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# Seeing Meaning Even When None May Exist: Collectivism Increases Belief in Empty Claims

Ying Lin[1], Y. Charles Zhang[2], and Daphna Oyserman[1]
[1] Department of Psychology, University of Southern California
[2] Department of Business Administration, University of California, Riverside

People often find truth and meaning in claims that have no regard for truth or empirical evidence. We propose that one reason is that people value connecting and fitting in with others, motivating them to seek the common ground of communication and generate explanations for how claims might make sense. This increases the likelihood that people experience empty claims as truthful, meaningful, or even profound. Seven studies ($N > 16{,}000$ from the United States and China) support our prediction. People who score higher in collectivism (valuing connection and fitting in) are more likely to find fake news meaningful and believe in pseudoscience (Studies 1 to 3). China–U.S. cross-national comparisons show parallel effects. Relative to people from the United States, Chinese participants are more likely to see meaning in randomly generated vague claims (Study 4). People higher in collectivism are more likely to engage in meaning-making, generating explanations when faced with an empty claim, and having done so, are more likely to find meaning (Study 5). People who momentarily experience themselves as more collectivistic are more likely to see empty claims as meaningful (Study 6). People higher in collectivism are more likely to engage in meaning-making unless there is no common ground to seek (Study 7). We interpret our results as suggesting that conditions that trigger collectivism create fertile territory for the spread of empty claims, including fake news and misinformation.

*Keywords:* collectivism, culture, communication, misinformation, social cognition

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Four in ten Americans (42%) find astrology sort of or very scientific (Smith et al., 2018 data from the General Social Survey). One in three (33%) believe in reincarnation (Pew Research Center, 2018). People act on these beliefs—as reflected in the $2.2 billion annual U.S. market for psychic services and astrology-related goods (IBIS World, 2020). In these and other ways, Americans find meaning in empty claims, claims produced with little or no concern for either truth or empirical evidence (Frankfurt, 2004; Risen, 2016). Claims can be empty (lack truth value) in two ways: They can be unverifiable and irrefutable (e.g., believing in reincarnation), or mis- or disinformative (e.g., believing fake news). People seem as likely to believe mis- or disinformative claims as other kinds of empty claims. For example, almost four in ten Americans believe that Joe Biden did not legitimately win the 2020 U.S. Presidential election (36%, The Economist/YouGov poll, 2021). An equal proportion (39%) acted on risk-increasing COVID-19 misinformation, doing things like gargling cleaning products (Centers for Disease Control, Gharpure, 2020). In this article, we predict that collectivism, the aspect of human culture that sensitizes people to connect with others, may explain why people are vulnerable to such empty claims.

We build our prediction on situated and evolutionary theories of human culture. Both situated and evolutionary theories start with the assumption that human culture structures human interactions (Henrich, 2020; Oyserman et al., 2002; von Hippel et al., in press), is complex, tool-intensive, and cumulative (Mesoudi & Thornton, 2018; Osiurak & Reynaud, 2020). A part of the evolutionary puzzle is that human societies accumulate skills and knowledge that allow for technological development based on trust (Mesoudi & Thornton, 2018; see also, Heinrich, 2020). That is, people do not redevelop or rediscover cultural knowledge at each generation. Instead, they acquire knowledge from others. They assume that transmitted information is meaningful and proceed from there (Mesoudi & Thornton, 2018; Osiurak & Reynaud, 2020). This tendency to accept in-group knowledge allows culture to be cumulative and increasingly complex. However, it also means that culturally acquired ideas may not be optimal and can even be maladaptive (Mesoudi & Thornton, 2018; Oyserman, 2011). Whereas people may accept ideas based on trust, in the current article, we suggest that people do not just passively accept. They often actively make sense and meaning by generating rationales of their own for acquired ideas.

Ying Lin https://orcid.org/0000-0003-4979-940X
Y. Charles Zhang https://orcid.org/0000-0001-7175-1491
Daphna Oyserman https://orcid.org/0000-0002-2727-2167

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Correspondence concerning this article should be addressed to Daphna Oyserman, Department of Psychology, University of Southern California, 3620 McClintock Avenue, Los Angeles, CA 90089, United States. Email: oyserman@usc.edu

## Seeing Meaning in Empty Claims

Humans are meaning-makers. They create a sense of what things are about and what they mean in their own minds and in social interactions (Park & George, 2018). They do so using imperfect cues and culture-based structural formulations (Baumeister & Landau, 2018). Meaning-making is culture-based in the sense that arbitrary symbols, like colors, are meaning-signifiers only because of culture thus, red "means" stop, prosperity and good luck, or is the color of love depending on culture (Oyserman, 2011). The idea that people actively construct meaning rather than passively receive it and do so using culture-based tools is central to situated accounts of human reasoning (Oyserman, 2015). Within a cultural context, people know what things are likely to mean and this allows them to make predictions without investing higher-level reasoning (Oyserman et al., 2014). This constructive process can lead people astray. After constructing meaning, people may come to believe things are true when they are not because they have filled in the blanks for a claim that was itself unverifiable and irrefutable, or mis- or dis-informative. The literature provides two useful accounts of how people might be led astray (an underthinking account and a motivated reasoning account). However, as we detail next, neither account addresses the vulnerability built into the collectivistic aspect of human culture.

### *Underthinking*

Underthinking is the often-nonconscious reliance on quick, intuitive thinking uncorrected by systematic reasoning (Kahneman & Frederick, 2005). According to the underthinking account, deliberation reduces, and lack of deliberation promotes, belief in empty claims (Pennycook et al., 2015; Risen, 2016). Supporting an underthinking account of seeing meaning in empty claims, people who are low in cognitive ability have a higher tendency to believe empty claims (e.g., superstition, fake news, Murphy et al., 2019). The same is true for people who tend to think intuitively rather than analytically (Pennycook et al., 2015). People are also more likely to believe empty claims when they are in situations that trigger intuitive reasoning, such as when they have limited time (Bago et al., 2020) or are in positive moods (Greifeneder et al., 2020).

### *Motivated Reasoning*

Motivated reasoning is the often-nonconscious reliance on reasoning approaches that support identities and preexisting beliefs (Kunda, 1990). In the context of empty claims, a motivated reasoning account implies that people are prone to see meaning if the claims feel compatible with their identity or existing beliefs (Kahan, 2012). Supporting a motivated reasoning account of seeing meaning in empty claims, people are more receptive to bogus personality feedback that implies that they have positive rather than negative traits (Johnson et al., 1985). They are more receptive to fake news that supports rather than opposes their political attitudes (Faragó et al., 2019; Murphy et al., 2019).

### *Gaps*

Although valuable, neither of these current accounts fully explains the phenomena. People are not fully protected from misinformation when they use strategies that engage slow and deliberate reasoning (Kahan, 2012; Majima, 2015). They are not fully protected when they are motivated to be accurate (Pennycook et al., 2020) or no longer need to self-affirm (Munro & Stansbury, 2009).

## Collectivism: A Focus on the Common Ground

Our cultural account can help fill the gaps in current explanations by highlighting an additional route by which people may come to accept empty claims as meaningful and true. Culture entails societal-level processes with implications for individual-level and society-level outcomes (Oyserman & Uskul, 2008). Indeed, culture-as-situated-cognition (CSC) theory proposes that culture affects multiple levels (universal, societal, situational, individual; Oyserman, 2015, 2017). At the highest level, culture is a human universal. Societies create culture as a 'good enough' solution to universal needs. One such need is survival. Humans cannot survive alone; they need an entity (in-group) to sustain them (Baumeister & Leary, 1995; von Hippel et al., in press). This universal need implies that there must be some universal mechanism triggering people to band together to cooperate and share with others. Cultural psychologists label this mechanism collectivism.[1]

At the societal level, culture is a specific meaning-making framework, a mindset that influences what is attended to, which goal or mental procedure is salient. Collectivistic mindsets focus people's attention on goals and content relevant to fitting in and belonging, the mental procedures relevant to connecting, and actions that facilitate attending to others (Oyserman, 2017). At the situational level, which aspect of culture-based knowledge is on the mind and accessible for meaning-making depends on what seems relevant and apt at the moment, what has recently been brought to mind, and what is chronically most relevant (Oyserman, 2016). Situations that trigger a collectivistic mindset can be proximal and immediate or societal and historical. What matters is that they require interdependence (e.g., ecologies with high pathogen risk, Fincher et al., 2008) or ethnocentrism (e.g., hostile contexts requiring group defense; von Hippel et al., in press). In these societies and situations, insiders are trusted more than outsiders, who are viewed with suspicion (Romano et al., 2017; Yamagishi, 2017). Comparing behaviors across societies reveals differences in chronic propensity to focus on connecting, supporting the notion that people in some societies encounter more situations that call for a collectivistic mindset than people in other societies (e.g., China vs. the United States, Nisbett, 2004; Oyserman et al., 2002).

