reasoning demonstrated in greater problem behaviors, such as bullying, violence, drug use (Rubin, 1999; Trinidad & Johnson, 2002), and social deviance, such as physical altercations and vandalism (Brackett et al., 2004). In short, EI involves effectively understanding and managing emotions in the self and others in ways that supports prosociality (e.g., perspective taking) and cognitive processes (performance), and enhances social interactions (Schneider et al., 2018).

Wisdom

Recent scientific research on wisdom has derived its focus from Aristotle's concept of practical decision-making (*phronesis*), which depends on prosocial thought and choice that leads to human flourishing. Human flourishing goes beyond simple personal well-being and centers on a positive state of being that depends on both the well-being of the self and others. In this regard, wisdom and its manifestation through wise reasoning involves balancing different value commitments among multiple factors, including intra- and interpersonal interests, to achieve balance in adapting to or shaping the environment (Sternberg, 1998).

In the context of social situations and projects, wisdom is often considered as the operating guide for good judgment- and decision-making (e.g., Baltes & Smith, 2008). Wisdom is described as a system of expert knowledge in (1) fundamental pragmatics (understanding human nature, development, and social norms), (2) strategic pragmatics (knowing how and when to apply knowledge), (3) appreciating and managing life's uncertainties, the contexts of life, and how they change, and (4) appreciating that people have different values and life goals. This view emphasizes the importance of expert reasoning and knowledge about *people*. Wisdom depends on understanding people and relevant aspects of the world, being attuned to others' needs, concerns, and values, while regulating one's own needs and concerns in evaluating a situation. It is perhaps not surprising, then, that explicit theories of wisdom are almost all grounded in a foundation of epistemic humility (Nusbaum & Schneider, 2020). Epistemic humility is the ability to recognize the limits of one's knowledge, reflect analytically on social problems informed by knowledge of human experience, persevere in grappling with intellectual challenges, and to take the perspectives of others. We view this as a meta-cognitive ability that is deployed when one would seek information or apply such a competency.

In addition to meta-cognitive factors, wise reasoning has been related to interpersonal well-being (Grossmann et al., 2016) and prosocial factors, such as having intentions to cooperate with others (Huynh et al., 2017; Kunzmann & Baltes, 2003). The above views of wisdom focus on wise decision-making, but others emphasize the importance of emotional understanding (Ardelt, 2004) or affective self-control (Grossmann, 2017; Jeste et al., 2019). On the one hand, there is acknowledgement that affective life informs wisdom in positive ways (Tiberius, 2008). On the other hand, there are concerns that affective

influences on decision-making and impulsivity should be controlled. Components of self-reflection, such as emotional considerations, can still inform wise decision-making (Tiberius, 2008), and moral virtues – principles that guide social concern for others – can provide a basis for social intelligence (Snow, 2010).

Indeed, researchers have previously considered emotions, particularly emotional valence, and their role in wise reasoning. Wise reasoning has been associated with lower negative affect (Kunzmann & Baltes, 2003) and higher positive affect (Grossmann et al., 2016), as well as unrelated to positive affect (Kunzmann & Baltes, 2003). Other research has found that focusing on multiple emotions and their interrelations predicts wise reasoning better than focusing on a solely rational approach to wise decisions (Grossmann et al., 2020). However, understanding the role of *emotional intelligence* in wise reasoning is not the same thing as the role of *emotion* in wise reasoning. The benefits of emotion in wise reasoning (or any rational thought) may depend not on the emotional valence or intensity, but rather on emotional competencies that aid in understanding and managing emotions in social contexts. Emotions can influence decisions by providing an approach or avoidance cue. However, knowing the informational value of the emotional signal, interpreting it in context given past experiences, and weighing that information against myriad situational factors (goals, motivations, risk-taking) is part of EI and part of some theories of wisdom.

Wisdom and EI

The hypothesized role of emotional intelligence in wisdom differs among theories, and understanding the relationship between EI and wisdom is a fundamental question in wisdom science. In general, theories of wisdom identify a number of components that play an important role in wise reasoning. For example, Ardel (2004) has identified three dimensions, originally a cognitive dimension, an affective dimension, and a reflective dimension. Jeste et al. (2019) list a number of basic components that include reflection, pragmatic life knowledge, tolerance, and emotional self regulation. Baltes and Smith (2008) identify different kinds of knowledge related to the pragmatics of life but put less emphasis on affective dimensions and emotional self regulation. In other words, some theories of wisdom and wise reasoning include emotional self regulation and others do not. Furthermore, a recent survey of researchers (Grossmann et al., 2020) reported that working research definitions of wisdom frequently

include prosociality, perspective taking, the importance of context, moral grounding, epistemic humility, and reflection but much less often include general intelligence or emotional self control. Emotional self regulation and emotional intelligence did not figure into this common model. This represents a clear distinction among theories of wisdom, and points to a unique contribution of this research. While wise decision-making has been situated in the reflective and analytical consideration of the perspective of others, the role of emotional intelligence has yet to be empirically investigated. As noted above, Tiberius (2008) suggested that emotions are an important component of wise decision-making, because making wise decisions requires consideration of how one feels about the choices available and how the value commitments of others affect feelings in considering possible choices. Consideration of these value propositions may help us better reflect on social problems as they relate to the human experience, leading to human flourishing (Nusbaum & Schneider, 2020). Is emotional intelligence a foundational aspect of wise reasoning? And, how do meta-cognitive and interpersonal factors influence this relationship? We tested this hypothesis in two studies that examined whether EI is related to wise reasoning, and if so, whether that link is facilitated by epistemic humility, need for cognition, empathetic concern, and perspective taking. To our knowledge, this is the first scientific endeavor to do so.

