

# Cross-cultural Convergence of Knowledge Attribution in East Asia and the US<sup>1</sup>

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[penultimate draft – for final, authoritative version, see *Review of Philosophy and Psychology*, Forthcoming]

Ever since Weinberg, Nichols, and Stich (2001), hereafter abbreviated as WNS, reported significant cross-cultural differences in epistemic intuitions, the field of epistemology has been haunted by the idea that epistemic intuitions are arbitrary. Epistemologists have relied heavily on the assumption that epistemic intuitions serve as a point of departure. If epistemic intuitions are contingent on people’s cultural background (among other arbitrary factors), an epistemological theory informed by Westerners’ intuitions is analogous to an anthropological report of Western table manners.<sup>2</sup> However, *pace* WNS, we provide new evidence for cross-cultural convergences regarding people’s epistemic intuitions.<sup>3</sup> Specifically, we found that three surprising patterns of knowledge attribution converge across three East Asian cultures, which are also similar to patterns found in the USA. Our findings not only cohere with but also provide—at least moderate—support for the existence of extensive convergences of important epistemic intuitions across cultures.

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<sup>1</sup> For comments on earlier versions of this article, we are grateful to Dan Greco, Yao Lin, Lauro Remmler, John Turri, two anonymous reviewers of the *Review of Philosophy and Psychology*, and participants in our presentation at Buffalo Annual Experimental Philosophy Conference in 2015. We are also grateful to Sungil Han, Sun-Joo Shin, and Jiewuh Song for their generous assistance in recruiting Korean participants. Finally, we owe special thanks to Joshua Knobe for his tremendous support throughout the process as we worked on this project.

<sup>2</sup> Though many epistemologists draw on epistemic intuitions in developing their theories, it is a controversial question whether intuitions should play an evidential role in epistemology or philosophy more generally. For metaphilosophical criticisms of the method of cases, which treats intuitions as (at least *prima facie*) evidence, see, e.g., Williamson 2007, Cappelen 2012, Deutsch 2015, and Machery 2017.

<sup>3</sup> Broadly speaking, epistemic intuitions include intuitions about knowledge attribution, epistemic justification, and so forth. As the focus of this paper (as well in WNS) is on intuitive knowledge attributions, for the sake of simplicity, we often employ the phrase “epistemic intuitions” interchangeably with a more precise phrase “patterns of knowledge attribution.”

Part I recounts the findings and conclusion of WNS, as well as the theoretical and empirical responses their work has generated. What emerges from this review is a discrepancy between empirical findings to date and theoretical responses to WNS. On the theoretical front, philosophers have hotly debated WNS's philosophical claims. On the experimental front, the total body of available evidence strongly suggests that the empirical findings reported by WNS should be disregarded due to failure of replication. We conclude Part I by reviewing two existing studies that provide initial evidence for cross-cultural convergence regarding important epistemic intuitions.

Part II presents a series of studies that we conducted in South Korea, Taiwan, and Mainland China. We purposefully selected three recent and surprising experimental studies about patterns of knowledge attribution conducted on English speakers in the USA and carried out the same studies among Mainland Chinese, Taiwanese, and Korean participants in their native language. Our reasoning was that, if the same patterns emerged in these communities, we would have evidence that people's epistemic intuitions converge more extensively than what the literature currently supports. That is indeed what we found. For all three of our studies, the patterns of knowledge attribution among our Mainland Chinese, Taiwanese and Korean participants were consistent with the patterns found among English speakers.<sup>4</sup>

Part III first discusses the evidence we provide for cross-cultural convergence regarding epistemic intuitions and emphasizes the ways in which our evidence is nuanced and moderate. We then draw on recent empirical studies (including ours) to advocate for a pivot in epistemological discourse. While existing discourses on cross-cultural studies about epistemic intuitions predominantly focus on cross-cultural *differences*, we propose three directions for future inquiries grounded on extensive cross-cultural convergences of people's epistemic intuitions.

## **1. Alleged cross-cultural divergences of epistemic intuitions**

WNS tested several influential cases in epistemology (e.g., TrueTemp cases, Gettier cases, and the case of a cleverly disguised mule) on a diverse group of participants

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<sup>4</sup> See Part 2 for detailed reports of our findings, which complicate but cohere with this simplified summary.

at Rutgers University who differed either in terms of cultural or socioeconomic background. In those tests, they asked the participants to judge whether the protagonist in those cases had knowledge or not. They reported statistically significant differences in knowledge attribution patterns between contrasting demographic groups for a significant portion of those tests.

Though WNS examined cultural and socioeconomic divergences in people's epistemic intuitions, the former received more attention from the philosophical community. The most striking cross-cultural difference reported in WNS was about *Gettier cases*, the types of cases introduced in Gettier (1963). While Westerners gave the standard answer in the philosophical literature, viz., the agent only believes but does not know, East Asians, in contrast, attributed knowledge to the agent. Given the prominence of Gettier cases in epistemology, such a cultural divergence was deeply concerning. Drawing on their empirical findings, WNS launched a novel criticism against the prominent practice in epistemology of philosophers drawing on their intuitions about particular cases to develop theories. The nexus of their sophisticated argument is the following: since intuitions were shown to be contingent on arbitrary factors such as ethnicity, they should not be trusted as evidence bearing on the nature of knowledge.

Unsurprisingly, WNS triggered fierce, divided responses among philosophers. On the theoretical front, skeptics advanced several lines of objections. Some disputed the effectiveness of WNS's research methodology. Kauppinen (2007) argues that intuitions gathered in surveys among laypeople are not the same sort of reflective intuitions that philosophers are able to tap into as a result of their training and reflection. Sosa (2009) argues that WNS's results could plausibly be attributed to East Asians and Westerners having different linguistic interpretations of the same case.

Others cast doubt on those cross-cultural divergences reported in WNS on theoretical grounds. For example, Nagel (2012, 2013) appeals to a universal and arguably innate human capacity for "theory of mind"—roughly the capacity to read other people's mental states—and argues that, because the concept of knowledge and the capacity for knowledge attribution is a basic element of people's theory of mind, we should expect epistemic intuitions to converge among various cultural groups. In addition, Hannon (2015, 2019) posits that concepts evolve to serve the communicative needs of a linguistic community.

He contends that we should therefore expect a concept as fundamental as knowledge to serve some basic, crucial needs shared by all cultures, and thus those respective languages each feature a word largely equivalent to the English word, “knowledge.”

Still, others more radically reject WNS’s argument by denying its first premise, namely that epistemologists have been built theories based on epistemic intuitions. For example, Cappelen argues that WNS “has been engaged in an attack on a strawman,” because “philosophers don’t rely on intuitions” in the first place (Cappelen 2014: 269).

As debates on the theoretical front rage on, evidence for the dismissal of cross-cultural differences alleged in WNS has been quietly accumulating on the experimental front. Three independent replication studies (Nagel 2013, Kim & Yuan 2015; Seyedsayamdost 2015) failed to find the alleged demographic effects.

The debate over WNS’s findings and argument has yielded an impressive 901 citations (as reported by Google Scholar in May 2020). However, not only have the cross-cultural divergences reported in WNS failed to replicate, recent empirical findings have offered initial positive support that critical epistemic intuitions converge across cultures. Machery et al. (2017b) collected data from 24 sites located in 23 countries and across 17 languages. They found that participants worldwide, in responding to cases in their native languages, share the Gettier intuition. Rose et al. (2019) collected data across 19 sites located in 16 countries. They demonstrated that participants worldwide do not take knowledge to be sensitive to practical stakes.<sup>5</sup>

While the above two studies show that cross-cultural convergences of important epistemic intuitions exist, it remains an open question of how extensive those convergences are. The goal of our studies is to further shed light on this question. We purposely selected surprising patterns of knowledge attribution recently discovered among English speakers. If these quirky effects are also found in other cultures, we have reason to believe that people’s epistemic intuitions may converge extensively across cultures.

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<sup>5</sup> Though Rose et al. (2019) found that lay people across cultures do not take knowledge to be sensitive to practical stakes, their study provides evidence for a distinct form of demographic variation: philosophers vs. lay people, as so many philosophers have the opposite intuition on this issue.

## 2. Studies

We selected three effects concerning patterns of knowledge attribution: (1) the perceptual vs. probabilistic evidence effect, namely that *ceteris paribus* people are less willing to ascribe knowledge for true beliefs based on probabilistic evidence than for true beliefs based on perceptual evidence (Friedman and Turri 2015); (2) the Gettierized epistemic side-effect effect (GESEE), namely that *ceteris paribus* people are more willing to attribute knowledge to a protagonist when she engages in harmful activities than when she engages in beneficent activities even in Gettierized scenarios (Buckwalter 2014); and (3) the knowing without believing effect, namely that in certain cases, people are willing to attribute knowledge to a protagonist while denying her the corresponding belief (Myers-Schulz and Schwitzgebel 2013). We first translated the vignettes and questions in the original studies conducted in English into both Korean and Mandarin Chinese. We then carried out the same studies among our Korean, Taiwanese, and Mainland Chinese participants.<sup>6</sup>

In our Korean studies, we used the word “알고” to translate the English word “know”. Though “알고” can be used both as the factive “know” and the non-factive “believe,” we do not think that this ambiguity of “알고” affects our studies. First of all, the factive “know” is the dominant usage of “알고,” as this word is much less frequently used as the non-factive “believe.” Furthermore, despite the ambiguity of “알고,” the design of our studies constitutes a natural way to disambiguate this word. For example, in our probabilistic vs. perceptual study and our knowing without believing study, after the participants read the vignette, we ask them whether the protagonist 알고 or 믿고 (the latter means “merely believes”) the proposition at issue. Given this binary choice, it only makes sense for participants to understand “알고” as “knows” rather than “believes;” otherwise, the two options collapse into one. Finally, the results of our study strongly support our assumption that participants would understand “알고” as “know” rather than “believe.” If participants were to interpret “알고” as “believe,” they cannot hold that a protagonist 믿고

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<sup>6</sup> For those wanting to explore our studies in more detail, all of our stimuli and data can be found on OSF ([https://osf.io/wspvq/?view\\_only=96e1a1e94bac41ec986fd173d19f6f35](https://osf.io/wspvq/?view_only=96e1a1e94bac41ec986fd173d19f6f35)).