[1] We are indebted to an anonymous reviewer who asked if this is a common definition of collectivism. As we note, our culture-as-situated cognition theory-based approach highlights the multiple levels at which culture can be understood. What we just described is the level of universal human culture. Cultural psychologists often focus on a limited set of these levels. For example, here is the full definition of collectivism from the online APA dictionary: "1. the tendency to view oneself as a member of a larger (family or social) group, rather than as an isolated, independent being. 2. a social or cultural tradition, ideology, or personal outlook that emphasizes the unity of the group or community rather than each person's individuality. Most Asian, African, and South American societies tend to put more value on collectivism than do Western societies, insofar as they stress cooperation, communalism, constructive interdependence, and conformity to cultural roles and mores." As can be seen, this definition focuses on individual and societal aspects of culture but not the universal or situated aspects.

Experimental manipulations of the accessibility of a collectivistic mindset across societies document that situational cues can easily trigger collectivism (Oyserman & Lee, 2008).

One way to facilitate a goal of fitting in and belonging is to use an indirect communication style that reduces the chances of directly creating or confronting disagreements by relying on contextual cues and inferences to carry meaning (Gudykunst et al., 1996; Hall, 1976). Communication is more likely to rely on context and receiver. Messages that are context- and interpretation-driven are intentionally less directive and more ambiguous, putting the onus on the receiver to read between the lines and fill in the blanks (Singelis & Brown, 1995). When communication is indirect, interpretation in context generates meaning. Meaning does not exist separate from context-based interpretation. Receivers can only figure out a communicator's intended meaning if they are attuned to the communicator's perspective (Haberstroh et al., 2002). Communication is more likely to rely on context and receiver interpretations than on what the communicator says in situations (Haberstroh et al., 2002) and societies that prioritize interdependence and relationships (Hall, 1976). The implication is that collectivism is associated with increased sensitivity to what others are trying to say and a focus on making sense when the message is ambiguous (Gudykunst et al., 1996).

Indeed, experimental evidence shows that when a collectivistic mindset is triggered, people are more sensitive to other people's perspectives (Haberstroh et al., 2002). They perform better in judgment tasks that require perspective-taking (Wolgast & Oyserman, 2019) and they are more likely to see and less willing to sever connections and relationships (Mourey et al., 2013). Similarly, between-country comparisons suggest that, on average, people from collectivistic societies attend more to indirect cues, such as vocal tone (Ishii et al., 2003) and communicator intent (Haberstroh et al., 2002). They decipher ambiguous messages (Sanchez-Burks et al., 2003) and other people's mental states (Wu & Keysar, 2007) better. Together, these results imply that collectivism increases peoples' sensitivity to the communicative intent of others. In the current article, we document that this sensitivity can be a double-edged sword. If the claims communicators present are nonprobative, recipients may still construct meaning.

## The Current Studies

We propose that collectivism increases people's sense that they are responsible for inferring what a communicator is trying to say. To do so, people process claims as if they were asking implicitly, "*How* might this claim make sense?" This focus on making sense motivates people to interpret, fill in the blanks, and construct meaning for empty claims. People are more likely to experience claims as truthful, meaningful, even profound once they have filled in the blanks that allow them to construct meaning.

We derived three hypotheses (H1, H2, H3) from our proposal, which we tested across seven studies. H1: People who are higher in collectivism are more likely to believe empty claims (operationalized as pseudoscience in Studies 1, 2; fake news in Studies 3a–3c, 5b; and randomly generated statements in Studies 4, 5a, 6). As corollaries of H1, we expect that because belief is based on self-generated reasons, it has downstream consequences, increasing people's false belief that they saw newly generated fake news before (Study 3a) and their willingness to share fake news (Study 3b). In H2 and H3 we predict the process by which this occurs: people who are higher in collectivism see meaning in empty claims because they generate meaning (construct explanations of how the claims might be meaningful or truthful) in seeking common ground with the communicator. Specifically, H2: Meaning construction should mediate the effect of collectivism on seeing meaning (Study 5), and H3: The absence of a human communicator should moderate the collectivism-seeing meaning relationship (Study 7).

Any test is a test of an operationalization, not a direct assessment of the theoretical construct itself. We maximized our chance that our results are not solely a function of a particular operationalization by using multiple common ways to operationalize each construct (as detailed in Table 1).

**Table 1**
*Overview of Study Methods and Operationalizations of Collectivism and Empty Claims*

| Study | Method and sample | Operationalization of collectivism | Operationalization of empty claims |
|---|---|---|---|
| 1 | A correlational study, U.S. national sample (GSS) | Collectivistic child-rearing values (2-item scale)[a] | Astrology |
| 2 | A correlational study, China national sample (COSS) | Collectivistic child-rearing and group values (4-item scale)[a] | Superstition<br>Pseudoscientific claims |
| 3a–3c | Correlational studies, online samples in U.S. and China | Collectivism 6-item scale[a] | COVID-19 fake news; Randomly generated pseudoscientific news |
| 4 | A between-country comparison (U.S., China, college students) | Country and collectivism scale[a] | Randomly generated sentences (metaphors, sentences formed from vague word-strings[b]);<br>Astrology |
| 5 | A correlational study, U.S. online samples | Collectivism scale[a] | A randomly generated metaphor from Study 4 |
| 6a and 6b | Experimental studies, U.S. online samples | Manipulation of momentary experience of oneself being collectivistic | Randomly generated sentences[b]; Randomly generated pseudoscientific news |
| 7 | An experimental study, online sample in China | Collectivism scale[a] | Study 4 randomly generated metaphors |

*Note*. GSS = General Social Survey; COSS = Chinese Online Social Survey.
[a] We used an adaptation of Oyserman's (1993) collectivism scale, as detailed in our online materials, we used the same adaptation for studies 3, 5, and 6 and a different adaptation for study 4. [b] We used Pennycook et al.'s (2015) bullshit-receptivity scale with nonprobative sentences randomly generated from ambiguous word-strings.

Any result can be attributed to multiple causes and no set of studies can rule out all alternatives. In the current studies, we addressed four alternative accounts for why collectivism may lead to belief in empty claims (credulity, reasoning style, bias toward in-group trust, affective states).

The credulity account rests on the association between collectivism and agreeableness (Burton et al., 2021) and between yea-saying in survey responses and collectivism (e.g., Smith et al., 2016). We addressed these possibilities in Study 4 by assessing measures of each and asking if collectivism matters once these constructs are taken into account.

The reasoning style account rests on the holistic reasoning style associated with collectivism (e.g., Kühnen & Oyserman, 2002; Varnum et al., 2010)[2] and underthinking associated with belief in empty claims. We addressed the former in Study 4 and Pilot Study 1 by measuring holistic reasoning (Chiu, 1972) and the latter in our cross-cultural pilot studies (online supplemental materials) by measuring accuracy on the cognitive reflection test (Frederick, 2005; Toplak et al., 2014) and need for cognition score (Norris et al., 1998). We did so even though we did not find any research indicating a potential link between collectivism and lack of systematic, deliberative thinking.

The trust account rests on the finding that collectivism is associated with less general trust (e.g., Romano et al., 2017). Hence, if the mechanism is trust rather than generating meaning, collectivism should not be associated with seeing meaning where none may exist. Quite the reverse, if collectivism is associated with low trust, a trust account might even predict a negative association between collectivism and belief in empty claims. To address this alternative, in Study 1, we showed that general trust is negatively associated with collectivism but is also negatively related to belief in pseudoscientific claims. Collectivists trust less, ruling out general trust is the mediator of the positive relationship between collectivism and belief in empty claims.

The affective state account rests not so much on collectivism as on prior research on receptivity to fake news. These studies suggest that people might believe fake news more if they experience a lack of control, negative emotions, low optimism, or feel isolated (Anthony & Moulding, 2019; Whitson et al., 2015; Whitson & Galinsky, 2008). We explored these alternatives in Study 3.

We determined the sample size based on available empirical evidence on plausible effect size before we collected data collection for each study. We report how we determined sample sizes (decision rules and a priori power analyses), data exclusion criteria, manipulations and measures, and the achieved power of main findings in each study. We used the Open Science Framework to provide preregistrations, study materials, data sets, and codes (https://osf.io/jc9v6).