Study 1

The first study examined the association of EI and wisdom in an online population and whether they were linked through meta-cognitive mediators, namely epistemic humility and need for cognition. While epistemic humility has been identified as an important ingredient for wisdom, it has not been specifically related to EI. For the purposes of conducting a thorough investigation, we used both a performance-based and a self-report measure of epistemic humility. Epistemic humility is crucial for being able to reflect upon a situation, and is foundational for many wisdom theories. Grossmann and colleagues (Brienza et al., 2018) include epistemic humility as a dimension of wise reasoning as it affords making compromises as well as taking the perspective of another. These aspects of social problem solving align with the social sensitivity provided by EI. In this context, epistemic humility is just as important for wise reasoning as managing emotions to social problem-solving is for EI, and they are likely related.

We also included a measure of need for cognition (Cacioppo et al., 1984) that assesses interest in working on cognitively effortful problems. High need for cognition may relate to wise reasoning, which may involve meta-cognitive and rational processes (Grossmann et al., 2020), requiring reflection and analysis more than intuitive responding. We examined whether EI would be positively associated with wise reasoning, and whether they are linked through epistemic humility and need for cognition, neither of which are part of EI but are linked to wisdom.

Method

Participants

Adults ($N = 144$; born and living in the USA) were recruited from Prolific Academic. Participation was voluntary (remuneration was \$10/hr), and the study was approved by the IRB. Before consent, participants were subjected to a CAPTCHA ('Completely Automated Public Turing test to tell Computers and Humans Apart') to prevent automated programs (robots) from contaminating our data (Von Ahn et al., 2003). An attention check item ensured quality data ('If you're not skipping through these scenarios without reading, please click the next button without choosing an answer'). Only those passing this check (68.8%) were included in analyses. This pass rate is comparable to and acceptable given research on the use of attention checks (Johnson, 2005; Kam & Meyer, 2015; Kurtz & Parrish, 2001; Oppenheimer et al., 2009).

The final sample included 99 adults, with an average age of 33.5 ($SD = 11.7$, range: 18–72), 43% were female, and most were White (75.8%; 10.1% Black or African American, 7.1% American Indian or Alaska Native, 6.1% Asian, 1.0% Native Hawaiian or Pacific Islander). Most reported English as their first language (98%) and as the language they use most frequently with their family (95%).

Materials

Emotional Intelligence. The Mayor-Salovey-Caruso EI Test V2.0 (MSCEIT) is a 141-item ability-based measure assessing the four branches of EI: (1) Perceiving Emotions ($\alpha = .91$; reliability estimates were obtained from the test manual), (2) Facilitating Thinking ($\alpha = .79$), (3) Understanding Emotions ($\alpha = .80$), and (4) Emotional Management ($\alpha = .83$; Mayer et al., 2002). We obtained general consensus branch scores and overall EI scores ($\alpha = .93$). General consensus scores reflect participant answers compared to a larger normed sample. Past research suggests that the general and expert scoring methods are highly correlated (Mayer et al., 2003). The MSCEIT takes 30 to 45 minutes to complete online.

Wisdom – Situated. To assess state wisdom we used the Situated Wise reasoning Scale (SWIS; $\alpha = 0.92$; Brienza et al., 2018). Participants recalled a specific conflict situation or disagreement between them and a close friend that had occurred during the past few months and had resolved. To increase recall accuracy, questions guided participants to reconstruct the context and experience ('Where were you at the time?'). After recalling the event, participants rated their use of 21 different reasoning strategies. An item is 'Looked for different solutions as the situation evolved.' Items were measured on a 5-point scale (1 = *Not at all*, 5 = *Very much*).

Wisdom – General. We used the abbreviated Three-Dimensional Wisdom Scale (WS; $\alpha = .78$; Ardelt, 2003). The WS-12 is a 12-item self-report measure to assess reflective, cognitive and affective dimensions of wisdom-related knowledge. A reflective item is 'Things often go wrong for me by no fault of my own.' A cognitive item is 'Ignorance is bliss.' An affective item is 'There are some people I know I would never like.' Items were rated on a 5-point agreement scale (1 = *Strongly disagree*, 5 = *Strongly agree*). Prior factor analytic methods and expert judgment assessed the validity of this scale (Thomas et al., 2015).

Epistemic Humility – Performance-Based. The Epistemic Humility Scenario Test (EHST; $\alpha = .69$) is a performance-based measure. It was designed in-lab and includes 18 scenarios that were meant to avoid desirability bias (an issue with the EHS) and reflect problem-solving approaches for different types of problems. An example scenario is: 'Imagine that you've just started a job that seems to have everything you want in a career; you're determined to do the best you can. One of your first projects has been challenging as well as rewarding. One of your partners wants to ask for input from another working group before launching it, while the other partner thinks there's no need. You think very highly of the other group, but there's a good chance they'll find things to criticize in your work.' Grounding these statements in detailed scenarios should reduce social desirability. Participants rated their responses to each scenario using an 8-point bipolar scale, where (unless reverse-scored) responses closer to 1 indicated greater epistemic humility.

Epistemic Humility – Self Report. The Epistemic Humility Scale (EHS) consists of 16 items, and was developed in-lab ($\alpha = .76$). This self-report measure examines awareness of one's limited knowledge and appreciating

one can learn from others. An item is 'I am honest with myself when I assess my own faults and limitations.' Items were rated on an 8-point agreement scale (1 = *Strongly disagree*, 8 = *Strongly agree*).

Need for Cognition. The tendency to engage in and enjoy thinking was assessed using the 18-item the Need for Cognition (NFC) scale ($\alpha = .91$; Cacioppo et al., 1984). An item is 'I prefer complex to simple problems.' Items are rated on a 5-point scale (1 = *Extremely uncharacteristic of me*, 5 = *Extremely characteristic of me*).

Procedure

After consenting, participants completed online surveys in random order and then demographics. They were remunerated and debriefed.

Results

Descriptive statistics are in Table 1.

Table 2 shows the Pearson correlation coefficients between total EI and four branches, wisdom scales (SWIS, WS), and potential mediators (EHST, EHS, NFC). Total EI and SWIS were not correlated, but total EI and WS were positively correlated. The EI managing emotions branch was positively correlated with both the

SWIS and WS. Because of these significant correlations, we focused on the managing emotions branch (ME) for subsequent analyses. The managing emotions branch was positively correlated with both measures of epistemic humility and need for cognition. The epistemic humility measures and need for cognition were positively correlated with both wisdom measures.