(believes) but not 알고 a proposition. However, we observed significant discrepancies in participants' judgments about whether the protagonist 알고 (knows) or 믿고 (believes) the pertinent proposition in cases of true beliefs based on probabilistic evidence and cases of knowing without believing.<sup>7</sup>

## 2.1 The Probabilistic vs. Perceptual Evidence Effect

Philosophers have long discussed questions about the epistemic status of beliefs based on *probabilistic* evidence in contrast with beliefs based on other sorts of evidence (perceptual evidence as a paradigmatic example). Many hold that one's belief that a lottery ticket will be a loser is not an instance of knowledge, though the ticket has an overwhelmingly low probability of winning the lottery.<sup>8</sup> This denial of knowledge seems to signal an extremely high standard of knowledge attribution, according to which one only knows a proposition when one's belief in this proposition is extremely likely to be true (cf. Hawthorne 2004). However, when confronted with beliefs based on *perceptual* evidence (e.g., the striped animal I see in front of me is a zebra), philosophers do not seem to harbor a similarly high epistemic standard. Though a perception-based belief that the striped animal is a zebra may be more likely to be false than a probability-based belief that this is a losing ticket, philosophers are undeterred to count this perception-based belief as knowledge. Knowledge thus apparently requires something more than the high probability to be true, though it is controversial what probability-based beliefs lack to render them falling short of knowledge even if they are extremely likely to be true; or put the opposite way, what special characteristic perception-based beliefs have that qualify them as knowledge even when they have a comparatively low probability of being true.

While philosophers have tried to develop a systematic answer to such questions (Dretske 1981; Lewis 1996; Neta 2011), Friedman and Turri (2015) have confirmed that the lay concept of knowledge embodies this feature, i.e., it tracks something more than high credence and is sensitive to the distinction between probabilistic and perceptual

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<sup>7</sup> We would like to thank a reviewer of the *Review of Philosophy and Psychology* for urging us to address this important feature of “알고” in the Korean language.

<sup>8</sup> For a contrary, minority stand on the issue, see Turri 2011.

evidence. Their participants were found to be more willing to attribute knowledge to beliefs based on perceptual evidence (78% and 73% did so in the Zoo and Farm cases, respectively) than on probabilistic evidence (11% did so in the lotto case). The cases are as follows:

*Lotto Case*

Abigail is out shopping with her son. In a store, they see a man with a super lotto ticket. Abigail's son says, "I bet that ticket's not a loser. It might win the jackpot!" Abigail answers, "It is a losing ticket." And Abigail is exactly right: the ticket is a loser.

Question: Does Abigail know or only believe that the ticket is a loser?

*Zoo and Farm Cases* (Differences between the two stories are bracketed)

Abigail is [visiting the zoo/driving past a farm] with her son. In a [pen/field], they see a black-and-white striped animal. Abigail's son says, "I bet that's not a real zebra. It might be a painted mule!" Abigail answers, "It is a real zebra." And Abigail is exactly right: the animal is a zebra.

Question: Does Abigail know or only believe that the animal is a zebra?

The aim of our first study is to examine whether this observed phenomenon, i.e., perceptual vs. probabilistic evidence effect, holds cross-culturally. We used the authors' original vignettes: Lotto, Zoo, and Farm. After translating them into Korean and Mandarin Chinese, we administered the same study as Friedman and Turri to our Korean and Taiwanese populations.

*Korean Study*

We recruited 241 Korean participants (mean age = 31, standard deviation = 12, 143 female) on the Korean social media platform "Kakaotalk." Our participants agreed to fill in a 2-minute survey on Qualtrics without compensation.<sup>9</sup> Participants were randomly

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<sup>9</sup> The same was true for all of our studies presented in this paper: we recruited participants with the notice that their contribution would facilitate philosophical understanding of the nature of knowledge, and our participants willingly filled in a short survey without financial compensation.

assigned to one of the three cases and answered the following questions (response options are bracketed).<sup>10</sup>

1. The animal/ticket is a \_\_\_\_\_. [zebra/mule]/[loser/winner]
2. Abigail and her son were \_\_\_\_\_. [visiting the zoo/driving past a farm/out shopping]
3. Abigail \_\_\_\_\_ that the animal/ticket is a zebra/loser. [knows/only believes]<sup>11</sup>
4. How confident are you in the answer you just gave? [1(not at all confident) to 10 (completely confident)]
5. What did Abigail and her son see? [A black-and-white striped animal/A man with a super lotto ticket]<sup>12</sup>

Questions 1, 2, and 5 are check questions designed to exclude participants who failed to comprehend the text properly. 31 participants failed at least one of those check questions, and their data were excluded from our analyses.

As shown in Figure 1, we found that the perceptual vs. probabilistic evidence effect emerged in our Korean population. A comparison of the 3 cases showed significant

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<sup>10</sup> Our studies all have two versions, one in Korean and the other in Mandarin Chinese, except the Chinese Third-person GESEE study which does not have a Korean counterpart. For studies that have both the Korean and Chinese versions, the experimental design is the same in both versions. After reporting the experimental design in the Korean version for each of our studies, we will omit the information when we report the corresponding Chinese version.

<sup>11</sup> A reviewer of the *Review of Philosophy and Psychology* doubts whether it is felicitous for Abigail to say “the ticket is a loser” without knowing the actual outcome and suggests that people may interpret “Abigail knows that the ticket is a loser” in terms of “Abigail knows that the chance of the ticket winning is very low.” We acknowledge the possibility that among those who attributed knowledge to Abigail in Lotto, some may have interpreted “the ticket is a loser” as saying “the chance of ticket winning is very low.” As the reviewer pointed out, this possibility cannot be eliminated with the current experimental design that we borrowed from Friedman and Turri’s original study. Nevertheless, most people—both in our study and in Friedman and Turri’s study—did not ascribe knowledge in Lotto, which indicates that they did not interpret “the ticket is a loser” in this deflationary manner; if they had, they would not hesitate to ascribe knowledge. More importantly, assuming that among participants who ascribed knowledge in Lotto, some have done so based on their deflationary interpretation of “the ticket is a loser,” we would expect the probabilistic vs. perceptual evidence effect to be even stronger if the deflationary interpretation is eliminated, because this change is likely to prompt those participants to withdraw their knowledge ascription in Lotto. We would like to thank the reviewer for urging us to address this issue.

<sup>12</sup> Friedman and Turri (2015: 1066) asked three other questions in their original study, which we also asked in our study. Since answers to those questions do not bear on the question of this paper, we did not attend to them.

differences  $\chi^2(2, N = 209) = 31.27, p < .001, V = 0.55$ . In comparing the probabilistic case results (Lotto) to each of the perceptual case results (Zoo and Farm), there was a significant difference found in each comparison: between Lotto and Zoo  $\chi^2(1, N = 139) = 30.97, p < .001, \phi = 0.47$ ; and Lotto and Farm  $\chi^2(1, N = 131) = 15.70, p < .001, \phi = 0.35$ . There was no significant difference between the two perceptual cases (Zoo and Farm):  $\chi^2(1, N = 148) = 3.09, p = .08, \phi = 0.14$ .

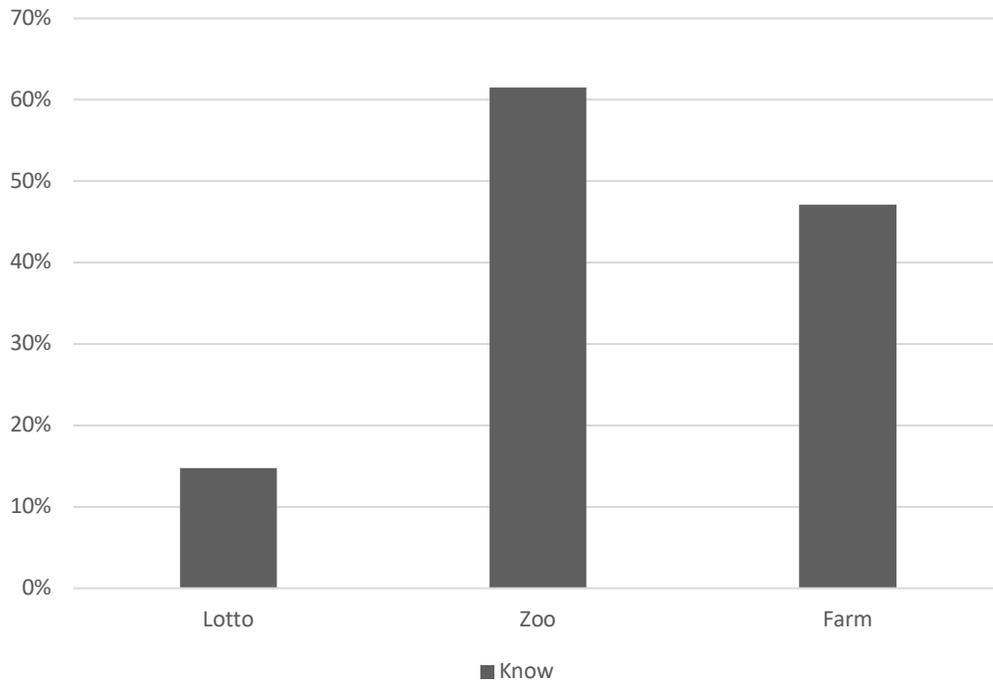


Figure 1: Percentage of Korean participants' knowledge ascriptions in the probabilistic vs. perceptual evidence study

### *Taiwanese Study*

We recruited 84 Taiwanese participants (mean age = 34, standard deviation = 11, 58 female) on the Taiwanese social media platform “Line.” 6 participants failed at least one of those check questions, and their data were excluded from our analyses.