## Study 1: Collectivism and Belief in Astrology

In Study 1, we tested H1 using available indicators of collectivism and belief in empty claims (operationalized as believing that astrology is scientific) in a nationally representative sample of Americans. Specifically, we predicted that people who endorse greater collectivistic values are more receptive to the idea that astrology is scientific.

### Method

#### *Participants*

Participants were part of the General Social Survey (GSS) between 2006 and 2018 when the GSS asked relevant questions (belief in astrology, collectivism). The GSS uses full-probability sampling—each household in the United States was equally likely to be selected. The dataset included a nationally representative sample of American English-speaking adults ($N$ = 5,114, 44% female, 75.0% White, 14.9% African American, 4.3% Latino/Hispanic, 3.0% Asian, 2.3% other ethnicities, .5% no ethnicity information).

#### *Measures*

**Independent Variable: Collectivistic Values.** Respondents ranked the relative importance from 1 (*least important*) to 5 (*most important*) of five things for a child to learn to prepare him or her for life: "to obey," "to think for himself or herself," "to be well-liked or popular," "to help others when they need help," and "to work hard." We followed Hamamura (2012) and operationalized collectivistic values as the mean of two negatively correlated items ($r_s$ = .48, $p < .001$): the item related to collectivist values ("to obey") and the item related to individualist values ("to think for himself or herself" reverse coded; Spearman-Brown coefficient = .66).

**Dependent Variable: Belief in Astrology.** Respondents answered the question: "Would you say that astrology is very scientific, sort of scientific, or not at all scientific?"

**Control Variables.** To rule out alternative explanations we included general trust (suggested in the review process), gender, race, social class, and religiosity-spirituality as control variables. General trust was assessed with a single-item measure "Generally speaking, would you say that most people can be trusted or that you can't be too careful in dealing with people?"

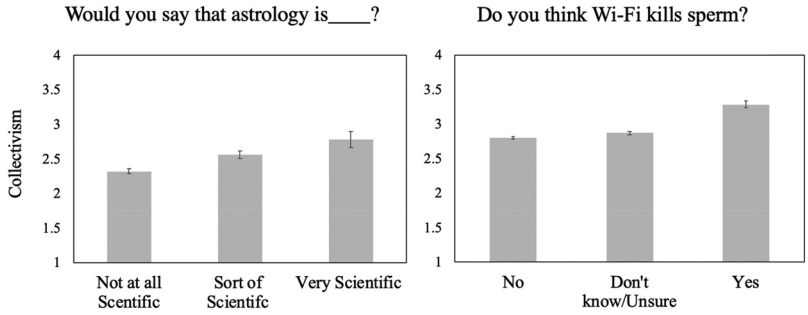
### Results and Discussion

We regressed belief in the scientific merit of astrology on collectivistic values using ordinal regression. The more people endorsed collectivistic values, the more they believed in the scientific merit of astrology (Figure 1; $OR$ = 1.27, 95% CI [1.21, 1.33], $\chi^2(1) = 86.60$, Cox-and-Snell $R^2$ = .02, $p < .001$). Adding controls did not change this relationship (controlling for general trust, gender, race, social class, and religiosity-spirituality, $OR$ = 1.11, 95% CI [1.04, 1.17], $p$ = .001; Table S1 in the online supplemental materials). General trust was negatively correlated with collectivism ($r = -.20$, $p < .001$) and predicted lower belief in the scientific merit of astrology ($OR$ = .69, $p < .001$; see the online supplemental materials for more details). We present our results graphically on the left-hand panel of Figure 1.

[2] The flip side of holistic reasoning is analytic reasoning. Although the term analytic appears in both cultural psychology and dual-process perspective literature, it does not mean the same thing. For cultural psychologists, analytic entails processing strategies with a focus on contrasting and pulling-apart (Oyserman & Lee, 2008) or use of different kinds of rules (Chiu, 1972), whereas in the dual-process literature it entails deliberate, rule-based reasoning rather than fast, gut- or gist-based reasoning (Frederick, 2005).

**Figure 1**

*People Who Endorse Collectivistic Values More (y-Axis) Are More Likely to Find Astrology Scientific (Study 1, Left Panel) and Think Wi-Fi Kills Sperm (Study 2, Right Panel)*




*Note.* Error bars = 95% confidence intervals.

Our results provide initial support for our prediction that collectivism is associated with a propensity to see meaning in empty claims. We examined lower general trust as an alternative explanation, helpfully suggested by an anonymous reviewer. We did find this negative association, but general trust is not associated with finding astrology scientific. We take our results to imply that collectivists find astrology scientific not because they trust, but because they actively fill in the blanks.

## Study 2: Collectivism and Belief in Pseudoscientific Claims

In Study 2 we tested H1 using available indicators of collectivism and belief in empty claims in the Chinese Online Social Survey (COSS; Ma, 2017). The COSS yields two single-item measures of belief in empty claims: belief in fortune-telling, palm-reading, Feng Shui, and the extent to which people believed a pseudoscientific report about negative sperm-count effects of radiation from WiFi. We predicted that collectivism would be associated with higher belief in each of these ideas.

### Method

#### *Participants*

Our sample consisted of 9,638 Chinese Internet users (37.51% female; 43.78% < 30 years old, 47.65% 30 to 50 years old, 8.57% > 50 years old) who responded to the measures of collectivism and belief in pseudoscience in the 2014–2017 COSS.

#### *Measures*

**Independent Variable: Collectivistic Values.** We operationalized collectivistic values with four items in the COSS ($\alpha = .76$): "One should follow parents' requests, even if they were unreasonable," "it is natural that one should obey his or her boss or people with a higher status," "the most important thing for children to learn is to obey and respect authority," and "one should always subdue personal interests to pursue national interests if there is a conflict between the two" (1 = *strongly disagree*, 5 = *strongly agree*). "*Do not know*" responses, coded as missing values, constituted <1% of responses.

**Dependent Variable: Belief in Pseudoscientific Claims.** We used the two items available in the COSS to measure belief in pseudoscience. First, respondents indicated their agreement with the statement "fortune-telling, palm reading, and Feng Shui can explain a lot of things and I believe in them" (1 = *strongly disagree*, 5 = *strongly agree*). "*Do not know*" responses, coded as missing values, constituted 2.73% of responses. Second, a subset of 2,299 respondents read the following claim: "Here is a piece of news: Wi-Fi can unknowingly kill sperm and induce sperm DNA damage. Radiation emitted from Wi-Fi sources is the cause of sperm count reduction." and answered the question "Do you think Wi-Fi kills sperm?" (*No/Do not know or not sure/Yes*). Respondents were randomly assigned to one of three groups. One group read the claim and did not receive debunking information. The other two groups read the claim then received debunking information from either a media source or a scientific source. Respondents were also asked if they had heard of this news before.

**Control Variables.** We included gender, age group, educational-attainment, and family income as control variables.

### Results

People who were higher in collectivism believed in fortune-telling, palm-reading, and Feng Shui more $\beta = .30$, $F(1, 9636) = 951.27$, $p < .001$, $\Delta R^2 = .09$. They were more likely to believe that Wi-Fi kills sperm (Figure 1 right-hand panel; $OR = 1.46$, 95% CI [1.31, 1.63], $SE = .08$, $p < .001$). This relationship was not moderated by the condition they were in (see the online supplemental materials for detailed analyses). Associations remained significant when we controlled for age, gender, education, family income, and having previously heard the claim that "Wi-Fi kills sperm" (Tables S2 and S3 in the online supplemental materials present full results).

## Study 3: Collectivism and Belief in Fake News

In Study 3 we tested H1, operationalizing belief in empty claims as belief in fake news. We also tested corollaries of H1: having

false memories about having seen newly generated fake news before (Study 3a, based on Murphy et al., 2019) and willingness to share fake news (Study 3b). We tested our prediction using COVID-19 fake news (Studies 3a, 3b) and non–COVID-19 novel pseudoscientific news (Study 3c).

## Study 3a

We conducted Study 3a during the peak of the COVID-19 outbreak in China (January to February 2020). We preregistered H1 (that collectivism is associated with a higher likelihood of believing existing and newly fabricated fake news about COVID-19) and a corollary of H1: a higher likelihood of forming false memory of having seen the newly fabricated news. We predicted that these associations should be robust to controlling for a low sense of control and negative emotions that people are likely to experience during a pandemic.

### *Method*

We preregistered our prediction, sample size, and analyses on AsPredicted.org.