To better understand the relationship between the managing emotions branch of EI and wise reasoning, a path analysis in an SEM framework modeled the effects of managing emotions on both SWIS and WS measures, mediated in parallel by epistemic humility and need for cognition. The product of coefficients approach was used to calculate the estimates of the indirect effects (Sobel, 1982). Because the product of normally distributed coefficients can lead to a skew-normal distribution, normal-theory standard errors are potentially biased (Preacher & Hayes, 2004). Simulations suggest that Monte Carlo confidence intervals provide the best balance between power and Type-I error protection for tests of indirect effects (Hayes & Scharkow, 2013). They also note that bootstrapped percentile confidence intervals provide less conservative estimates but are advantageous when homoscedasticity assumptions are not met. We rely on and report both bootstrapped percentile and Monte Carlo confidence intervals for significance testing. Path analyses were performed with the lavaan package (Rosseel, 2012) in R. The path model was saturated and converged normally, providing adequate fit, CFI = 1.00, RMSEA = 0.00, SRMR = 0.00 (Table 6). A total of 10,000 samples were drawn for the non-parametric bootstrapping procedure. For the Monte Carlo procedure, 10,000 samples were drawn from independent univariate normal distributions with means and standard deviations equal to the parameter estimates and standard errors of the model paths, respectively. Confidence intervals were constructed with a 10,000-draw Monte Carlo procedure to test for significance of the indirect effects (Hayes & Scharkow, 2013). The residual variances of the mediators and dependent variables were allowed

Table 1. Study 1: Descriptive statistics.

	M	SD
Age	33.52	11.74
EI	103	12.4
Perceiving	110.85	16.16
Using	102.08	13.55
Understanding	100.19	9.55
Managing	96.29	8.90
SWIS	3.24	0.84
WS	3.46	0.65
EHST	6.18	0.74
EHS	6.18	0.79
NFC	3.40	0.77

Note. EI = total EI; SWIS = situated wise reasoning, WS = 3D wisdom, EHST = epistemic humility scenario test, EHS = epistemic humility scale, NFC = need for cognition.

Table 2. Study 1: Pearson correlations and scale reliabilities.

	1	2	3	4	5	6	7	8	9	10	11
1. Age	–										
2. EI	–.09	–									
3. Perceiving	–.08	.71***	–								
4. Using	–.10	.83***	.54***	–							
5. Under-standing	.02	.64***	.22*	.35***	–						
6. Managing	–.07	.75***	.25*	.52***	.49***	–					
7. SWIS	–.22*	.15	.04	.08	.09	.25*	(.92)				
8. WS	.10	.22*	.10	.16	.04	.34***	.25*	(.78)			
9. EHST	.04	.45***	.34***	.28**	.30**	.44***	.23*	.41***	(.69)		
10. EHS	.13	.24*	.24*	.14	.09	.24*	.33***	.47***	.55***	(.76)	
11. NFC	.01	.17	.00	.13	.09	.29**	.33***	.62***	.30**	.28**	(.91)

Note. EI = total EI, SWIS = situated wise reasoning, WS = 3D wisdom, EHST = epistemic humility scenario test, EHS = epistemic humility scale, NFC = need for cognition; *** $p < .001$, ** $p < .01$, * $p < .05$. Cronbach's α on diagonal.

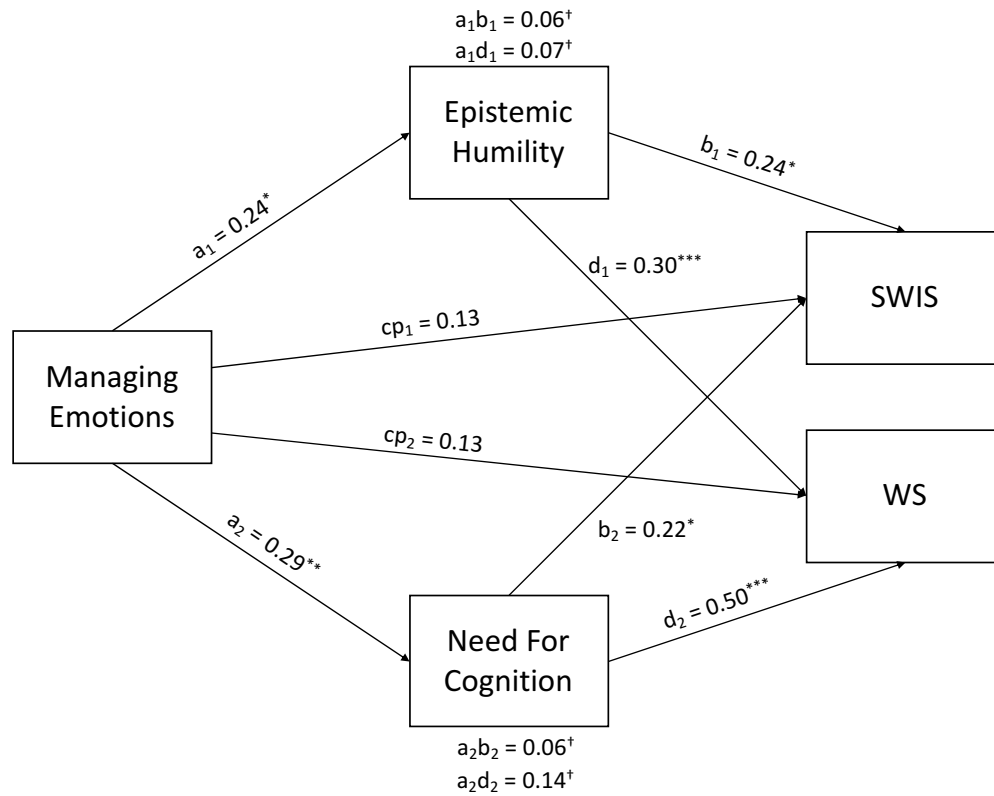


Figure 1. Study 1: Path model with direct, indirect, and total effect estimates.