As shown in Figure 2, we found that the perceptual vs. probabilistic evidence effect emerged in our Taiwanese population as well. A comparison of the three cases showed significant differences,  $\chi^2(2, N = 76) = 22.86, p < .001, V = 0.39$ . In comparing the probabilistic case results (Lotto) to each of the perceptual case results (Zoo and Farm), there was a significant difference found in each comparison: between Lotto and Zoo  $\chi^2(1,$

N = 49) = 19.71,  $p < .001$ ,  $\phi = 0.63$ ; and Lotto and Farm  $\chi^2(1, N = 46) = 17.34$ ,  $p < .001$ ,  $\phi = 0.61$ . There was no significant difference between the two perceptual cases (Zoo and Farm),  $\chi^2(1, N = 57) = 0.07$ ,  $p = .08$ ,  $\phi = .04$ . For the mean and standard deviation of both the Korean and the Taiwanese participants' answers to the confidence question, see Table 1.

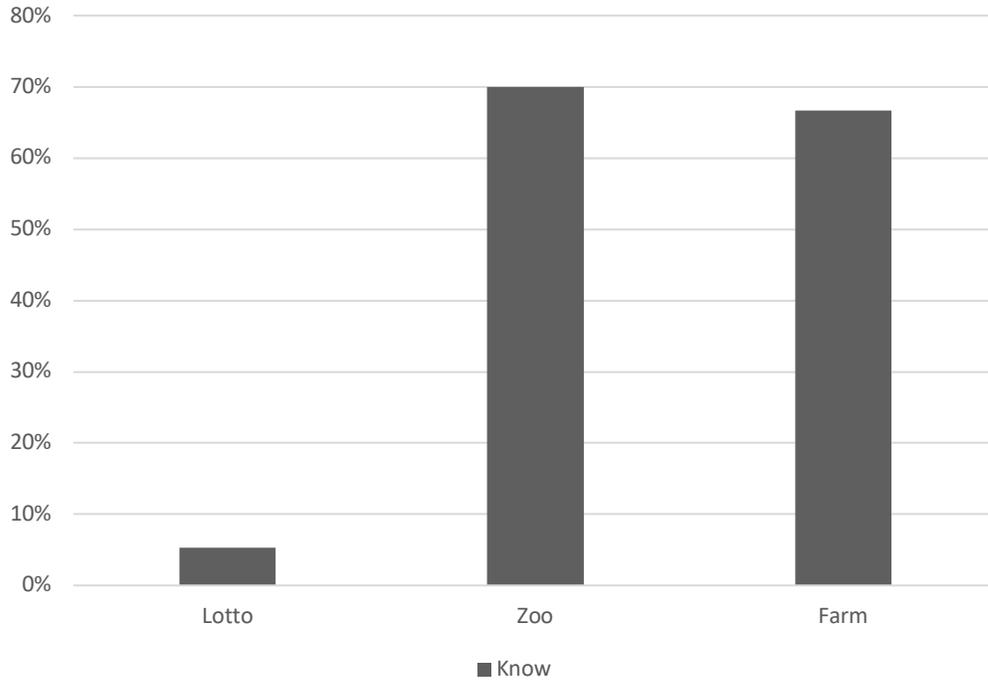


Figure 2: Percentage of Taiwanese participants' knowledge ascriptions in the probabilistic vs. perceptual evidence study

Table 1: Probabilistic vs. Perceptual: Means and standard deviations of confidence ratings by condition

	Korean				Taiwanese			
	Only Believes		Knows		Only Believes		Knows	
	M	SD	M	SD	M	SD	M	SD
Total	5.74	1.36	5.82	1.49	5.86	1.27	6.12	1.34
Lotto	5.83	1.42	4.27	2.05	5.89	1.32	7	N/A*
Zoo	5.70	1.47	5.86	1.43	6.22	0.67	6.14	1.56
Farm	5.65	1.17	6.22	1.06	5.44	1.59	6.06	1.11

\*not available as there was only 1 participant

## *Discussion*

In summary, our studies found that the probabilistic vs. perceptual evidence effect observed in Friedman and Turri's American population also emerged in Korean and Taiwanese populations. Participants from all three populations were more likely to attribute knowledge to beliefs based on perceptual evidence than beliefs based on probabilistic evidence. Meanwhile, we also observe a potentially interesting cross-cultural difference in this study. Across all the three populations, people overwhelmingly attributed knowledge in Zoo. However, while people also overwhelmingly attributed knowledge in Farm in our Taiwanese study and in Friedman and Turri's American study, less than half of our Korean participants did so. Despite that, we would note that the difference between the two perceptual cases (Zoo and Farm) in our Korean study is not statistically significant.

### **2.2 The Gettierized Epistemic Side-Effect Effect (GESEE)**

Knowledge is concerned with evidence, justification, reliability, the soundness of deductive and inductive reasoning, and so forth—in other words, whatever faithfully leads to truth at least in general. Many philosophers think of knowledge exclusively as a hallmark of truth that must be acquired in the right ways. However, recently, an increasing number of philosophers have started to look beyond factors that link knowledge to truth. They observe that besides the tight conceptual link between knowledge and truth, knowledge is also tightly linked to action, skill, norms of communication, and so forth (cf. e.g., Fantl and McGrath 2010; Stanley 2005). This sheds light on an array of factors that have long been ignored in epistemology and also raises empirical questions about whether the lay concept of knowledge is sensitive to those factors (cf. e.g., Schaffer & Knobe 2010; Sripada & Stanley 2012).

Beebe and Buckwalter (2010) introduced yet another layer of complexity when they first reported empirical evidence that our concept of knowledge is responsive to moral valence. They used a scenario adapted from Knobe (2003): The vice-president of a company went to the chairman of the board proposing a new program. The new program would increase profits and also help/harm the environment. The chairman replies that he does not care about helping/harming the environment. After the company started the program, the vice-president's predictions were borne out. Beebe and Buckwalter found that

participants were more likely to assert that the chairman knew how the program would affect the environment in the harm vs. the benefit version of the case. They termed this asymmetry in participants' knowledge attributions the *Epistemic Side-Effect Effect* (ESEE).<sup>13</sup>

Buckwalter (2013) further observed that moral valence would affect ordinary folk knowledge attribution even in Gettierized cases. The following is a pair of cases (with harm/benefit variants – the manipulated words in either variant are in the brackets) tested in Buckwalter's 2013 study:

Sam's job is to pump water into the cistern, which then supplies the water to the farms owned by several families in the community. One day, as Sam operates the pump, he hears a broadcast on the radio. The radio report says that local officials suspect a new chemical from a nearby factory, chemical X, may have found its way into the local reservoir, and that there is a chance it will be very [beneficial/poisonous] to all the local townspeople's crops. Sam thinks to himself, "I don't care about their crops; I just want to earn my pay," and continues pumping the water. Sure enough, the crops started [thriving/dying]. It turned out that the local officials were completely wrong about the chemical in the water. After analyzing the water, they found no trace of chemical X. Scientific reports later confirmed that the crops were all [thriving/dying] because of a fungus that had been secretly growing inside Sam's pump.

After participants read the case, Buckwalter asked them whether they agreed or disagreed with the statement, "Sam knew that by pumping the water, the townspeople's crops would [thrive/die]." Responses were collected on a seven-point scale from 1 (strongly disagree) to 7 (strongly agree). The Gettierized nature of the case would predict that the participants deny knowledge to Sam in both cases. But Buckwalter's results show this expected result did not hold. Participants' Gettier intuitions were overturned by their moral judgments of Sam in the harm condition: participants thought that Sam knew his actions would bring

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<sup>13</sup> ESEE has recently been replicated in Kneer et al. 2020.

about harm ( $M=4.86$ ,  $SD=1.7$ ). In contrast, responses for the benefit case were consistent with traditional Gettier case results: participants claimed that Sam did not know ( $M=3.05$ ,  $SD 1.59$ ). Thus, Buckwalter's results indicate not only that the lay concept of knowledge is sensitive to moral valence but also that the moral factor can sometimes even override the Gettier intuition, which is generally considered a central aspect of our understanding of knowledge. He refers to the robust impact of moral valence on people's knowledge attribution in Gettier cases<sup>14</sup> as the *Gettierized epistemic side-effect effect* (GESEE).

In order to eliminate the worry that knowledge attribution in the harm case may be rooted in the desire to blame the protagonist for wrongdoing, Buckwalter introduced a third-person case, where the purported knower differs from the wrongdoer. Buckwalter found that even in the third-person case, people were still much more likely to attribute knowledge to the knower in the harm condition than in the benefit condition. This finding suggests that moral valence indeed has a robust impact on the lay concept of knowledge.<sup>15</sup>

Our second study examined whether GESEE appears across different cultures. We translated the three vignettes (Pump, Mayor, Third-person Mayor) used in Buckwalter's paper into Korean and Mandarin Chinese and tested them with our Korean and Mainland Chinese participants.<sup>16</sup>

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<sup>14</sup> The essence of GESEE is the robust impact that moral valence has regarding knowledge attribution. Following Buckwalter, we refer to the epistemic side-effect effect obtained in Gettierized cases as GESEE, no matter whether the Gettier intuition is obtained in those cases.