**Participants.** We preregistered to collect at least 193 responses based on a small-to-moderate correlation effect size ($r = .20$) as suggested in Studies 1 and 2. We aimed to collect as many responses as we could obtain during the COVID-19 outbreak in China to increase statistical power. Participants were recruited from social media platforms and received 4 Yuan (the equivalent of .60 USD) as compensation. Our final sample included 278 Chinese participants (64% female; $M_{age} = 26.34$, $SD = 9.17$; excluding three participants who lived outside of China).

**Materials.** We used nine news headlines about the COVID-19 outbreak (materials in the online supplemental materials). To test the formation of false memory, we fabricated three critical headlines that contained novel untrue information (e.g., Mass culling of wild animals in Wuhan) that participants could not have seen before. We conducted online searches to ensure that fabricated news stories of this kind did not already exist. We also included three fake news headlines that have been officially debunked (e.g., Drinking strong liquor kills coronavirus), and three real news headlines that contained truthful information (e.g., Coronavirus is contagious in the incubation stage). Each news headline was accompanied by a news image.

**Procedures.** We conducted our survey online between January and February 2020. Participants saw nine news headlines, one at a time, in a randomized order in Chinese. We assessed false memory following previous research (Murphy et al., 2019), asking participants to choose one option for each headline ("I remember seeing or hearing this," "I do not remember seeing or hearing this but I remembered it happening," "I do not remember seeing or hearing this" and "I remember it differently"). The first two options were coded as "Remember" and the rest were coded as "Do not remember." Each time a participant chose "I remember seeing or hearing this" or "I remember it differently," they were asked where (e.g., online news, social media, newspaper, other people, do not remember where they heard it). Then participants were asked if they believed the reported news (e.g., "do you believe that drinking strong liquor kills coronavirus?"). They completed a modified version of Oyserman's (1993) six-item collectivism scale ($\alpha = .83$). Finally, to address alternative explanations, we measured participants' sense of control and experience of negative emotions concerning the coronavirus (fear, worry, anger, disgust) followed by gender, age, education, and the city that they currently lived in.

### *Results and Discussion*

**Belief and False Memories of Fabricated News.** We tested our prediction using regressions. People who scored higher in collectivism were more likely to believe newly fabricated news about the coronavirus $\beta = .18$, $F(1, 276) = 8.93$, $p = .003$, achieved power = .86. This association was reduced when controlling for people's sense of control, negative emotions concerning coronavirus, gender, age, education, and the number of COVID-19 cases in their province $\beta = .12$, $F(1, 257) = 3.61$, $p = .06$ (Table S4 in the online supplemental materials).

Collectivism increased the likelihood of forming false memories by affecting belief, as indicated by the significant indirect effect of collectivism on false memory via belief in fabricated news articles (indirect effect: $ab = .01$, $SE = .005$, 95% CI [.003, .024], overall model: $F[1, 276] = 8.93$, $p = .003$). To ensure that this process indeed reflected false memory driven by people's belief in fabricated news, we performed the same mediation analyses on existing fake news and real news that people could have seen before. These mediation results were not significant—collectivism did not increase people's likelihood of reporting remembering existing fake ($ab = -.0002$; $SE = .001$, 95% CI [−.005, .001]) or real news ($ab = .003$, $SE = .003$, 95% CI [−.002, .011]) by affecting their belief in these news articles.

**Belief in Existing Fake News.** The Chinese government made a national effort to debunk COVID-19 misinformation. Collectivism did not predict belief in existing fake news about the coronavirus in China $\beta = .04$, $F(1, 276) = .54$, $p = .46$. We followed up by testing the moderating role of remembering seeing or hearing the fake news. We used a mixed-effect model with belief in each news headline nested within participants as our dependent variable, collectivism, remembering the news (yes/no), and their interaction as our predictor variables. Whether participants reported remembering the news moderated the effect of collectivism ($\beta = .22$, $p = .02$). Subgroup analyses suggest that collectivism predicted belief in existing fake news that participants remembered seeing or hearing ($\beta = .16$, $p = .02$). Collectivism did not matter when participants reported not remembering seeing or hearing the fake news or reported that they remembered the news differently perhaps due to official debunking ($\beta = -.08$, $p = .28$).

## Study 3b

While official news outlets in China featured debunking of COVID-19 misinformation, in the United States, novel and debunked misinformative coronavirus claims were circulated on then-President Trump's Twitter account. Hence, Americans were more exposed to fake news about COVID-19, even from a seemingly credible source—a sitting president. This would seem to increase the likelihood that in the United States, people would not distinguish fake news from fact-based COVID-19 information. In Study 3b we tested H1 (people higher in collectivism are more likely to believe fake news) and a corollary (increased likelihood of sharing fake news).

### *Method*

**Participants.** Results in Study 3a suggested that the relationship between collectivism and fake news is small-to-moderate ($r$ = .20). Based on this assumption, we recruited 200 participants (53% female; $M_{age}$ = 31.67, $SD$ = 11.33; 72% European American, 9.5% Asian American, 6% African American, 5% Latino American, 7.5% other ethnicities) from Prolific and paid them 1.10 USD as compensation.

**Materials.** We used 10 news headlines about the COVID-19 outbreak (materials in the online supplemental materials). Among them, six were fake news that contained information without evidence (e.g., "Coronavirus survives and spreads faster in the snow") and four were real news that contained truthful information (e.g., "Coronavirus can survive on surfaces for days").

**Procedures.** We collected the data in April 2020. Participants described their living situation and physical distancing strategies during the COVID-19 outbreak, completed five-item social isolation ($\alpha$ = .90), five-item negative emotion (fear, worry, anger, disgust, sadness, $\alpha$ = .86), and two-item optimism (hope, optimism, $\alpha$ = .89) regarding COVID-19 scales. Then we showed them the 10 news headlines in randomized order, one at a time, asking them to rate each on informativeness, truth (e.g., "do you think coronavirus survives and spreads faster in the snow?"), and their likelihood of sharing it with others. Finally, they completed the same collectivism scale as Study 3a ($\alpha$ = .75), reported their gender, age, highest education level, race-ethnicity, and the state they currently lived in.

### *Results and Discussion*

American participants who scored higher in collectivism were more likely to believe fake news about the coronavirus $\beta$ = .20, $F(1, 198) = 8.21$, $p$ = .005, achieved power = .81. This association remained significant when controlling for their feelings of social isolation, negative emotions, and optimism regarding coronavirus, gender, age, education, and the number of COVID-19 cases in their state, $\beta$ = .15, $F(1, 168) = 4.39$, $p$ = .04. Collectivism also predicted a higher likelihood of sharing fake news, $\beta$ = .17, $F(1, 198) = 5.81$, $p$ = .02. Importantly, the effect of collectivism on sharing fake news was mediated by belief (indirect effect: $ab$ = .24, $SE$ = .07, 95% CI [.11, .40]).

Results from Studies 3a and 3b suggest that people who are higher in collectivism believe COVID-19 fake news more. This misbelief, in turn, leads to false memories and sharing fake news. Though high in external validity, our COVID-19 results might be attributable to political or other social factors (e.g., conservatism, clarity, and uniformity of government COVID-19 messaging, heightened threat). Therefore, in Study 3c we cross-validated our results with novel non-COVID-19 pseudoscientific news.

## Study 3c

To ensure generalizability, in Study 3c we tested H1 with non–COVID-19 fake news. Specifically, we predicted that collectivism is associated with a higher likelihood of believing randomly generated non–COVID-19 fake news articles.

### *Method*

We preregistered our prediction, sample size, and analyses on AsPredicted.org.

**Preregistration and Participants.** We preregistered our decision to collect data from 200 participants based on the assumption that the effect size would be small-to-moderate ($r$ = .20), consistent with the results we obtained in Studies 3a and 3b. We received slightly more respondents ($N$ = 202) from Amazon's Mechanical Turk Services. Our final sample for analysis included 141 American adults (55 females; 62.41% European American, 21.99% African American, 7.80% Hispanic American, 4.26% Asian American, 3.55% other American) after following our preregistered exclusion criteria ($n$ = 56 duplicate geolocations indicative of fraudulent overseas responses using Virtual Private Servers, $n$ = 4 non-U.S. citizens, $n$ = 1 non-native English-speaker).

**Materials.** We randomly generated three correlation-based fake news articles (full articles in the online supplemental materials) using Grover, an AI model that generates realistic-looking fake news articles (Zellers et al., 2019). We used the Grover to randomly generate a list of headlines. Empty claims typically take the form of a relationship between an action and an outcome. Hence, we selected randomly generated news articles that had this form and were, to our knowledge, both empty (not backed by any empirical evidence) and novel (not found in our online search).