Table 3. Study 1: Parameter estimates, standard errors, test statistics, and confidence intervals for regression paths in path analysis.

DV	Path Label	IV	<i>b</i>	<i>SE</i>	<i>z</i>	Normal 95% CI	
						LCL	UCL
Direct Effects							
EHS		Intercept	4.162***	0.842	4.941	2.511	5.813
	(a ₁)	ME	0.021*	0.009	2.406	0.004	0.038
NFC		Intercept	0.993	0.804	1.235	−0.583	2.568
	(a ₂)	ME	0.025**	0.008	3.004	0.009	0.041
SWIS		Intercept	−0.349	0.919	−0.380	−2.151	1.453
	(b ₁)	EHS	0.252*	0.101	2.497	0.054	0.450
	(b ₂)	NC	0.242*	0.106	2.292	0.035	0.450
	(c ₁)	ME	0.013	0.009	1.391	−0.005	0.030
WS		Intercept	−0.378	0.567	−0.666	−1.490	0.734
	(d ₁)	EHS	0.244***	0.062	3.922	0.122	0.366
	(d ₂)	NC	0.422***	0.065	6.469	0.294	0.550
	(c ₂)	ME	0.009	0.006	1.661	−0.002	0.020
Indirect and Total Effects							
Path	Path Label		Estimate		Bootstrap 95% CI		Monte Carlo 95% CI
				LCL	UCL	LCL	UCL
ME→EHS→SWIS	(a ₁ x b ₁)		0.006 [†]	0.001	0.014	0.001	0.014
ME→NFC→SWIS	(a ₂ x b ₂)		0.005 [†]	0.000	0.013	0.000	0.013
ME→EHS→WS	(a ₁ x d ₁)		0.011 [†]	0.004	0.019	0.003	0.019
ME→NFC→WS	(a ₂ x d ₂)		0.005 [†]	0.001	0.011	0.001	0.011
Indirect Effect SWIS			0.011 [†]	0.003	0.022	0.003	0.022
Indirect Effect WS			0.016 [†]	0.007	0.026	0.007	0.025
Total Effect SWIS	(c ₁)		0.024 [†]	0.006	0.042	0.005	0.044
Total Effect WS	(c ₂)		0.025 [†]	0.012	0.037	0.011	0.039

Note. DV = dependent variable; IV = independent variable; LCL = lower confidence limit; UCL = upper confidence limit; ME = managing emotions, EHS = epistemic humility scale, NFC = need for cognition, SWIS = situated wise reasoning, WS = 3D wisdom; ****p* < .001, ***p* < .01, **p* < .05, [†]both bootstrap and Monte Carlo 95% confidence intervals do not contain zero.

to covary, providing a fully saturated model. Completely standardized effects are reported in text and in Figure 1. Table 3 presents unstandardized parameter estimates and confidence intervals.

Managing Emotions Predicting SWIS

The EI managing emotions branch (ME) had small positive direct effects on epistemic humility, $b^* = 0.24$, and need for cognition, $b^* = 0.29$. Likewise, the direct effects of epistemic humility, $b^* = 0.24$, and need for cognition, $b^* = 0.22$, on SWIS were small and positive. The direct effect of ME on SWIS was non-significant. The indirect effect of ME on SWIS through epistemic humility was small and positive, $b^* = 0.06$, indicating that a ten-point increase in ME led to a 0.05 increase in SWIS through epistemic humility. The indirect effect of ME on SWIS through need for cognition was small and positive, $b^* = 0.06$, where a ten-point increase in ME led to a 0.06 increase in SWIS. The total indirect effect of managing emotions on SWIS was small and positive, $b^* = 0.12$. Managing emotions did not have a direct effect on SWIS but had a small positive total effect on SWIS, $b^* = 0.25$, such that a ten-point increase in ME led to a 0.24 SWIS increase.

Managing Emotions Predicting WS

Epistemic humility, $b^* = 0.30$, and need for cognition, $b^* = 0.50$, had moderate positive direct effects on wisdom. The direct effect of ME on WS was non-significant. The indirect effect of ME on WS through epistemic humility was small and positive, $b^* = 0.07$, such that a ten-point increase indirectly led to a 0.05 increase in WS. The indirect effect of ME on WS through need for cognition was small and positive, $b^* = 0.14$, where a ten-point increase led to a 0.11 increase in WS. The total indirect effect of ME on WS was small and positive, $b^* = 0.21$. The direct effect of ME on WS was non-significant. Together with the indirect effect, the total effect of ME on WS was small-to-moderate and positive, $b^* = 0.34$, suggesting a ten-point ME increase led to a 0.25 WS increase.

Discussion

In Study 1, we established a significant positive correlation between EI, specifically the ability to manage emotions, and wisdom. Self-report measures of epistemic humility and need for cognition fully mediate this relationship, but not a performance-based measure of epistemic humility. That is, the effect of EI's managing emotions branch is conditional upon these meta-cognitive factors to have a relationship with wise reasoning. Although we believed that EI would be foundational for wisdom, it appears that this is not the case. Rather, the relationship of the managing emotions branch and wisdom is dependent upon

epistemic humility and need for cognition, the latter two are needed for wise decision making. Although the total EI score and the managing emotions branch are highly intercorrelated, our results suggest that overall EI alone does not positively predict wisdom.

Only the self-reports of epistemic humility, not the performance-based scale, predicted wise reasoning. Self-reports of epistemic humility may reflect personal appraisals of how people generally view themselves and may provide an overall perspective of the self, similar to a trait measure. The scenarios in the performance-based measure were constructed to apply to situations in which epistemic humility might be manifest. The different findings suggest that while someone may conceive of themselves as having epistemic humility, they may not manifest it in the constructed scenarios, or there could be higher variance in respondents in recognizing the need for epistemic humility in the scenarios.