<sup>15</sup> Potentially there are two major approaches to explain this observation: either moral valence directly affects knowledge attribution, or moral valence affects some mediating factor(s) which in turn affect(s) knowledge attribution. For example, Alfano, Beebe and Robinson (2012) argue that differently valenced side-effects engender asymmetric attributions of beliefs, which in turn generates asymmetric attribution of knowledge. Other mediating factors proposed to explain the original side-effect effect on intentionality attribution might, *mutatis mutandis*, also help explain GESEE (cf. Guglielmo & Malle, 2010; Uttich & Lombrozo, 2010; Sripada, 2012, and Scaife & Webber, 2013). Cova, Lantian, and Boudesseul (2016) show that even when controlling for those proposed mediators in mediation analyses, the direct impact of normative considerations remains significant, which suggests that 'moral evaluations still play an irreducible role in shaping our judgments of intentionality' (2016: 12). To sum up, it is still an on-going process investigating the true mechanism behind the side-effect effect, including the epistemic side-effect effect. Since our purpose is to investigate the patterns of knowledge attribution across cultures, we do not intend to take a stance on what explanation of this family of effects is ultimately correct.

<sup>16</sup> Mayor and Third-person Mayor cases can be found in the appendix.

### *Korean Study*

We recruited 753 Korean participants (mean age = 42, standard deviation = 10, 378 female) on the Korean social media platform “IQEQCQ.” Adopting Buckwalter’s experimental design, no check question was asked. Each participant was provided with one variant (i.e., Harm or Benefit) of a vignette. In Pump, after participants read the vignette, we asked them:

(1) Do you agree with the statement: “Sam knew that by pumping the water, the townspeople’s crops would [thrive/die]”? (Yes/No)

(2) How confident are you in your answer above? (1-7 with increasing confidence)<sup>17</sup>

The same two questions, *mutatis mutandis*, were asked in Mayor and Third-person Mayor. As Figure 3 shows, GESEE appeared across all three vignettes with our Korean participants. We analyzed the resulting data using binary logistic regression, entering as predictors valence (Harm vs. Benefit), two dummy codes for vignette, and the interaction of valence and each of the dummy codes. The results showed a main effect of valence,  $B = -.69$ ,  $SE = .11$ ,  $p < .001$ ,  $OR = 0.50$ .

To determine whether valence interacted with vignette, we compared this model to one that did not include the two interaction terms. A comparison of these models indicated that valence interacted significantly with vignette,  $\chi^2(2) = 6.42$ ,  $p = 0.015$ .

To explore this interaction, we looked at each vignette separately. Visual inspection of the data indicated interaction was driven by a bigger contrast in the pump case than the third-person mayor or mayor. However, the effect of valence was significant within each

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<sup>17</sup> Note that while we separated the question of knowledge ascription and the question of confidence level, Buckwalter (2014) only asked the question of knowledge ascription while allowing his participants to answer the question on a seven-point scale from 1 (strongly disagree) to 7 (strongly agree). This difference in our experimental designs does not prevent us from observing whether the GESEE pattern emerge among our participants but may render more detailed comparisons between our results and Buckwalter’s inapplicable.

vignette separately: Pump  $\chi^2(1, N = 260) = 31.37, p < .001, \phi = .35$ ; Mayor  $\chi^2(1, N = 258) = 18.84, p < .001, \phi = .27$ ; Third-Person Mayor  $\chi^2(1, N = 235) = 4.69, p = 0.03, \phi = .14$ .

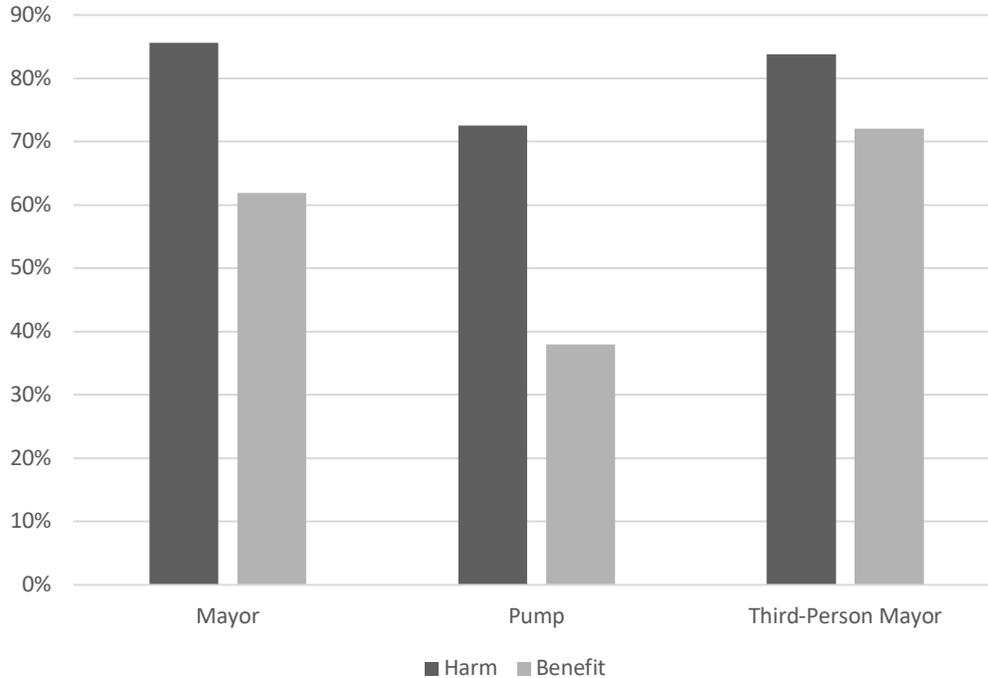


Figure 3: Percentage of Korean participants' knowledge ascriptions in the GESEE study

### *Chinese Study*

We recruited 830 Chinese participants (mean age = 28, standard deviation = 8, 318 female) on the Chinese social media platform “WeChat.”

We analyzed the resulting data using binary logistic regression, entering as predictors valence (Harm vs. Benefit), two dummy codes for vignette, and the interaction of valence and each of the dummy codes. The results showed no main effect of valence,  $B = -.11, SE = .11, p = .31, OR = 0.90$ .

To determine whether valence interacted with vignette, we compared this model to one that did not include the two interaction terms. A comparison of these models indicated that valence interacted significantly with vignette,  $\chi^2(2) = 8.02, p = 0.012$ .

To explore this interaction, we looked at each vignette separately. We found that the effect was significant in Mayor, while not significant in Pump and Third-Person Mayor:

Mayor  $\chi^2(1, N = 254) = 16.66, p < .001, \phi = .26$ ; Pump  $\chi^2(1, N = 299) = 1.12, p = .29, \phi = .06$ ; Third-Person Mayor  $\chi^2(1, N = 277) = 0.14, p = 0.71, \phi = .02$ . See Figure 4. We further summarized the mean and standard deviation of both the Korean and the Chinese participants' answers to the confidence question in Table 2.

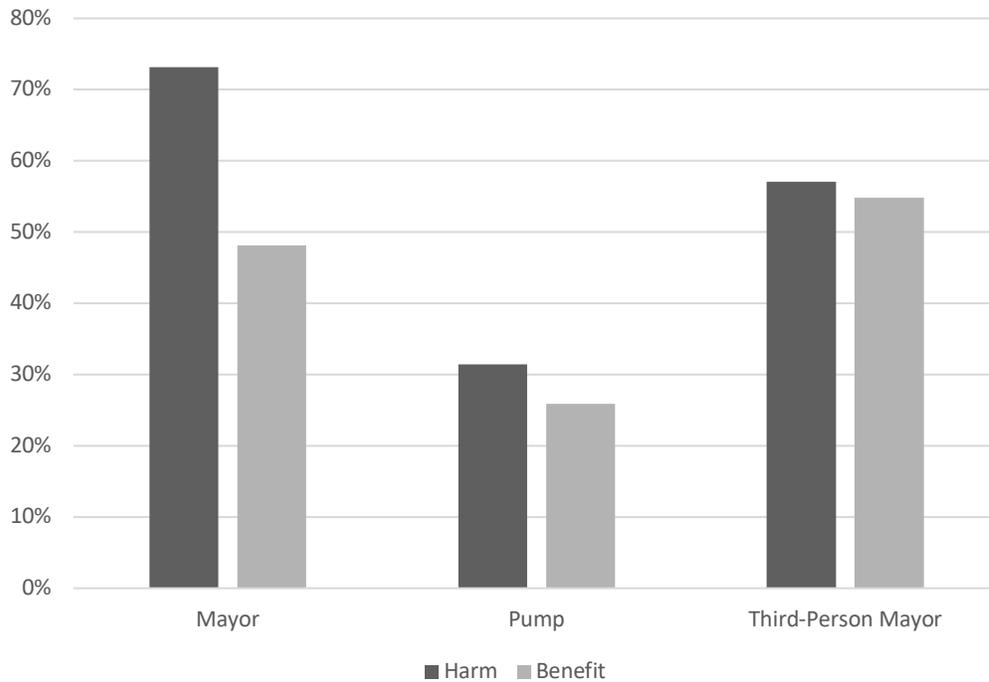


Figure 4: Percentage of Chinese participants' knowledge ascriptions the GESEE study

Table 2: GESEE: Means and standard deviations of confidence ratings by valence and knowledge judgment

		Korean				Chinese			
		Only Believes		Knows		Only Believes		Knows	
	Valence	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Total	Harm	4.86	1.59	5.50	1.50	5.42	1.44	5.12	1.66
	Benefit	5.26	1.72	5.03	1.60	5.74	1.25	4.92	1.46
Mayor	Harm	4.68	1.45	5.78	1.40	5.55	1.44	5.69	1.30

	Benefit	5.21	1.61	5.27	1.65	5.59	1.27	5.63	1.38
Pump	Harm	4.78	1.69	5.26	1.51	5.48	1.40	5.55	1.26
	Benefit	5.54	1.64	5.20	1.46	5.80	1.28	5.03	1.42
3 <sup>rd</sup> Person	Harm	4.78	1.69	5.26	1.51	5.48	1.40	5.55	1.26
Mayor	Benefit	5.54	1.64	5.20	1.46	5.80	1.28	5.03	1.42

*Note.* *M* and *SD* represent mean and standard deviation, respectively.