**Procedures.** We presented three randomly generated news articles (e.g., "eating pizza is linked to financial security"), one at a time, to participants in an online survey. Participants rated each article on informativeness ("How informative is the core message of this article?"), meaningfulness ("How meaningful is the core message of this article?"), and belief (e.g., "Do you think people who eat pizza are more financially secure than people who eat fast food"). We averaged ratings across the three articles to form a score of belief in fake news ($\alpha$ = .94). Then participants completed the collectivism scale we used in Study 3a ($\alpha$ = .87) and provided demographic information (gender, ethnicity, U.S. citizen, first language, and highest education attained).

### *Results and Discussion*

Participants who scored higher on collectivism were more likely to believe randomly generated noncoronavirus-related fake news, Study 3c: $\beta$ = .44, $F(1, 139) = 33.50$, $p < .001$, achieved power > .99. This association remained significant when controlling for their gender, race-ethnicity, and level of education, $\beta$ = .36, $F(1, 136) = 20.72$, $p < .001$. We infer that the association between collectivism and believing fake news may generalize across topic domains.

## Study 4: Country Differences in Seeing Meaning Where None May Exist

In Study 4, we operationalized collectivism as a person's country of residence, comparing people in the U.S. and China. We compared the United States and China based on a large body of cross-cultural research showing that China has a stronger cultural focus on collectivism than the United States (for a meta-analysis, see Oyserman et al., 2002). We tested H1, preregistering two specific predictions based on each operationalization of collectivism. First, people in China will see more meaning in empty claims than people in the United States. Second, in each country, people who

score higher in collectivism will find more meaning in empty claims. Alternative accounts posit that people who endorse collectivism may report higher belief in empty claims because they reason holistically or are highly agreeable (Burton et al., 2021) and agree to anything irrespective of content (yea-saying; e.g., Johnson et al., 2005). We tested these alternative possibilities in this study by including measures of yea-saying, agreeableness (John & Srivastava, 1999), and holistic thinking style (Chiu, 1972).

## Method

We preregistered our prediction, sample size, and analyses on AsPredicted.org.

### Participants

We preregistered our plan to collect 240 responses (120 from each country) based on the minimum size of the relationship we found between collectivism and belief in vague statements in our pilot tests[3] ($.18 \leq r\text{s} \leq .38$). We preregistered to exclude people who failed the attention check and, from our American sample, people who were not native English-speaking or U.S. citizens. We recruited our American sample from the subject pool of the University of Southern California. Each received course credit for participating. We excluded non-U.S. citizens ($n = 24$), non-native English speakers ($n = 31$), and people who failed the attention check ($n = 4$), yielding a final sample of 122 native English-speaking U.S. citizens (82 females; $M_{age} = 19.69$, $SD = 1.59$; 39.34% European American, 36.07% Asian American, 5.74% African American, 18.86% other American). We recruited our Chinese sample from an online student discussion board of Zhejiang University, offering 5 Chinese Yuan (the equivalent of .7 USD) for participating. We were caught by surprise at the swiftness of response, quickly receiving 318 Chinese participants (135 females; $M_{age} = 23.26$, $SD = 2.36$; 49% undergraduates, 51% graduate students)[4] after excluding 3 participants who failed the attention check.

### Procedure

Our survey was online in Chinese in China and English in the United States and presented in the order we describe below (ending with age, gender, highest education attained, first language, the state or province they grew up in, and for Americans, race-ethnicity).

### Meaningfulness of Randomly Generated Metaphors

We created 225 metaphor-like sentences in each language of the form: "Love is a tree." "Trust is sand." Table S13 in the online supplemental materials presents the full list of 15 abstract and 15 concrete concepts that we randomly paired to create our novel metaphor-like sentences. Each participant saw five sentences that were randomly drawn from the pool of 225 metaphor-like sentences. Each of the five sentences started with a different abstract concept. We told participants that statements were from online sources and asked them to rate how meaningful each was (1 = *completely meaningless* to 7 = *very meaningful*). We ensured that differences are not attributable to a particular metaphor by having each participant rate a different set of metaphors.

### The Profundity of Randomly Generated Vague Statements

We used the Bullshit Receptivity Scale by Pennycook et al. (2015). Specifically, we asked participants to rate how profound (1 = *not at all profound* to 7 = *very profound*) they found each of 10 syntactically correct statements randomly constructed from vague phrases (e.g., "Wholeness quiets infinite phenomena"; American $\alpha = .82$, Chinese $\alpha = .78$).

### Yea-Saying

We asked participants how much they agreed or disagreed (1 = *strongly disagree* to 7 = *strongly agree*) with five verifiable statements about mundane aspects of life (e.g., "Most people enjoy some sort of music"; Pennycook et al., 2015).

### Belief in Astrology

We asked participants how much they agreed or disagreed that "Astrology has scientific truth" and "I think the horoscope can tell a person's future" (1 = *strongly disagree* to 7 = *strongly agree*; American $\alpha = .75$, Chinese $\alpha = .85$). Though originally from the West, astrology is now a mainstream cultural trend in China (Qin, 2017).

### Collectivistic Values

We adapted Oyserman's (1993) collectivism scale (American $\alpha = .68$, Chinese $\alpha = .69$).

### Agreeableness

We measured agreeableness using the trait agreeableness scale (John & Srivastava, 1999; e.g., "I see myself as someone who is helpful and unselfish with others"; 1 = *strongly disagree*, 7 = *strongly agree*; American $\alpha = .71$, Chinese $\alpha = .71$).

### Thinking Style

We measured holistic thinking with the 20-item triad task (Chiu, 1972), which includes eight critical triads and 12 filler triads. Participants saw a triad (e.g., doctor, teacher, homework) and reported which two were most closely related. Holistic thinking was scored as the proportion of relational responses in the eight critical trials in which items can be grouped relationally (because they share a functional relationship, as do teachers and homework) or categorically (because they share category membership, as do teachers and doctors).

## Results

### Between-Country Differences

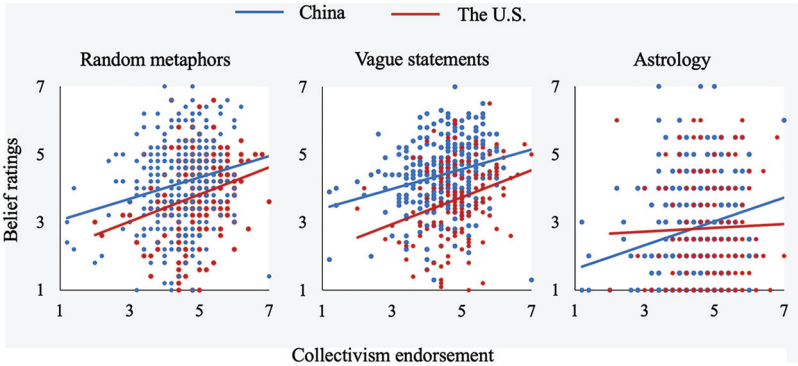
As shown in Figure 2, Chinese participants found more meaning in randomly generated empty claims than Americans. Effects were consistent whether the claim took the form of a metaphor-like sentence (Chinese $M = 4.14$, $SD = 1.20$ vs. Americans $M = 3.73$, $SD = 1.17$), $F(1, 438) = 10.70$, $p = .001$ ($d = .35$; Figure 2 left

[3] We conducted two exploratory pilot studies prior to Study 4. See the online supplemental materials for detailed methods and results.

[4] The online supplemental materials present similar results when only undergraduate students were considered and when the first 120 responses from each country were considered.

**Figure 2**

*Study 4: Collectivism Is Related to Seeing Meaning in Randomly Formed Metaphors (Left), Randomly Generated Vague Statements (Middle), and Astrology (Right) in Study 4*




*Note*. The lighter (blue) upper line represents China; the darker (red) lower line represents the United States. See the online article for the color version of this figure.

panel) or a nonprobative sentence formed from vague word-strings (Chinese $M = 4.40$, $SD = .98$ vs. Americans $M = 3.62$, $SD = 1.10$), $F(1, 438) = 51.98$, $p < .001$ ($d = .75$; Figure 2 middle panel). The right panel of Figure 2 shows that though people in China ($M = 2.81$, $SD = 1.45$) believed more in astrology than people in America ($M = 2.66$, $SD = 1.52$), this difference was not significant, $F(1, 438) = .91$, $p = .34$, $d = .10$.