To our knowledge, this is the first study to examine the relationship between EI and wise reasoning. These findings suggest that EI, as a whole, is not as similar to wisdom as conceptual descriptions suggest or even as wisdom researchers have conceived it theoretically (e.g., Grossmann et al., 2020). Instead, the multiple mediation analyses indicate that the ability to manage emotions in oneself and others (e.g., being sensitive to the effectiveness of actions in the context of problems involving emotions) is positively associated with wise reasoning, but this association is dependent upon self-reported epistemic humility and need for cognition. Having strong emotional management abilities may change one's understanding of social problems and emotional experiences, which are associated with epistemic humility and exerting cognitive effort for finding solutions to such problems. Our findings suggest that the link of managing emotions to wisdom is contingent upon these meta-cognitive factors.

Study 2

It remains unclear whether interpersonal factors that might be especially relevant for good social relationships, such as empathic concern and perspective taking, may prove to be crucial links from EI to wisdom. As mentioned above, past research has linked EI with interpersonal factors, such as social sensitivity and enhanced emotional perspective taking. In addition, wisdom depends upon reflecting on interpersonal consideration of others needs, concerns, and value commitments. Study 2 expanded our investigation of the relationship between EI and wise reasoning by examining interpersonal mediators as they are related to thriving in social

situations that require problem solving. Given our findings from Study 1, we hypothesized that EI, specifically the managing emotions branch, would positively predict wise reasoning, contingent upon epistemic humility, empathic concern, and perspective taking.

Method

Participants

Undergraduates ($N = 150$) were recruited from psychology courses at a Midwestern University. Remuneration included partial course credit and the opportunity to win one of two \$50 gift cards. The average age was 21.22 ($SD = 5.3$, range: 18–63); most were female (63%).

Materials

Emotional Intelligence. As in Study 1, EI was assessed using the MSCEIT V2.0.

Wisdom – Situated. Wisdom was assessed using the SWIS, as in Study 1.

Wisdom – General. Wisdom was assessed using an adjusted WS (Ardelt, 2003). The original scale has 39-items. Items that assess perspective taking were not used in this study, leaving 32 items ($\alpha = .70$). See Study 1 for sample items.

Epistemic Humility. As in Study 1, the EHS was used.

Empathetic Concern. Empathetic concern for others was assessed with the Interpersonal Reactivity Index subscale (Davis, 1980) ($\alpha = .80$). An item is 'I often have tender, concerned feelings for people less fortunate than me.' Ratings were on a 4-point scale ($A = Does not describe me well$ to $D = Describes me well$).

Perspective Taking. The tendency of participants to adopt the others' perspective was assessed with that Interpersonal Reactivity Index subscale (Davis, 1980;

$\alpha = .73$). An item is 'I sometimes try to understand my friends better by imagining how things look from their perspective.' Ratings were on a 4-point scale, as empathic concern above.

Procedure

Participants completed the surveys online as a part of a larger, in-person study requiring small-group interaction. Afterward participants were debriefed, remunerated, and notified if they were lottery winners after data collection ceased.

Results

Table 4 shows descriptive statistics and intraclass correlations. Table 5 shows that total EI was not correlated with the SWIS, but negatively correlated with WS. However, the EI managing emotions branch (ME) was positively correlated with the SWIS, but negatively correlated with the WS. The managing emotions branch was positively correlated with epistemic humility, empathetic concern, and perspective taking. Epistemic humility and empathetic concern were positively correlated with the SWIS and WS, but perspective taking was correlated only with the SWIS. We note below the differences in our measurement of WS in this study versus

Table 4. Study 2: Descriptive Statistics.

	<i>M</i>	<i>SD</i>	<i>ICC</i> (1)	<i>ICC</i> (2)
Age	21.14	5.22		
EI	95.66	14.68	0.00	
Perceiving	106.61	16.85	−0.11	−0.41
Using	93.15	14.10	−0.12	−0.45
Understanding	92.43	12.75	0.05	0.14
Managing	93.67	11.64	0.05	0.13
SWIS	3.63	0.78	0.04	0.12
WS	2.90	0.38	0.15	0.34
EHS	3.93	0.53	0.03	0.08
EC	3.22	0.59	−0.08	−0.29
PT	3.21	0.56	0.11	0.26

Note. EI = total EI, SWIS = situated wise reasoning, WS = 3D wisdom, EHS = epistemic humility, EC = empathetic concern, PT = perspective taking.

Table 5. Study 2: Pearson Correlations and Scale Reliabilities.

	1	2	3	4	5	6	7	8	9	10	11
1. Age	–										
2. EI	.19*	–									
3. Perceiving	.02	.74***	–								
4. Using	.17*	.75***	.43***	–							
5. Under-standing	.19*	.77***	.42***	.44***	–						
6. Managing	.21**	.80***	.43***	.53***	.55***	–					
7. SWIS	.05	.14	.04	.14	.10	.17*	(.92)				
8. WS	.17*	−.23**	−.23**	−.05	−.24**	−.19*	.24**	(.70)			
9. EHS	.25**	.45***	.19*	.45***	.37***	.43***	.46***	.17*	(.81)		
10. EC	.01	.44***	.26**	.37***	.27***	.46***	.32***	−.20*	.24**	(.80)	
11. PT	.11	.27***	.11	.22**	.24**	.30***	.40***	−.04	.48***	.33***	(.80)

Note. SWIS = situated wise reasoning, WS = 3D wisdom, EHS = epistemic humility scale, EC = empathic concern, PT = perspective taking; *** $p < .001$, ** $p < .01$, * $p < .05$. Cronbach's α on diagonal.

Table 6. Study 2: Parameter estimates, standard errors, test statistics, and confidence intervals for regression paths in path analysis.