### *Chinese Third-Person Study*

Unlike in Buckwalter’s English study and our Korean study where GESEE was significant in all three vignettes, GESEE was only significant in Mayor but not in Pump and Third-Person Mayor in our Chinese study. The results of the Chinese study admit of two explanations. (1) Chinese speakers do not have GESEE intuitions, and the GESEE in Mayor—despite its statistical significance—is due to extraordinary luck. (2) Chinese speakers indeed have GESEE intuitions, but their GESEE intuitions vary between cases in a culturally distinct way. In order to test which explanation is correct, and especially whether Chinese speakers have GESEE intuitions in third-person cases, we conducted a second study.

We designed two new third-person cases and tested them alongside the original third-person mayor case on a new sample of Chinese participants (N=434, mean age=28, standard deviation=9, 215 female) recruited on “Wechat”. The cases were designed to have the same structure as Third-person Mayor: the purported knower is a witness to the agent performing the benefit/harm action. Below is an English translation of one of the new “third-person pump” cases; the other new third-person case can be found in the appendix.

Sam’s job is to pump water into the cistern, which then supplies the water to the farms owned by several families in the community. One day, as Sam operates the pump, he hears a broadcast on the radio. The radio report says that a new chemical from a nearby factory, chemical X, has found its way into the local reservoir, and that it will be very [beneficial/poisonous] to all the local townspeople’s crops. Sam continues pumping the water while chatting with his girlfriend, “I don’t care about

their crops; I just want to earn my pay.” Sam’s friend, James, overheard everything, and is appalled by what Sam said. Sure enough, the crops started [thriving/dying]. It turned out that the radio broadcast got it wrong about the chemical in the water. After analyzing the water, scientists found no trace of chemical X at all. And later scientific reports further confirmed that the crops were all [thriving/dying] due to a totally different cause, i.e., a fungus that had been secretly growing inside the pump.

Participants were then asked:

Do you agree or disagree with the statement, “James, Sam’s friend, knew that the townspeople’s crops would [thrive/die]”?

We analyzed the resulting data using binary logistic regression, entering as predictors valence (Harm vs. Benefit), two dummy codes for vignette, and the interaction of valence and each of the dummy codes. The results showed a main effect of valence,  $B = -0.20$ ,  $SE = .09$ ,  $p = .024$ ,  $OR = 0.81$ .

To determine whether valence interacted with vignette, we compared this model to one that did not include the two interaction terms. A comparison of these models indicated that valence interacted significantly with vignette,  $\chi^2(2) = -12.41$ ,  $p < .001$ .

To explore this interaction, we looked at each vignette separately. The effect was significant in Third-Person Pump,  $\chi^2(1, N = 138) = 8.82$ ,  $p = 0.002$ ,  $\phi = .25$ , and Third-Person Air,  $\chi^2(1, N = 147) = 6.72$ ,  $p = 0.009$ ,  $\phi = .21$ , while not significant in Third-Person Mayor,  $\chi^2(1, N = 149) = 3.03$ ,  $p = 0.082$ ,  $\phi = .14$ . In sum, GESEE appeared in all third-person cases except *again* for the third-person mayor case (Figure 5).<sup>18</sup> This follow-up study

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<sup>18</sup> Though the GESEE pattern didn’t emerge both in our first and our second Chinese study of the third-person mayor case, participants’ responses to the case differed quite substantially between the two studies. Specifically, the participants in the first study did not show the Gettier intuition, while those in the second study did. We think that the difference might be attributed to our different ways of framing the questions after participants read the vignette. In the first Chinese study, we gave participants the translation verbatim of Buckwalter’s third-person mayor case and the question followed, where we asked participants: “Do you agree or disagree with the statement, ‘James the office secretary knew that members of the local community would [get/lose] jobs?’” In the second Chinese study, we changed the office secretary’s name James into *Li Ming*, and framed the question differently, where we asked participants: “Do you agree or disagree with the statement, ‘Li Ming, the office secretary knew that members of the local community would [get/lose] jobs, *as he heard the conversation between the mayor and his economic strategists*?’” (see the appendix). We think

speaks decisively in favor of the second explanation mentioned above, namely that like their English and Korean counterparts, Chinese speakers share GESEE intuitions in both first-person cases (like Mayor) and third-person cases (like Third-person Pump and Third-person Mayor), but their GESEE intuitions vary between cases in a culturally distinct way. The mean and standard deviation of the participants' answers to the confidence question are shown in Table 3.

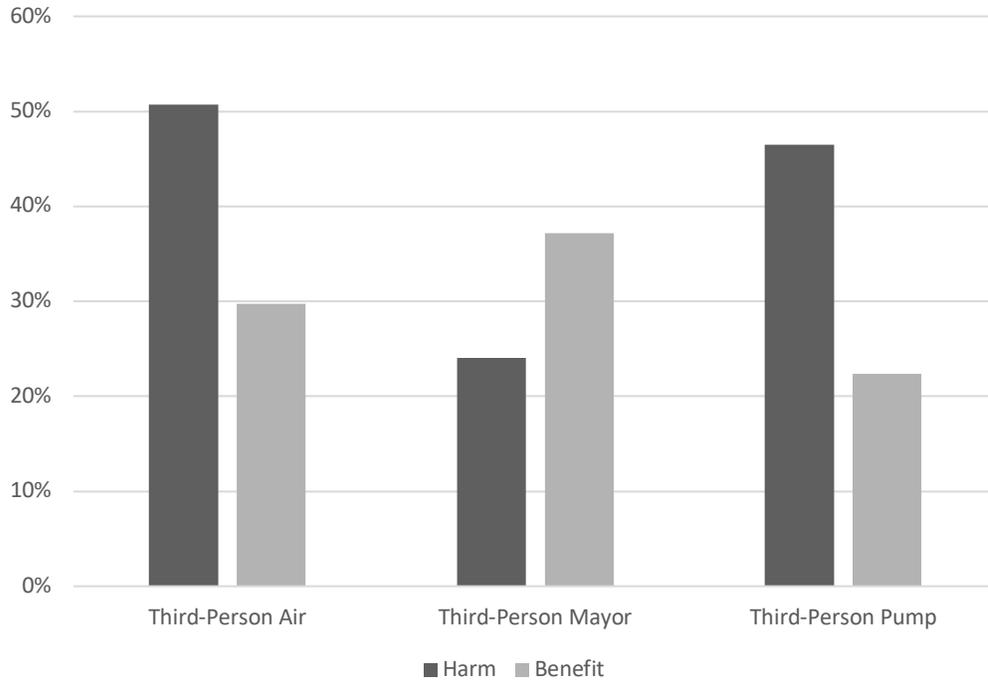


Figure 5: Percentage of Chinese participants' knowledge ascriptions about third-person cases in the GESEE study

Table 3: Third-person GESEE: Means and standard deviations of confidence ratings by valence and knowledge judgment

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Knowledge

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that the temporal element highlighted in the questions of our second Chinese study helped prompt participants' Gettier intuition. At the time when Li Ming heard the conversation between the mayor and the economic strategists, the mayor and the economic strategists were deliberating about a contract which was later secretly swapped by the company and thus was not the one actually causing job increase/decrease. The presence of the temporary element was likely to prime the participants to focus on the causal disconnection between the facts of the world and Li Ming's true belief about it, and thus led them to the denial of knowledge in both the harm and benefit conditions.

		Only Believes		Knows	
	Valence	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Total	Harm	5.42	1.44	5.12	1.66
	Benefit	5.74	1.25	4.92	1.46
3 <sup>rd</sup> Person Air	Harm	5.66	1.41	4.92	1.80
	Benefit	5.60	1.26	5.18	1.14
3 <sup>rd</sup> Person Mayor	Harm	5.20	1.41	5.42	1.35
	Benefit	6.02	1.05	4.76	1.71
3 <sup>rd</sup> Person Pump	Harm	5.54	1.50	5.18	1.67

*Note.* *M* and *SD* represent mean and standard deviation, respectively.

### *Discussion*

Both the Korean and Chinese speakers displayed a striking asymmetry of knowledge attribution between harm and benefit conditions. While GESEE emerged with our Korean participants across all the three vignettes employed in Buckwater’s original studies, it emerged with our Chinese participants in Mayor and the two third-person cases designed by us. This suggests that the absence of GESEE with Chinese speakers in Pump and Third-person Mayor is not due to their lack of GESEE intuitions *per se*, but rather due to case-specific reasons. However, the fact that Chinese speakers’ GESEE intuitions vary in this culturally distinct way may constitute an interesting cross-cultural difference that deserves further exploration.

### **2.3 Knowing without Believing**

Knowledge used to be analyzed in terms of justified true belief.<sup>19</sup> According to such an analysis, knowledge entails belief. Though this once-standard analysis has been discredited largely thanks to Gettier-styled counterexamples, the idea that knowledge entails belief remains widely assumed by epistemologists. Proponents of the idea tend to

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<sup>19</sup> It is contentious whether anyone actually endorsed the analysis of knowledge in terms of justified true beliefs. See Dutant 2015 on this issue.

rely on its intuitive appeal rather than theoretical arguments (Cohen 1966; Armstrong 1969, 1973; Sorenson 1982; Dartnall 1986; Steup 2001/2006). This makes their position vulnerable to counterexamples.