### *Effects of Endorsing Collectivism*

As shown in Figure 2, in each country, people who endorsed collectivistic values were more likely to see meaning (except American participants' belief in astrology). Indeed, even after taking into account between-country differences, people who scored higher in collectivism found metaphor-like sentences more meaningful, $\beta = .25$, $F(1, 437) = 26.99$, $p < .001$, $\Delta R^2 = .06$. They found sentences randomly generated from vague word-strings more profound $\beta = .26$, $F(1, 437) = 34.84$, $p < .001$, $\Delta R^2 = .07$. They believed in astrology more, $\beta = .16$, $F(1, 437) = 10.86$, $p = .001$, $\Delta R^2 = .02$. See Table S8 in the online supplemental materials for full model results and Table S9 in the online supplemental materials for similar within-country correlations.

### *Are Collectivism Effects Just Yea-Saying?*

If our results were simply due to yea-saying (agreeing regardless of the content), the results should be the same for empty claims and mundane, verifiable ones. That is not what we found. Agreeing with mundane and empty claims did not follow the same country pattern. Americans agreed with mundane statements more than Chinese participants, $F(1, 438) = 12.39$, $p < .001$, $d = .37$. Tables S8 and S9 in the online supplemental materials for detailed further analyses on yea-saying.

### *Are Collectivism Effects Attributable to Agreeableness or Holistic Thinking?*

The effect of collectivism cannot be explained by agreeableness or holistic thinking. As detailed in Tables S10 and S11 in the online supplemental materials, between-country differences in meaningfulness and profundity ratings and the associations between endorsing collectivism and meaningfulness, profundity, and belief in astrology remained strong after controlling for agreeableness and holistic thinking.

## Study 5: Test of the Underlying Process—Meaning Making

In preregistered Study 5, we tested H2 (our process prediction that collectivism increases belief in empty claims by motivating people to actively generate ways to fill in the blanks and create meaning). We operationalized empty claim as one of the metaphors we generated in Study 4. We asked participants to rate the metaphor's meaningfulness and write down what came to mind when they read it. We predicted that people higher in collectivism would find the metaphor more meaningful and this relationship would be mediated by their likelihood of generating ways in which the metaphor might make sense.

### Method

We preregistered our prediction, sample size, and analyses on AsPredicted.org.

### *Participants*

We preregistered to recruit 250 participants (based on a small effect size of $r = .20$). We recruited participants recruited from Prolific. They received $.64 for their participation. Our sample consisted of 250 American participants (51.6% female; $M_{age} = 31.24$, $SD = 11.56$; 69% European American, 12% Asian American, 8% African American, 6% Latino American, 7% other ethnicities).

### *Procedures*

We used "love is a forest" as our empty claim. This was one of the metaphors we randomly generated in Study 4. We told participants that the statement was taken from online sources and that

their task was to rate it for meaningfulness from 1 = *not meaningful at all*, to 7 = *very meaningful*. Their response was carried forward to the next screen and embedded in the query: "You rated it as a [the number they selected] of 7 on meaningfulness. Please write down below what came to mind when you read the statement." After this thought-listing task, participants completed the collectivism scale used in Study 3 ($\alpha$ = .77), followed by demographics (gender, age, whether they were U.S. citizens, race-ethnicity, and highest education).

### *Thought Coding*

Two research assistants who were blind to the study design and the first author (blind to the collectivism data) independently coded each participant's thought responses into two variables. The first variable was *any* explanation of the meaning of the statement "love is a forest" (1 = *generated one or more explanations*, 0 = *did not generate any explanation*). An example response coded as 1 is "I imagined that it meant love is vast and expanding, easy to get lost in." An example response coded as 0 is "It sounds like an attempt to be poetic but comes across as nonsensical." The second variable was a continuous variable representing the number of explanations generated for the meaning of the statement.

Our independent coding yielded excellent interrater reliability scores. Kappas ranged from .84 to .86 for whether participants provided any explanation and our ICC = .95 for the number of explanations. In cases of disagreement, three coders discussed until they reached an agreement. Overall, about half (48.8%) of all participants provided one or more explanations for why they thought love is like a forest. Participants who provided explanations provided on average 1.80 explanations.

## Results

Participants who scored higher on collectivism rated the randomly generated metaphor as more meaningful, $r(249) = .21$, $p < .001$, achieved power = .92. To test our prediction that collectivism is related to a higher likelihood of engaging in meaning-making, we fit a logistic regression equation using collectivism scores to predict whether participants provided any explanation. Supporting our prediction, participants who were higher in collectivism were more likely to provide any explanation for why love can be like a forest ($OR = 1.50$, $Z = 2.63$, $p = .008$, achieved power = .87). The pattern of results is consistent when we used the number of explanations in an ordinal logistic regression.[5] People higher in collectivism provided more explanations ($OR = 1.47$, $t(249) = 2.56$, $p = .01$). We used the number of words people wrote as a way to rule out compliance as an alternative explanation. People's collectivism score was unrelated to the number of words they wrote, $r(249) < .01$, $p = .99$. This suggests that our results were attributable to how people higher in collectivism engaged with the statement, not to their simply complying more by writing more.

Finally, we used the Medflex R package (Steen et al., 2017) to test whether the number of explanations mediates the effect of collectivism on the perceived meaningfulness of a statement. We conducted mediation analysis using an imputation-based approach to accommodate our ordinal mediator. Results suggest that the number of explanations a person generated mediated the effect of their collectivism on how meaningful they found the randomly generated metaphor (indirect effect = .22, $SE = .09$, $p = .01$, 95% CI [.06, .39]). Our results support our process prediction that collectivism enhances people's tendency to see meaning in empty claims by motivating them to consider how claims can be meaningful, and, in doing so, construct meaning and even truth.

## Study 6: A Test of Causality

In Study 6 we tested H1 as a causal claim. To do so, we momentarily induced people to experience themselves as more collectivistic (vs. less collectivistic) using an experimental design (preregistered Study 6a and conceptual replication 6b). We predict that people led to experience themselves as more collectivist have a stronger tendency to see meaning in empty claims.

## Method

### *Participants*

In Study 6a, we preregistered the plan to recruit 300 participants based on the small-to-medium effect size we obtained in a pilot study of our manipulation (see the online supplemental materials). In both Study 6a and 6b we recruited American adults to complete a three-minute study on Amazon Mechanical Turk for $.30. After exclusions (detailed next) our final samples were American adult native speakers of English (Study 6a, $n$ = 288, $M_{age} = 33.06$, $SD = 10.42$; 44.1% female, 68.4% White, 8.0% African American, 7.6% Latino or Hispanic, 12.1% Asian, 1.4% Native American, 1.4% Mixed ethnicities, 1% Other American; Study 6b, $n$ = 360, 44.0% female; 70.2% White, 14.8% African American, 7.5% Latino or Hispanic, 5.8% Asian, 1.1% Native American, .6% Other American). We followed preregistered exclusion criteria, excluding people whose first language was not English ($n$ = 2) or had duplicate IP addresses ($n$ = 10) following recommendations for Mechanical Turk research that this may violate response-independence (Berinsky et al., 2012). Similarly, in Study 6b, we excluded people who were not U.S. citizens ($n$ = 4) and were not native speakers of English ($n$ = 6).

### *Procedures*

We told participants the study was about individual differences in judgment and opinion.

We used a force-agreement paradigm (Petrocelli et al., 2010), randomly assigning participants to one of two groups: More Collectivistic (Study 6a: $n$ = 148; Study 6b: $n$ = 177) or Less Collectivistic (Study 6a: $n$ = 140; Study 6b: $n$ = 182). We asked the More Collectivistic group to rate their agreement (1 = *slightly agree* to 7 = *completely agree*) with each of six statements taken from the collectivism scale used in Study 3. We asked the Less Collectivistic group to

[5] We preregistered a continuous variable analysis but realized that this is an error and that the number of explanations participants provided is an ordinal variable because successive units are not equally spaced. An increase from 0 (*no meaning-making*) to 1 (*a single meaning-making explanation*) is more substantial than an increase from four to five explanations. We present the similar pattern of results if the measure is considered continuous in the online supplemental materials according to our original preregistered analysis plan.

rate their disagreement (1 = *slightly disagree* to 7 = *completely disagree*) with the same collectivism statements. Before proceeding, we pilot-tested the belief manipulation, finding that it changed people's momentary self-perception that they were collectivistic (see the online supplemental materials for pilot results).

We included a different dependent measure in each study. In Study 6a, participants rated the profundity of eight randomly generated vague sentences from Study 4 (Pennycook et al., 2015; $\alpha = .86$). In Study 6b, participants rated informativeness, meaningfulness, and belief of a randomly generated fake news story from Study 3c ("texting decreases IQ"; $\alpha = .84$). We placed a manipulation check in Study 6a after the dependent measure, which included two items that assessed collectivism (1 = *strongly disagree*, 7 = *strongly agree*; $\alpha = .72$) and were not part of the priming task. Finally, participants reported demographics (gender, first language, ethnicity, highest education, whether they were U.S. citizens).