						Normal 95% CI	
DV	Path Label	IV	<i>b</i>	<i>SE</i>	<i>z</i>	LCL	UCL
Direct Effects							
EC		Intercept	1.040**	0.351	2.968	0.353	1.728
	(a ₁)	ME	0.023***	0.004	6.280	0.016	0.031
EHS		Intercept	2.114***	0.318	6.648	1.491	2.737
	(a ₂)	ME	0.019***	0.003	5.755	0.013	0.026
PT		Intercept	1.863***	0.356	5.232	1.165	2.561
	(a ₃)	ME	0.014***	0.004	3.826	0.007	0.022
SWIS		Intercept	0.528	0.515	1.024	−0.482	1.538
	(b ₁)	EC	0.307**	0.105	2.907	0.100	0.513
	(b ₂)	EH	0.569***	0.124	4.581	0.325	0.812
	(b ₃)	PT	0.268*	0.114	2.362	0.046	0.491
	(c')	ME	−0.010	0.006	−1.860	−0.022	0.001
Indirect and Total Effects							
Path	Path Label	Estimate	Bootstrap 95% CI		Monte Carlo 95% CI		
			LCL	UCL	LCL	UCL	
ME→EC→SWIS	(a ₁ x b ₁)	0.007 [†]	0.002	0.013	0.002	0.013	
ME→EHS→SWIS	(a ₂ x b ₂)	0.011 [†]	0.006	0.017	0.006	0.018	
ME→PT→SWIS	(a ₃ x b ₃)	0.004 [†]	0.001	0.009	0.000	0.008	
Indirect Effect		0.022 [†]	0.014	0.031	0.013	0.032	
Total Effect	(c)	0.012	−0.000	0.023	−0.003	0.026	

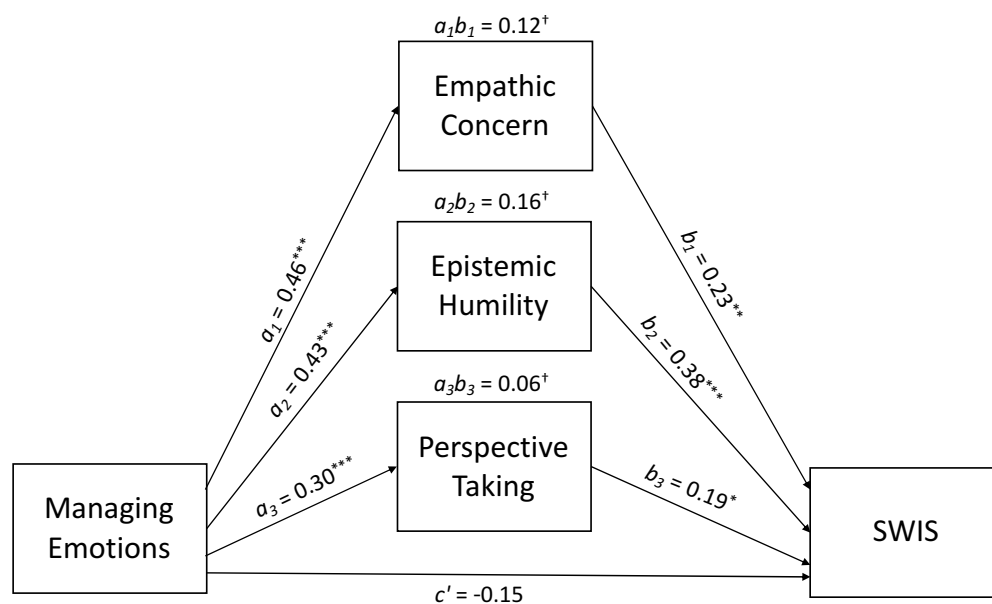
Note. DV = dependent variable; IV = independent variable; LCL = lower confidence limit; UCL = upper confidence limit; ME = managing emotions, EC = empathic concern, EHS = epistemic humility scale, PT = perspective-taking, SWIS = situated wise reasoning; ****p* < .001, ***p* < .01, **p* < .05, [†] both bootstrap and Monte Carlo 95% confidence intervals do not contain zero.

Study 1 below, which may partly account for these negative correlations. Given the significant correlations, subsequent SEM analyses examined the relationship of

EI managing emotions branch and the SWIS, depending upon the parallel mediation of epistemic humility, empathetic concern, and perspective taking.

As in Study 1, a parallel mediation analysis tested the indirect effects of managing emotions on wisdom. A path model within a SEM framework estimated parameters simultaneously. Epistemic humility, empathic concern, and perspective taking were mediators in parallel. Figure 2 presents the model structure and associated standardized parameters, with standardized parameters in the text below as well. Unstandardized parameters are presented in Table 6.

The path model was saturated and converged normally, providing adequate fit, CFI = 1.00, RMSEA = 0.00, SRMR = 0.00 (Table 6). Managing emotions (ME) did not have a significant direct effect on SWIS. ME had a small positive total effect on SWIS, *b** = 0.25, such that a ten-point increase in managing emotions led to a 0.24 increase in SWIS. ME had moderate positive direct effects on epistemic humility, *b** = 0.43, empathetic concern, *b** = 0.46, and perspective taking, *b** = 0.30. Likewise, epistemic humility, *b** = 0.38, empathetic concern, *b** = 0.23, and perspective taking, *b** = 0.19 had small-to-moderate positive direct effects on SWIS. The direct effect of ME on SWIS was not significant. The indirect effect of ME on SWIS through epistemic humility was small and positive, *b** = 0.16, indicating that a ten-point increase in ME led to a 0.11 increase in SWIS through epistemic humility. The indirect effect of ME on SWIS through empathetic concern was small and positive, *b** = 0.11, indicating that a ten-point increase in ME led to a

**Figure 2.** Study 2: Path model with direct, indirect, and total effect estimates.

0.07 increase in SWIS through empathetic concern. The indirect effect of ME on SWIS through perspective taking was small and positive, $b^* = 0.06$, whereby a ten-point increase in ME led to a 0.04 increase in SWIS through perspective taking. The total indirect effect of ME on SWIS was moderate and positive, $b^* = 0.32$, where a ten-point increase in ME led to a 0.22 increase in wisdom.

Due to suppression effects (i.e., inconsistent mediation; see MacKinnon et al., 2000), the total effect ME on SWIS was not significantly different from zero, despite having a sizable, significant, positive indirect effect. The data and model results suggest that the effect of ME on SWIS is fully mediated by epistemic humility, empathic concern, and perspective taking.