A recent empirical study conducted by Myers-Schulz and Schwitzgebel (2013) demonstrated that there were plausible cases of knowledge without belief. Myers-Schulz and Schwitzgebel presented to ordinary English speakers five potential scenarios of knowledge without belief.<sup>20</sup> In their study, each participant received only one scenario, with only one question at the end, asking either whether the protagonist knows, or believes, the proposition in question. The following are three pairs of cases from their study:

(1) The unconfident examinee (modified from Radford 1966):

Kate spent many hours studying for her history exam. She's now in class taking the exam. Everything's going quite well, until she comes to the final question. It reads, "What year did Queen Elizabeth die?" Kate had reviewed this date many times. She had even recited the date to a friend just a few hours earlier. So, when Kate sees that this is the last question, she feels relieved. She confidently looks down at the blank space, waiting to recollect the answer. But before she can remember it, the teacher interrupts and announces, "Alright, the class session is almost over. You have one more minute to finalize your answers." Kate's demeanor suddenly changes. She glances up at the clock, now flustered and worried. "Oh, no. I can't perform well under this kind of pressure." Her grip tightens around her pencil. She strains to recall the answer, but nothing comes to her. She quickly loses confidence. "I suppose I'll just have to guess the answer," she says to herself. With a sigh of disappointment, she decides to write "1603" into the blank space. This was, in fact, the correct answer.

Did Kate know/believe that Queen Elizabeth died in 1603?

yes no (circle one)

(2) The prejudiced professor (modified from Schwitzgebel 2010):

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<sup>20</sup> Markus Kneer et al. (2020) also replicated the knowing without believing effect.

Juliet is a university professor. Unfortunately, she is also prejudiced against student athletes. In her classes, she calls more often on non-athletes than athletes, and she interprets the comments of the former more charitably. When two soccer players, Brett and Bernard, come to visit her in office hours, she treats them patronizingly, explaining the basic concepts of the course in a very rudimentary manner, failing to recognize the sophistication and intelligence behind their questions. They leave, and shortly after, two students with no involvement in school sports enter. Juliet immediately launches into a high-level discussion, generously assuming the students' command of the elementary material. When Bernard writes the best essay in the course, revealing the intelligence that a neutral observer would have recognized in his previous remarks, Juliet is surprised. All of this is typical of her.

However, Juliet also repudiates all forms of prejudice. She openly affirms that students involved in athletics are just as capable as non-athletes. In fact, she has it on excellent authority that this is the case: Her chair just completed a study showing that the two groups perform equally well in their philosophy classes. Intrigued by this study, Juliet even reviews her own records and finds that, on average, the athletic students had actually performed better than the other students. But, in spite of all this, Juliet's prejudice remains. She continues to treat her athletic students as if they are less intelligent than her other students.

Does Juliet know/believe that her athletic students are as capable as her other students?  
yes no (circle one)

### (3) The freaked-out movie-watcher

Susan loves to watch old horror films. She finally convinces her friend Jamie to watch one with her. It's an old horror film that Susan actually considers to be quite funny, due to its unrealistic plot. The film begins with a group of astronauts who discover alien life on another planet. The aliens look somewhat like bumblebees, but they are dark-green and about two feet in length. The astronauts capture one of these creatures and bring it back to Earth. Once they have it on Earth, it manages to escape and starts laying numerous eggs. The eggs need water to hatch, so the creature lays

the eggs in sink faucets. Thus, whenever people turn on their sink faucet, hundreds of newly hatched alien creatures fly out and begin to attack them.

During one of these attack scenes, Susan notices that Jamie is a bit tense. Susan remarks, “This isn’t bothering you, is it? Come on, you should be laughing at this movie. Look how unrealistic it is.” Jamie responds, “Yes, of course it’s unrealistic. But it’s still scary. I just don’t like these types of movies. They frighten me. Can’t we just watch something else?” “Well, I suppose,” Susan says. Susan then turns off the movie, and they quickly get ready for a second trip to the movie store.

On the way out, Susan stops. “Hold on for a second. I’m thirsty. Let me grab a glass of water.” Susan walks over and begins to turn on the sink faucet. Suddenly, Jamie shouts, “No! Don’t do it!” The words come out of Jamie’s mouth before she even has time to consider what she’s saying. Jamie then looks over and sees that it’s only water coming out of the faucet.

Did Jamie know/believe that only water would come out of the sink faucet?

yes no (circle one)

In the above three of the five total scenarios examined by Myers-Schulz and Schwitzgebel, a significant effect was found where more people attributed knowledge but not the corresponding belief to the protagonist: 87% vs. 37% in the unconfident examinee case, 63% vs. 23% in the prejudiced professor case, and 83% vs. 30% in the freaked-out movie-watcher case. Myers-Schulz and Schwitzgebel’s finding provides strong evidence against the commonly assumed conceptual claim about knowledge that knowledge entails belief.<sup>21</sup> Our third study examined whether similar phenomena of knowledge without belief appear in other cultures. We translated the abovementioned three scenarios (the unconfident examinee, the prejudiced professor, and the freaked-out movie-watcher) used in Myers-Schulz and Schwitzgebel’s study into Korean and Mandarin Chinese and tested them with our Korean and Mainland Chinese participants.

### Korean Study

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<sup>21</sup> For a discussion of Schulz and Schwitzgebel’s finding, see Buckwalter, Rose, and Turri 2015.

We asked several Korean acquaintances to share our survey link with their students and colleagues, who were largely non-philosophers. We recruited 159 participants (mean age = 32, standard deviation = 10, 73 female) online. Adopting Myers-Schulz and Schwitzgebel’s experimental design, we did not ask any check questions or how confident participants were regarding their attribution of knowledge or belief. Each participant was provided with one vignette with either the question about knowledge or that about belief.

The results are displayed in Figure 6. We analyzed the resulting data using binary logistic regression, entering as predictors Knowledge (Know vs. Believe) and 2 dummy codes for vignette. The results showed a main effect of Knowledge (Know vs. Believe),  $B = -.52$ ,  $SE = .15$ ,  $p < .001$ ,  $OR = 1.68$ .

To determine whether valence interacted with vignette, we compared this model to one that did not include the two interaction terms. A comparison of these models indicated no significant interaction,  $\chi^2(2) = .98$ ,  $p = 0.10$ .

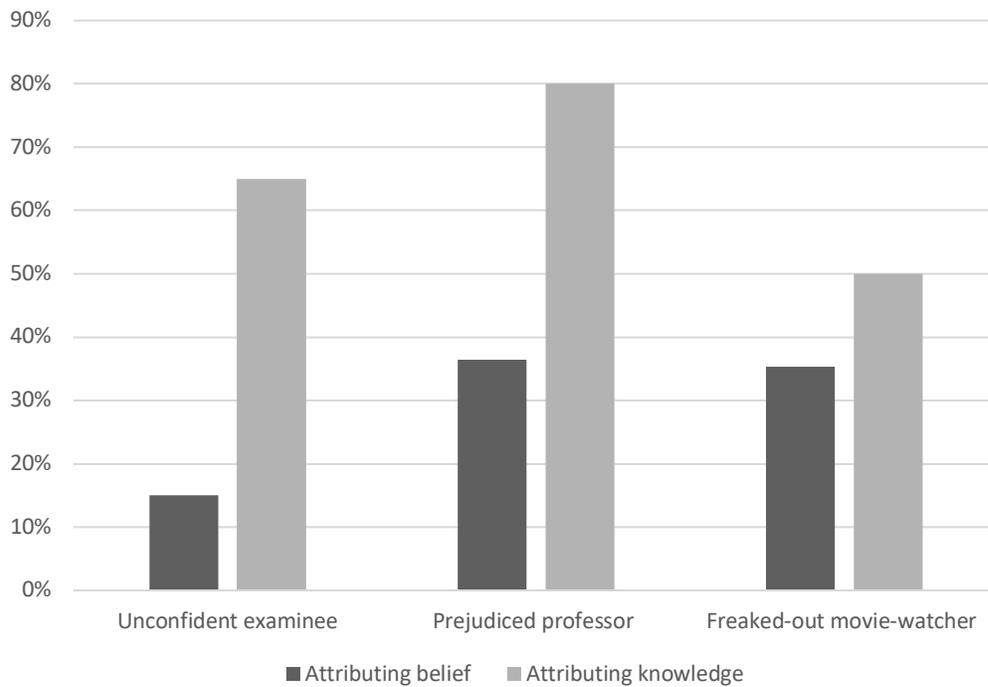


Figure 6: Percentage of Korean participants who attributed knowledge or belief in the knowing without believing study

Chinese study

We recruited 613 Chinese participants (mean age = 27, standard deviation = 9, 308 female) on WeChat.

The results are displayed in Figure 7. We analyzed the resulting data using binary logistic regression, entering as predictors Knowledge (Know vs. Believe) and 2 dummy codes for vignette. The results showed a main effect of Knowledge (Know vs. Believe),  $B = -0.34$ ,  $SE = .06$ ,  $p < .001$ ,  $OR = 0.71$ .

To determine whether valence interacted with vignette, we compared this model to one that did not include the two interaction terms. A comparison of these models indicated no significant interaction,  $\chi^2(2) = 0.35$ ,  $p = 0.43$ .