## Results

### *Manipulation Check*

Participants randomly assigned to the More Collectivistic condition scored higher on the manipulation check collectivism measure ($M = 5.04$, $SD = 1.05$) than participants randomly assigned to the Less Collectivistic condition ($M = 4.71$, $SD = 1.23$) in Study 6a, $F(1, 286) = 5.92$, $p = .02$, $d = .29$.

### *Collectivism Increases Meaning-Making*

Participants randomly assigned to the More Collectivistic condition in Study 6a rated the vague word string sentences as more profound ($M = 4.13$, $SD = 1.26$) than those randomly assigned to the Less Collectivistic condition ($M = 3.85$, $SD = 1.33$), $F(1, 286) = 3.47$, $p = .06$, $d = .22$. In Study 6b participants randomly assigned to the More Collectivistic condition believed the randomly generated pseudoscientific news story more ($M = 4.39$, $SD = 1.53$) than those randomly assigned to the Less Collectivistic condition ($M = 3.99$, $SD = 1.59$), $F(1, 357) = 5.68$, $p = .02$, $d = .26$. Our meta-analytic synthesis of Studies 6a and 6b ($Z = 3.01$, $p = .003$, $d = .24$, 95% CI [.08, .39]) suggests that people see more meaning after being led to consider themselves more collectivistic.

## Study 7: The Absence of Communicator Moderates the Collectivism Effect

In Study 7 we tested H3. Specifically, we predicted that collectivism guides people to see more meaning in empty claims because they are motivated to seek common ground with a communicator. We tested this by manipulating whether a communicator is implied. If the tendency to see meaning is driven by seeking common ground with a communicator then the absence of a communicator should sever the collectivism-seeing meaning relationship.

## Method

### *Participants*

We recruited 119 Chinese adults (38% female; $M_{age} = 31.75$, $SD = 10.78$) from a Chinese crowdsourcing website (zbj.com) and paid them $.70 for participation.

### *Procedures*

The survey was online and in Chinese. We randomly assigned participants to one of two conditions (Human Generated, Non-Human Generated). In the Human Generated condition, we preserved the implicit assumption that content comes from another person. We asked participants to choose a number to randomly select a statement in the form of "____ is ____" and then rate the statement on meaningfulness. The unstated assumption was that the randomly selected statement was created by a person (communicator). In the Non-Human Generated condition, we made it clear that the content did not come from another person. We asked participants to choose numbers to randomly generate the first and second parts of a statement ("____ is ____") and rate its meaningfulness. Participants had no reason to infer the existence of a communicator since they were told that they formed the statement by drawing two numbers. To make sure that people all saw the same stimuli, we gave participants in both conditions the same five metaphor-like sentences (for example, "time is air") from our Study 4 pool of metaphors. After the rating task, participants completed the collectivism scale we used in Study 3 ($\alpha = .69$) and reported their gender, age, the province they grew up in, their religiosity, and spirituality.

## Results

Assignment to condition did not affect participants' rating of meaning, ruling out the possibility that the manipulation changed the meaning of statements, $F(1, 117) = .27$, $p = .60$. Instead, we found a significant interaction between condition and collectivism on meaning ratings, $F(1, 115) = 7.72$, $p = .006$, $\Delta R^2 = .06$. The achieved power (.80) was sufficient to detect this interaction.

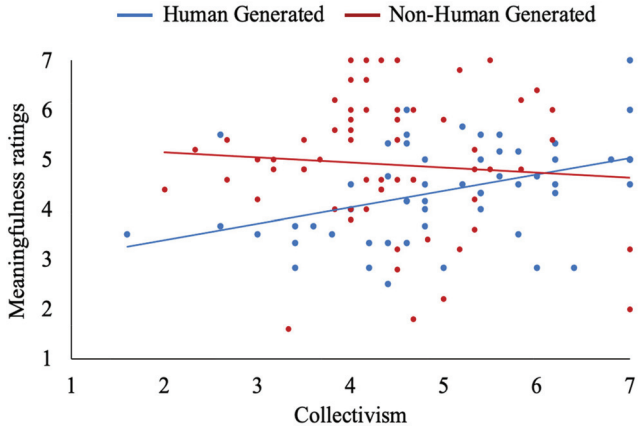
To understand this interaction, we tested the relationship between collectivism and meaning ratings in the Human-Generated condition and the Non-Human Generated condition, respectively. As we depict in Figure 3, what people likely assumed about the existence of a communicator mattered. People who were randomly assigned to the Non-Human Generated condition were explicitly told that the content they saw was not generated by a human. In contrast, people who were randomly assigned to the Human-Generated condition did seem to infer that the content they saw came from another person. Collectivism was positively related to seeing meaning if a human communicator was assumed (Figure 3, lighter [blue] line), $r(56) = .42$, $p = .001$) and was unrelated to seeing meaning if a human communicator was explicitly excluded (Figure 3, darker [red] line), $r(63) = -.08$, $p = .54$. People who were higher in collectivism were more likely to find meaning in empty claims only if they were seeking common ground with an implied communicator.

## Meta-Analysis: Does Collectivism Increases Belief in Empty Claims Across Studies?

We conducted a single-paper meta-analysis using a random-effects model across our ten studies to test the overall effect of collectivism on belief in a variety of empty claims. Results support our prediction that collectivism increases people's belief in empty claims ($d = .39$, 95% CI [.24, .43], $Z = 5.21$, $p < .001$). For interested readers, we present the forest plot in our online supplemental materials.

**Figure 3**

*Study 7: The Relationship Between Collectivism and Seeing Meaning Is a Function of Motivation to Establish Common Ground*




*Note*. The lighter (blue) increasing line represents the positive relationship in the Human-Generated condition; the darker (red) flat line represents the null relationship in the Non-Human Generated condition. See the online article for the color version of this figure.

## General Discussion

We started with the observation that people commonly find meaning in empty claims. Building on our synthesis of an evolutionary perspective on cultural accumulation (Mesoudi & Thornton, 2018) and culture-as-situated cognition theory (Oyserman, 2017), we suggested that an aspect of human culture, collectivism, could help explain why this is the case. People need others to survive and collectivism is that aspect of human culture that sensitizes people to the need to fit in so that this need can be satisfied. Moving from this universal level to societal, situational, and individual levels, collectivism motivates people to generate meaningful ways in which claims might make sense so that they can attain a common ground with communicators. By generating meaning, people become convinced, and may even see meaning when none may exist.

We documented an association between collectivism and belief in real-world empty claims (for example, astrology, superstitions) using two national samples. We showed that this association can be generalized to a variety of empty claims, including newly created or widely circulated fake news about COVID-19, AI-generated pseudoscientific news articles, and sentences constructed with random components. We ruled out yea-saying, agreeableness, holistic thinking, education, and religiosity-spirituality as alternative explanations. The collectivism effect is causal: People induced to momentarily experience themselves as more collectivistic are more likely to find meaning in empty claims. This occurs, in part, because collectivism motivates people to generate reasons that a claim might be meaningful. Indeed, collectivism is only associated with seeing meaning in empty claims that seem to come from another person. The implication is that people make meaning because they are motivated to seek common ground with a potential communicator.

### Theoretical Implications

Our collectivism account builds on culture-as-situated cognition theory (Oyserman, 2017) and expands prior cultural psychological research on sensitivity to the common ground of communication. Prior studies show that priming collectivism increases sensitivity to the common ground of communication (Haberstroh et al., 2002), improves perspective-taking (Wolgast & Oyserman, 2019), and increases the likelihood that people experience objects as parts of connected sets (Mourey et al., 2013). Our results suggest that people higher in collectivism are spontaneously attuned to what others are trying to communicate. They presume that any claim they see is created by another person and hence is supposed to have meaning. This inference potentially underlies prior research documenting that people higher in collectivism can reconcile conflicting perspectives (Peng & Nisbett, 1999) and agree with seemingly opposing survey statements (Smith et al., 2016). Our results suggest that people higher in collectivism do so, in part, by considering how each claim might be true.

Our focus on culture as a driving mechanism of seeing meaning and truth in empty claims is novel and notable. It is distinct from the two existing accounts which focus on underthinking (Pennycook et al., 2015; Risen, 2016) and motivated reasoning (Kahan, 2012). We interpret our results as suggesting that vulnerability to empty claims is not simply a consequence of underthinking or motivated reasoning. It can stem from overthinking driven by a need to relate with others and a focus on how claims might make sense.