Discussion

In Study 2, which utilized a different participant population from Study 1, we again established a significant positive correlation between the EI managing emotions branch and wisdom. This study also found that self-reported epistemic humility is a mediator of this relationship. We extended our investigation to prosocial interpersonal mediators including empathetic concern and perspective taking, which were mediators of the EI managing emotions – wisdom link in parallel with epistemic humility. The link between the EI ability to manage emotions and wise decision-making is dependent upon epistemic humility, empathetic concern, and perspective taking. Neither overall EI nor the managing emotions branch are foundational for wisdom, as we envisioned, rather their relationship is contingent upon epistemic humility, empathic concern, and perspective taking.

Compared to Study 1, which found a positive correlation of EI managing emotions and Ardel's general wisdom scale, Study 2 yielded a negative correlation of EI managing emotions with general wisdom. We conducted another data quality check and double-checked the accuracy of our analyses, finding no issues there. There are differences in the general wisdom measures from Study 1 to 2, which may contribute to the findings. Study 1 used a briefer 12-item WS measure, whereas Study 2 used a 32-item measure (removing the perspective taking items). Alas, the perspective taking items used in the present study were altered such that they could not be integrated with the WS. Having different types of items, and far fewer items in Study 1 could have affected the differences in correlations. On this note, our perspective taking measure (which is different from the WS assessment) is positively correlated with the managing emotions branch. Although perspective taking has positive correlation with both EI managing emotions and wisdom as assessed via the SWIS, it has a non-

significant small, negative correlation with general wisdom. This could be due to sampling error. However, empathetic concern has similar positive correlations with EI managing emotions and the SWIS, but a significant negative correlation with WS. A combination of sampling error and general problems with our different implementation of the WS make a comparison from Study 1 to Study 2 for this measure may have affected the pattern of correlations, and stifle our ability to make inferences about any relationship of EI or managing emotions with meta-cognitive abilities, interpersonal processes, and general wisdom (WS).

Still, Study 2 found that prosocial mediators are a needed link from EI managing emotions to situated wise decision making. The EI managing emotions branch is related to wise reasoning via meta-cognitive and interpersonal mediators which afford thriving in social situations that require consideration of others and their emotional states in social situations.

General Discussion

Given this initial investigation of the relationship between EI and wise reasoning, we believed that EI might be foundational for wisdom. Although EI and wisdom seem conceptually related, this research suggests they are separable constructs. Further, this research suggests that it is particularly the ability to manage emotions aspect of EI, coupled with its reliance on meta-cognitive mediators and interpersonal mediators, which provision a link to wisdom. Rather than aspects of EI being foundational for wise decision-making, meta-cognitive mediators, including self-reported epistemic humility and need for cognition, as well as prosocial interpersonal mediators, including empathetic concern and perspective taking, are crucial for wise reasoning. That the EI ability to manage emotions is positively related to these mediators is not surprising, because this ability informs the understanding and use of emotional experiences in social contexts in which these intervening variables manifest to social problem solving.

As with all research, the present research has limitations. Both studies had small sample sizes for the analyses we employed to test hypotheses. Nevertheless, there were consistent findings across two studies with different populations. In one study of older adults, the ability to manage emotions was linked to epistemic humility and need for cognition. In a second study including a WEIRD convenience sample of college students, the ability to manage emotions was linked to epistemic humility, having concern for others, and taking the perspective of others. Our statistical model suggests that these meta-cognitive and interpersonal processes are plausible mediating constructs involved in the relationship between emotional

intelligence and wise reasoning. This consistency across the two studies suggest greater generalizability than either relatively small sample size might typically imply. However, these studies alone are not sufficient to draw strong conclusions about the nature of these relationships, but they do provide impetus for future research to further investigate the generalizability of our findings in non-WEIRD populations.

The findings of the present research suggest that the EI abilities involved in managing emotions alone are not sufficient for wise reasoning but instead depend on social cognition as processes that are separate from emotional intelligence as typically conceived. Indeed, these psychological processes are often viewed as foundational to wisdom, whereas overall EI was thought to be related to wisdom in some way. Although some theories of wisdom (e.g., Ardel, 2003; Jeste et al., 2019) have argued for a foundational role for managing emotions, emotional management seems to have a less direct role in wisdom than these theories suggest. The findings of the present research appear to be more consistent with the recent description of a common set of theoretic assumptions across wisdom researchers that focuses on perspectival meta-cognition, reflection, and moral grounding (Grossmann et al., 2020). Given the relationships among these meta-cognitive and prosocial interpersonal processes and managing emotions, it is important to consider how best to integrate these processes or abilities in explaining wisdom.

Our findings are consistent with Tiberius' theory of wisdom (Tiberius, 2008) which suggests that the emotional abilities related to managing emotions, in particular, may influence wise decisions through meta-cognitive and interpersonal mediators. Her theory states that emotions are important in determining personal values and providing necessary perspective taking to weigh possible choices against others' value commitments. Similarly the present results are consistent with the common model of wise reasoning as perspectival meta-cognition and morally grounded reflection (Grossmann et al., 2020).

A number of wisdom theorists have suggested that the importance of emotional self-management is to suppress impulsive and affective responses (Ardelt, 2003; Baltes & Smith, 2008; Jeste et al., 2019). By this view, emotions should be down-regulated to remove their influence on the choice-evaluation process. The only role for EI in perspective taking is to avoid being overly swayed by the kinds of evaluations one might attribute to others. Indeed, reducing the influence of emotion could be an important part of wise reasoning. One should not be overly impulsive nor overly swayed by any particular source or part of information. But suppressing emotional responses is antithetical to using emotions as information in making choices. Tiberius has discussed the importance of emotion

as information in prospective assessment of choices. Sternberg's (1998) Balance Theory focuses on balancing self vs. other, near term vs. long-term perspectives, but it is also important to balance emotional vs. other sources of information. Our findings are consistent with theories of wise reasoning that highlight the importance of emotion (Ardelt, 2003, 2004; Tiberius, 2008) but this research illuminates the importance of social cognitive processes in relationship to this role. Theories of wisdom need to consider more carefully the nature of the relationships between managing emotions, epistemic humility, need for cognition, empathy, and perspective taking.