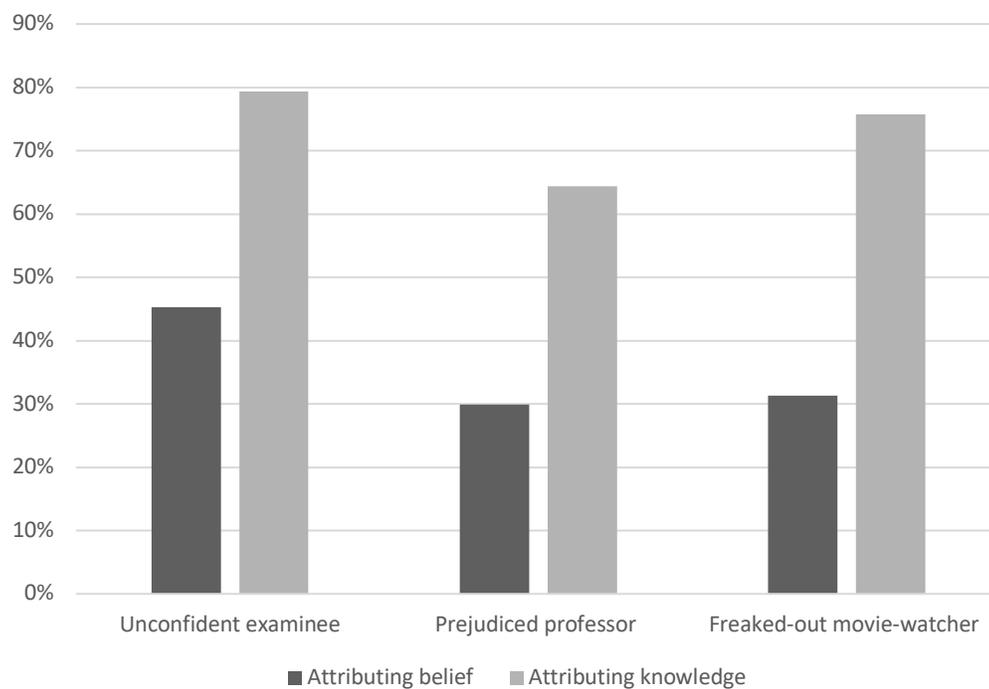


Figure 7: Percentage of Chinese participants who attributed knowledge or belief in the knowing without believing study

## Discussion

Our study found that both Korean and Chinese populations share the intuition that an agent can know a proportion without believing it, mirroring the finding in the original study conducted by Myers-Schulz and Schwitzgebel with English speakers.

## 3. General Discussion

Our studies examined three epistemic effects in three groups outside the US (South Korea, Taiwan and Mainland China). Each effect was tested in two populations, and we found that all three effects emerged in both groups. Our perceptual vs. probabilistic evidence study found that Korean and Taiwanese participants, like Friedman and Turri's (2015) American participants, were more likely to attribute knowledge to beliefs based on perceptual evidence than on those based on probabilistic evidence. Our GESEE study found that Chinese and Korean participants, resembling Buckwalter's (2014) American participants, demonstrated a striking asymmetry of knowledge attribution when an agent was harming rather than benefiting others. Consistent with the results of Myers-Schulz and Schwitzgebel's study, our knowing without believing study found that in some cases, Chinese and Korean participants tend to attribute knowledge without attributing a corresponding belief. In sum, each of those effects we studied showed up in both cultural groups we tested.

### 3.1 Nuanced and Moderate Evidence for Epistemic Convergences

Though all three epistemic effects are obtained in all of the US and Asian cultures we studied, we want to emphasize that the evidence we provide for cross-cultural epistemic convergences is nuanced and moderate. First of all, we conducted our studies among three populations (Korean, Mainland Chinese, and Taiwanese). They share certain traits, for example, geographical proximity and the level of industrialization. Thus, the fact that certain epistemic patterns emerge among those populations may hardly bear on whether similar patterns would be found in, e.g., a small-scale society speaking Quechua or Shiwiar. Nevertheless, we find vital value in surveying the aforementioned three cultures and comparing them to Americans. In contrast with English, Chinese and Korean are both non-Indo-European languages (Mallory & Adams 2006: 84), and Korean is further a language isolate (Song 2005: 15). Thus, it is remarkable that important and quirky epistemic intuitions converge in the US, Korea, China, and Taiwan. However, we would note that our studies provide limited and thus moderate evidence for cross-cultural convergences regarding the three effects we studied, and we invite future work to look at whether those effects also emerge among a wider range of communities worldwide.

Furthermore, as noted earlier, our data also show potentially interesting cross-

cultural divergences. We would highlight two points in this aspect. Based on the results of our perceptual vs. probabilistic evidence study, unlike the majority of Taiwanese and English speakers, the majority of Korean speakers did not attribute knowledge in Farm, one of the perceptual cases. Moreover, according to our GESEE study, unlike Korean and English speakers, Chinese speakers do not demonstrate GESEE intuitions in Pump and Third-person Mayor. Those divergences raise the question of how culture-specific moderators affect the obtainment of an epistemic effect in a given case. Depending on the nature of such moderators, those cultural divergences may or may not be of interest to epistemologists.

Cultural variations in which an effect emerges in some cases but not in others also appear regarding other philosophical intuitions that are otherwise universal across cultures. In some cases, such variations seem to have no implications for philosophy, though they may be interesting for anthropologists or sociologists. For example, Robbins and colleagues (2017) found that participants from eleven different cultures universally demonstrated the Knobe effect. However, results from Samoan and Ni-Vanuatu participants did not show this effect in the case where the agent was a High Chief while showing this effect in a case where the agent was a commoner. The authors explained this distinct cultural phenomenon with the hypothesis that certain cultures show a distinctive deference toward High Chiefs, and thus tend to judge that a High Chief acted intentionally even when producing help as a side-effect.<sup>22</sup> If Robbins and colleagues' explanation is correct, the absence of the Knobe effect among Samoan and Ni-Vanuatu participants in the case featuring a High Chief—despite its being culturally distinctive—does not undermine the cross-cultural universality of the Knobe effect.

Unlike Robbins and colleagues, we are not able to offer definitive explanations for the cultural divergences that emerged in our studies and thus cannot determine whether they have interesting philosophical implications. While we invite future studies to explore them further, we would like to make two observations. First, because we do not know whether those cultural divergences are philosophically significant, the evidence we provide for cross-cultural convergences is nuanced and moderate. However, even if those cultural

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<sup>22</sup> See Knobe 2020, for a helpful discussion for this cultural phenomenon.

divergences turn out to be philosophically significant, it remains striking that epistemic intuitions as quirky as GESEE and knowing without believing converge across different cultures in various cases.

In sum, our contribution is two-fold. First, along with other work reporting cross-cultural convergences on patterns of knowledge attribution (Machery et al. 2017b; Rose et al. 2019), our studies provide a convincing case against the hypothesis that patterns of knowledge attribution are thoroughly contingent on cultural backgrounds. Furthermore, while Machery et al. (2017b) and Rose et al. (2019) documented that people's epistemic intuitions converge in two important respects across cultures, our studies shed new light on the extensiveness of such cross-cultural convergences. Specifically, in addition to the Gettier intuition and the insensitivity to practical stakes, we have provided evidence that the epistemic deficit of probabilistic evidence, the epistemic side-effect effect, and the absence of a conceptual link between knowing and believing are likely to be shared across cultures.

### 3.2 The Scope and Implications of Epistemic Convergences

The epistemological discussion to date about cross-cultural studies has largely focused on supposed cross-cultural differences. Sparked largely by WNS, the dominant question was, "What are the philosophical implications of cross-cultural differences in epistemic intuitions?" By focusing on such questions, interlocutors presuppose the existence of prevalent cross-cultural divergences in epistemic intuitions. Drawing on existing evidence for extensive cross-cultural convergences of epistemic intuitions, we instead propose a systematic inquiry into the phenomena and implications of extensive cross-cultural convergences of epistemic intuitions. This inquiry would open up a cluster of important questions for epistemology, e.g., (1) how far or how deep the cross-cultural convergences of epistemic intuitions run;<sup>23</sup> (2) what best explains such extensive cross-

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<sup>23</sup> While we expect extensive cross-cultural convergences of epistemic intuitions, such convergences are compatible with the existence of various cross-cultural divergences of people's epistemic intuitions. For example, Waterman et al. (2018) found that people across cultures were not equally sensitive to skeptical pressures. Specifically, their studies show that a majority of Chinese and Americans, but only a minority of Indians, withdrew knowledge ascription in zebra-like cases.

cultural convergences; and perhaps most importantly, (3) given the extensive cross-cultural convergences of epistemic intuitions, what role intuitions should play in epistemology.

Concerning the first question, we expect that future studies will discover more cross-cultural convergences of important epistemic intuitions since patterns of knowledge attribution that are as quirky as those tested by us are commonly held in very different cultures. Of course, future studies may also uncover cross-cultural divergences in people's epistemic intuitions. Both kinds of findings will help demarcate more precisely the extent of cross-cultural convergences of epistemic intuitions.

With respect to the second question—what may explain the extensive cultural convergences of people's epistemic intuitions—at least two accounts both seem plausible: pragmatist and nativist explanations.<sup>24</sup> According to the pragmatists (e.g., Craig 1990; Hannon 2019), a community develops a certain concept of knowledge because it is conducive to beneficial ends such as preserving truth within a community, identifying trustworthy informants, the coordination between agents through effective mind-reading, and so forth.<sup>25</sup> Through trial-and-error, useful applications of the concept are selected out, and the meaning of “knowledge” is solidified, stabilized, and constrained by constant social practice. Furthermore, through rewards-and-sanctions for new language learners (e.g., children), the patterns are spread and passed on. If we are to add a further plausible assumption that the ends served by the concept of knowledge largely converge across cultures, we can expect an extensive convergence of the concept of knowledge across cultures, which in turn can explain extensive cross-cultural convergences of people's epistemic intuitions (cf. Hannon 2015, 2019).

By contrast, according to the nativists, the basic concept of knowledge has been planted in human minds as a matter of our genetic make-up, which dictates (at least to a

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<sup>24</sup> Though this discussion focuses on pragmatism and non-pragmatic nativism as potential explanations for extensive epistemic convergences across cultures, we do not assume that the two accounts are the only possible explanations.