As such, our collectivism account sheds light on otherwise inexplicable results. For example, it reconciles the finding that Americans who engage in deliberate thinking are less likely to believe empty claims (Bago et al., 2020; Pennycook et al., 2015), whereas the opposite is true for Japanese (Majima, 2015). An underthinking account can explain the American but not the Japanese results. Our account can reconcile conflicting findings by considering that people in Japan are more likely to have a collectivistic focus (Kitayama & Imada, 2010). This motivates them to seek common ground and fill in the blanks when claims are empty. Succeeding at filling in the blanks is more likely when engaging in more thought, as shown by Majima (2015) among Japanese participants. Our results suggest that underthinking is not the only path to belief in empty claims; this belief can also stem from overthinking with a focus on making sense.

### Practical Implications

Situations that trigger collectivism are likely to increase people's susceptibility to empty claims. Because pathogen risk predicts higher collectivism (Fincher et al., 2008), our work applies to public acceptance of misinformation surrounding COVD-19. Our results suggest that people are vulnerable to misinformation not simply because they are too lazy to think but rather because they are motivated to find meaning in content provided by others. Our work implies that to undo the effect of collectivism, people's motivation to seek meaning needs to be disrupted. This can be done, for example, by pointing out that the content comes from a nonhuman communicator (for example, Internet bots) or an untrustworthy source (e.g., Oyserman & Schwarz, 2020).

### Alternative Explanations

We predicted that collectivism is associated with belief in empty claims because it prompts people to seek common ground by filling

in the blanks, and in so doing, generating meaning where none may exist. Our process model builds on prior research documenting that collectivism heightens context-sensitivity (Hall, 1976; Haberstroh et al., 2002) and perspective-taking to see the common ground of communication (Wolgast & Oyserman, 2019) and seeing relationships even among objects (Mourey et al., 2013). For example, people primed with collectivism are more likely to provide disparate answers to two redundant survey questions because they pay closer attention to the common ground to determine what the questioner wants to know (Haberstroh et al., 2002). They are more accurate in judging the perspective of others in a variant of the 3-mountains task (Wolgast & Oyserman, 2019). In this section, we consider three alternative explanations for our results (credulity, reasoning style, bias toward in-group trust). As we detail next, although each has an interesting association with culture, we do not find evidence that these are sufficient alternative explanations to our process prediction of actively filling in the blanks in pursuit of seeking common ground with a communicator.

First, consider credulity, the willingness to accept and believe claims without really processing them. At least in some situations, people might be more willing to accept persuasive arguments if the arguments are framed in culturally fluent terms (Oyserman, 2019) and linked to their social identities (Oyserman & Dawson, 2020). In these situations, people may be credulous, accepting arguments without really processing them. But in these cases, the mechanism is cultural fluency, things unfolding as culturally expected, not collectivism. Indeed, our Study 5 results are incompatible with this alternative explanation that collectivism triggers acceptance of claims without processing them. In Study 4 we did not find that yea-saying (agreeing regardless of content) explained the effect of collectivism. In Study 5 we found that people higher in collectivism actively made connections and constructed meaning. They created something that did not exist before. The more connections they made, the more meaning they found in the randomly generated metaphor "love is a forest." Consider the response a participant who rated "love is a forest" as meaningful: "It makes sense to me—love is a forest because there's a lot to explore and learn about someone you love, and love is a beautiful thing, but like a forest, it can also be scary and new. It can be dangerous depending on what challenges you come across, but it can be fun." As this example highlights, what drives the high meaningfulness rating is not simply accepting a claim but rather an active generation of meaning that is unique and personal beyond the literal meaning of the words.

Next, consider reasoning style. Collectivism has been associated with more use of holistic reasoning and less use of analytic reasoning (Varnum et al., 2010). In this body of work, holistic reasoning is characterized by a focus on contextual information and relationships among objects, whereas analytic reasoning is characterized by a focus on the main point and rule-based categorizations of objects. We did not find any literature associating holistic reasoning with belief in empty claims. Nonetheless, we tested the possibility that our collectivism effects are due to holistic reasoning in two cross-cultural studies (Study 4 and Pilot Study 1) using a classic paradigm—the triad task. Compatible with other research on country-level differences in holistic reasoning (e.g., Ji et al., 2004), Chinese participants were higher in holistic reasoning and lower in analytic reasoning than American participants in both studies. However, we failed to find any evidence that holistic reasoning was related to belief in empty claims. Between-country differences in belief in empty claims and the effect of collectivistic values on belief in empty claims remained unchanged when controlling for holistic reasoning. Hence, our data do not support holistic reasoning as an alternative explanation for our results. At the same time, our data are compatible with research showing that when primed with a collectivistic mindset, people are better at solving less specified problems (Arieli & Sagiv, 2018). We believe that the collectivism-induced, active generation of meaning may be the process behind this finding as well. We look forward to future research exploring other ways in which this aspect of collectivism affects human judgment.

Finally, consider potential bias toward ingroup trust. A feeling of belongingness to in-groups is a common way of operationalizing collectivism (Brewer & Chen, 2007). One implication is that collectivism triggers an in-group feeling, a sense of trust centered on the in-group, not others (Romano et al., 2017). To the extent that a human communicator is assumed to be a member of the in-group, that might heighten trust. Our Study 7 results suggest that people may spontaneously assume a human communicator is behind claims, though it is unclear whether they are assuming that the communicator is an in-group member. That said, trust is not the same as gullibility. Indeed, Yamagishi et al. (1999) showed people are more sensitive to signals of potential untrustworthiness if they are high in trust. Our Study 1 results also show a negative association between general trust and acceptance of pseudoscience. General trust cannot mediate the positive relationship between collectivism and accepting pseudoscience because it is negatively associated with both. Taken together, our results are not explained by alternative explanations even though collectivism is related to reasoning style and in-group trust, these aspects of collectivism do not explain our results.

## Limitations and Future Directions

Our research sheds light on four possible avenues for future research. First, consider what we can learn from the samples we used. Many of our tests involved online participants from crowdsourcing platforms. Despite concerns about these samples, comparative analyses suggest that these participants are at least as careful, if not more so than college students (e.g., Hauser et al., 2019). These platforms engage noncollege-student adults who are relatively more diverse and less economically advantaged than college-based samples (Paolacci & Chandler, 2014). Although, of course, these platforms do not provide representative samples of national populations. We address the issue of ecological validity by using a U.S.-based and a China-based national sample in Studies 1 and 2. In both countries, within-society variations in collectivism correlate with belief in empty claims. We showed that collectivism correlates with these beliefs even once we controlled for demographic factors (people's age, religion, ethnicity, and socioeconomic status). That said, we focus on the kinds of empty claims found in modern, industrialized societies. We cannot be certain about generalizability to premodern societies. Next, consider generalizability (what we can learn from the operationalizations we used). Although we tried to include a variety of empty claims, we cannot fully delineate the population of such claims hence we could not draw a random sample of all empty claims. The same can be said for collectivism. Instead, we used a variety of operationalizations of our core concepts (collectivism, empty

claims) across studies to increase confidence that our findings shed light on our core concepts rather than only on a particular operationalization. Third, consider causality. Although some of our tests are correlational and cannot indicate causality, we find converging evidence supporting the effect of collectivism by comparing countries and experimentally manipulating collectivism.

Fourth, consider alternative ways in which collectivism can lead to belief in empty claims. We show a stable association, document causality and provide evidence that an underlying process entails active construction of reasons that the claim might be sensible. A fruitful next step would be to examine other factors that increase motivation to seek common ground as these may also trigger the same meaning-making processes we have identified for collectivism. For example, collectivism and perspective-taking are more likely in situations in which people are interacting with close others, people from their in-group, or people who have power over them (Boothby et al., 2016; Galinsky et al., 2006). Although we did not find an association with holistic reasoning, it is possible that such a relationship exists, given studies showing an association between collectivism and generating solutions to loosely structured problems (Arieli & Sagiv, 2018).

## Conclusion

To satisfy a human need to relate and fit in, people attempt to see what others see by asking themselves "how might this claim make sense?" In doing so, people self-convince. Collectivism increases seeing meaning where none may exist. This very human sensitivity to the communicative intent of others is likely to be a reason why conspiracy theories, fake news, and pseudoscience spread. A core implication of our work is that to reduce acceptance of misinformation, people's perspective-taking tendencies need to be disrupted. Considering the cultural roots of the tendency to see meaning where none may exist may be one important step to counter the spread of false information in the public sphere.

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