As outlined in Grossmann et al.'s (2020) description of the common theoretic perspectives among wisdom researchers, while emotional intelligence is thought to be relevant, it is neither generally viewed as a precursor nor as necessary or sufficient for wisdom. Although a slight majority viewed EI to be relevant, it was not clear how. This research suggests a need for greater understanding of emotional intelligence as a potential ingredient in wise reasoning as tempered by its relationship with social cognition. In the present studies, only the EI managing emotions branch was related to wise reasoning via these meta-cognitive and interpersonal processes, which suggests the need for further study of EI and other psychological processes that may be related to wise reasoning. The measurements for wise reasoning are not comprehensive enough to cover all forms and situations that call for wisdom and there could be specific situations that call for different aspects of EI.

From here, we share two broad views of emotion management that could be invoked in this relationship, and they differ based on the putative role of emotion in wise reasoning. To the extent that wise reasoning is viewed as a 'cold cognitive' process, more akin to the Baltes and Smith (2008) expert system model, or the Grossmann et al. (2020) consensus model, emotion plays a more adverse role to wise reasoning and should be down-regulated. Here, emotion management is focused on reducing the impact of affective responses to particular aspects of situations and thought processes. One may picture more of a 'homo economicus' rational choice approach wherein the elements of consideration depend on social knowledge, social reasoning, and one's ability to have empathic concern (albeit not empathic resonance) and take the perspectives of others.

The alternative view of emotion management in wise reasoning is more akin to Tiberius (2008) reflective theory or Ardel's (2004) view. In this theoretical framework (and in alignment with renowned emotion theorists), emotions are important informational signals. To suppress them would be to reduce the availability of an important source for understanding of the personal

and social world and the possible impact of choices. Perspective taking, according to Tiberius, is not to simply enumerate the possible responses to a choice by others, but to feel those as well. She is clear that in considering one's own reactions to future events, emotions help us determine the value of alternatives that are available. Will this choice make you happy or angry or regretful or ashamed? To make wise decisions, it is not enough to be able to state those possible outcomes, but Tiberius claims it is important to at least feel them and – most importantly – to incorporate them as useful pieces of information that inform decision making. Similarly, EI theory suggests that to effectively solve emotional and social problems, it is important to understand the emotions we and others experience, how they change over time, and what is needed to manage them in context (Mayer et al., 2016; Salovey et al., 2004). Higher EI provides insights about what other people may be feeling. A wise decision balances both one's own emotional responses to choices with the prospective emotional responses of others (Sternberg, 1998; Tiberius, 2008). Thus, our results suggest that emotions cannot and should not be suppressed because they represent the simulation of the outcomes as they would be experienced by the person making the decision, both for themselves and for others. The idea of emotion management, then, refers to this important process of balancing the emotional resonances from taking the perspectives of those who might be affected by a choice along with the prospective emotional responses that one might have.

Further, social-emotional understanding depends on perspective taking and reflection, which in turn depends on epistemic humility. Epistemic humility is characterized as the awareness of one's limited knowledge and learning from others' experiences and knowledge. This suggests an inherent appreciation for gaining the perspectives of others and implicates EI wherein one would be more attuned to and have empathic resonance to others' experiences. Epistemic humility is critical to recognizing the need to seek information where gaps may exist. As Baltes and Smith (2008) noted, a wise response is not one that provides a single answer to a complex situation, but one that recognizes the uncertainties in such situations, thereby making an active decision to seek more information. However, to demonstrate epistemic humility, one needs to temper one's affective response of confidence to situations that appear familiar but may have unidentified complexities. In this respect, emotion management could work to restore epistemic humility and advance information-gathering, though further investigation is needed.

These putative abilities of EI and wisdom have implications for promoting human flourishing and prosocial interaction, yet little is known about how they are interrelated to influence social problem-solving as well as the psychological and physiological mechanisms that afford effective social decision-making. Providing training that can enhance EI abilities, and particularly emotional management, may foster the capacity to manifest these mediators more fully, leading to greater wisdom. EI training has been shown to increase emotional support amongst students and between students and teachers (Hagelskamp et al., 2013) and social and leadership skills in students (Brackett et al., 2012). Future research should examine whether emotional management training induces greater epistemic humility, empathetic concern, or perspective taking, and wise reasoning. EI affords an appreciation for the emotional experiences of oneself and others. In principle, this should increase epistemic humility, one's willingness to engage in thoughtful activities, and the ability to take others' perspectives with empathy. We suggest that EI is a basic foundation upon which wise decisions manifest. Having a solid foundation of emotional management competencies should enhance insight into one's own and another's psychological processes and provide the capacity to take another's perspective when making decisions in social situations. Additionally, learning to appreciate others' experiences and knowledge, including their affective or emotional experience and knowledge, should enhance epistemic humility and wisdom as evidenced by making wise social decisions. Across two studies, we present a set of correlational analyses suggesting a mediated relationship between emotion management and wise reasoning. To establish causal relationships between the studied variables, future research should investigate whether training EI abilities results in greater wisdom as they pertain to increases in meta-cognitive and interpersonal factors. If we are able to enhance emotional understanding, key psychological processes, and thereby wisdom, we should be able to enhance human flourishing for all.

Acknowledgments

Preparation of this manuscript was supported in part by the John Templeton Foundation and the National Science Foundation. No financial interest or direct benefit has resulted from this research. All data that support the findings of this research are publicly available on Open Science Framework website <https://osf.io/yrktn>

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Disclosure statement

We have no known conflict of interest to disclose.

Data availability statement

The data described in this article are openly available in the Open Science Framework at <https://doi.org/10.17605/OSF.IO/TPA6U>.

Open scholarship



This article has earned the Center for Open Science badge for Open Data. The data are openly accessible at <https://doi.org/10.17605/OSF.IO/TPA6U>.

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