<sup>25</sup> Craig (1990) offers a systematic elaboration and defense of the pragmatic understanding of the concept of knowledge. He singles out certifying reliable informants as the purpose of the concept of knowledge. Though we see merits of the pragmatic approach to analyzing the concept of knowledge, we share many critics' skepticism that the concept of knowledge serves any unique purpose (c.f., for example, Rysiew 2012; Beebe 2012).

great extent) when we would attribute/deny knowledge in a given case.<sup>26</sup> Recently, the innateness of the concept of knowledge has found substantive empirical support: both young children and other primates demonstrate a certain basic concept of knowledge—in the sense of immediate, accurate representation of reality—which they employ to make predictions about others’ behavior (cf. Hogrefe et al. 1986; Wellman & Liu 2004; Martcorena et al. 2011).<sup>27</sup> But it can be argued that the innate concept of knowledge shared by babies and non-human primates would be too primitive to adequately explain the universality of our epistemic intuitions in highly sophisticated scenarios. For example, if it turns out that the innate, basic concept of knowledge is limited to immediate, accurate presentations of reality, a nativist account may have a hard time explaining the cross-cultural convergence of GESEE (cf. Part II, Sec. 2), as immediate, accurate representations of reality are not sensitive to the moral valence of an agent’s action. We need more empirical studies, especially in primatology and developmental psychology, to better evaluate these competing accounts.

Finally, many epistemologists take epistemic intuitions as foundational building blocks for normative epistemological theories.<sup>28</sup> The extensive cross-cultural convergences of epistemic intuitions would provide some justification for granting at least a *prima facie* evidential role to epistemic intuitions. Regardless of whether pragmatism or nativism turns out to be the right explanation for the extensive convergences, both accounts see the concept of knowledge as serving crucial functions for human beings. This is obviously the case if pragmatism is true, but it is also likely to be the case even if nativism is true: an innate concept of knowledge that helps human survival is more likely to be selected in the evolutionary process. If we still regard those ends as desirable, it would be advisable to consult our epistemic intuitions for normative purposes. This would be true,

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<sup>26</sup> This particular claim about our concept of knowledge fits into a broader picture of nativism expounded by Scholl and Leslie (1999), which holds that certain concepts in theory of mind (usually including belief, pretense and desire, etc.) are innate.

<sup>27</sup> The pragmatist and nativist explanations are not mutually exclusive. A concept of knowledge may become innate thanks to natural selection because it serves pragmatic purposes that are so crucial for our survival. Nevertheless, the two explanations can come apart. Even if an element of the concept of knowledge is not innate, it can be part of the common core simply due to the same pragmatic purpose that it serves across cultures.

<sup>28</sup> As mentioned, not everyone agrees with this methodology. See footnote 1.

especially in light of J.L. Austin's comment:

Our common stock of words embodies all the distinctions men have found worth drawing, and the connexions they have found worth marking, in the lifetimes of many generations: these surely are likely to be more numerous, more sound, since they have stood up to the long test of the survival of the fittest, and more subtle, at least in all ordinary and reasonably practical matters, than any that you or I are likely to think up in our arm-chairs of an afternoon—the most favoured alternative method (Austin 1956).

Giving a *prima facie* evidential role to our epistemic intuitions doesn't mean that we simply defer to our *de facto* concept of knowledge in our effort to build normative epistemology. Our innate concept of knowledge may be too thin to support elaborate epistemological theories, and what was beneficial for hunter-gathers may not be beneficial for those who live in the modern world. Moreover, a unified concept of knowledge may have been called upon to serve multiple ends, for example, not only to guide our effort to discover "pure" theoretical truths but also to ground our moral criticism of the wrongdoers (as GESEE seems to suggest).<sup>29</sup> There is no guarantee that those tasks are always mutually conducive or even compatible. Epistemologists have to make hard choices about prioritizing certain epistemic intuitions and discarding others when our epistemic intuitions are in tension. By engaging in a search for reflective equilibrium, we will arrive at a refined concept of knowledge along with elaborate norms for epistemic practices built around it.

In sum, the above is merely a sketch of what an epistemological discourse might look like if we take the extensive cross-cultural convergence of epistemic intuitions seriously. We would like to conclude our paper with an invitation for researchers from a wide variety of academic fields (including experimental philosophy, traditional

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<sup>29</sup> Though the third-person GESEE helps to mitigate the worry that the asymmetry of knowledge attribution in harm and benefit conditions is directly driven by the desire to blame the wrong-doer, it doesn't rule out that the asymmetry is caused by the general, communal need to hold the wrongdoers responsible. It might be due to the pressure of consistency: that since we want to attribute knowledge to the wrongdoer in order to hold him responsible, we'd better also attribute knowledge to the observer who bases her belief on similar evidence.

philosophy, psychology, and others) to further explore such convergence—its depth, explanations, and implications. We believe that this convergence-based discourse will constitute an indispensable complementary angle, vis-à-vis the previous discourse that focuses on cross-cultural epistemic divergence.

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## Appendix

The mayor case from Buckwalter 2014

The mayor of a small town is trying to decide whether or not to sign a new contract with a local corporation. The math is all very complex, but all his economic strategists think that there's a relatively good chance that one outcome is that it will [create/cut] jobs for workers in the community. The mayor says, "all I really care about is campaign contributions, not people's jobs, and I am sure to get millions from the corporation if I agree." So, he decides to sign their contract. The corporation, however, didn't take any chances. They secretly switched the contract with a totally different one right before the mayor signed it. By changing all the fine print, in some cases the opposite of what the mayor thought he was signing, the corporation could be sure it got what it wanted. Sure enough, shortly after the mayor signed the contract, a number of members of the community [got/lost] jobs, and the mayor received a huge donation to his reelection campaign.

At the end of the story:

Do you agree or disagree with the statement, "The mayor knew that by signing the contract he would [create/cut jobs]"?

The third-person mayor case from Buckwalter 2014

The mayor of a small town is trying to decide whether or not to sign a new contract with a local corporation. The contract is very complex, but all his economic strategists think that there's a relatively good chance that one outcome is that it will [create/cut] jobs for workers in the community. The mayor says, "all I really care about is campaign contributions, not people's jobs, and I am sure to get millions from the corporation if I agree." James the office secretary overheard everything, and is appalled by what the mayor said. Nonetheless, the mayor decides to sign the contract. The corporation, however, didn't take any chances. They secretly switched the contract with a totally different one right before the mayor signed it. By changing all the fine print, in some cases the opposite of what the mayor thought he was signing, the corporation could be sure it got what it wanted. Sure enough, shortly after the mayor signed the contract, a number of members of the community [got/lost] jobs, and the mayor received a huge donation to his reelection campaign.

After the story:

Do you agree or disagree with the statement, "James the office secretary knew that members of the local community would [get/lose] jobs"?

### The Chinese third-person pump case

Wen Bin's job is to pump water into the cistern, which then supplies the water to the farms owned by several families in the community. One day, as Wen Bin operates the pump, he hears a broadcast on the radio. The radio report says that a new chemical from a nearby factory, chemical X, has found its way into the local reservoir, and that it will be very [beneficial/poisonous] to all the local townspeople's crops. Wen Bin continues pumping the water while chatting with his girlfriend, "I don't care about their crops; I just want to earn my pay." Wen Bin's friend, Li Ming, overheard everything, and is appalled by what Wen Bin said. Sure enough, the crops started [thriving/dying]. It turned out that the radio broadcast got it wrong about the chemical in the water. After analyzing the water, scientists found no trace of chemical X at all. And later scientific reports further confirmed that the crops were all [thriving/dying] due to a totally different cause, i.e., a fungus that had been secretly growing inside the pump.

Do you agree or disagree with the statement, "Li Ming, Wen Bin's friend, knew that the townspeople's crops would [thrive/die], as he heard the broadcast and Wen Bin's words"?

### The Chinese third-person air case

The vice-president of a company went to the chairman of the board and said, "we are thinking of starting a new program. Based on careful and convincing analysis offered by our financial and tech experts, it will help us increase profits, but it will also [improve/harm] air quality of the city." The chairman of the board answered, "I don't care at all about the air quality. I just want to make as much profit as I can. Let's start the new program." Thus, they decided to start the new program. The secretary of the chairman, Li Ming, overheard everything, and is appalled by what the chairman said. Sure enough, shortly after the company started the new program, the air quality was [improved/harmed]. It turned out that the experts in the company got it wrong about the environmental effects of the new program. The new program actually has no effect at all to the air. The fact that the air quality had been [improved/harmed] was due to a totally different cause, i.e., a new waste disposal plant that had started to operate.

Do you agree or disagree with the statement, “Li Ming, the secretary of the chairman, knew that the air quality would be [improved/harmed], as he heard the conversation between the vice-president and the chairman”?

The Chinese third-person mayor case

The mayor of a small town is trying to decide whether or not to sign a new contract with a local corporation. The contract is very complex, but all his economic strategists think that there’s a relatively good chance that one outcome is that it will [create/cut] jobs for workers in the community. The mayor says, “all I really care about is campaign contributions, not people’s jobs, and I am sure to get millions from the corporation if I agree.” *Li Ming*, the office secretary overheard everything, and is appalled by what the mayor said. Nonetheless, the mayor decides to sign the contract. The corporation, however, didn’t take any chances. They secretly switched the contract with a totally different one right before the mayor signed it. By changing all the fine print, in some cases the opposite of what the mayor thought he was signing, the corporation could be sure it got what it wanted. Sure enough, shortly after the mayor signed the contract, a number of members of the community [got/lost] jobs, and the mayor received a huge donation to his reelection campaign.

After the story:

Do you agree or disagree with the statement, “*Li Ming*, the office secretary knew that members of the local community would [get/lose] jobs, as he heard the conversation between the mayor and his economic strategists”?