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A multinational megastudy of the effects of gratitude practices on subjective well-being

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Scholars have observed people from a variety of cultures using a variety of gratitude-related practices to change their emotions, outlooks, and social relationships. Across 34 countries purposively sampled to cover a broad set of cross-cultural differences (total $N = 10{,}696$), we experimentally tested the effects of 6 brief gratitude interventions on subjective moods, life outlooks, and social evaluations. Compared to 3 control tasks, gratitude practices immediately produced theorized improvements in positive affect ($d = 0.37$), negative affect ($d = -0.22$), optimism ($d = 0.24$), life satisfaction ($d = 0.12$), indebtedness ($d = 0.15$), and envy ($d = -0.16$). Notably, these effects varied across different gratitude practices ($0.00 < \tau_{practice} < 0.08$) and countries ($0.10 < \tau_{country} < 0.19$). For instance, based on existing evidence, stakeholders can expect gratitude interventions deployed in a randomly selected country to improve positive affect—but not our other measured outcomes. To guide future inquiry into why this might be the case, we provide exploratory Bayesian estimates of the importance of 12 cross-cultural differences.

gratitude | culture | positive psychology | megastudy | big team science

Significance

In a large-scale collaboration, we tested the effects of six brief gratitude interventions among 10,696 participants from 34 culturally diverse countries. Compared to control tasks, gratitude interventions produced several theorized benefits: small improvements in mood, subjective life outlooks, and prosocial feelings. However, these effects varied across different gratitude practices and countries. For instance, based on existing evidence, stakeholders can expect gratitude interventions deployed in a newly randomly selected country to improve positive affect—but not our other measured outcomes. To explain when and why gratitude interventions succeed vs. fail, our work details the role of a dozen cultural differences.

From the Yakut's historical sacrificial offerings to the gods of North Siberia to North Americans' modern celebrations of Thanksgiving, gratitude has been expressed and experienced across a variety of different cultures, through a variety of different practices, across a variety of different eras in human history (1–3). Increasingly, researchers and members of the general public alike have wondered: can these culturally ubiquitous practices help promote human flourishing (for a recent review, see ref. 4)? Consistent with such possibilities, past theorists have posited that gratitude practices a) improve moods and subjective life outlooks (5), b) strengthen social bonds (6), and c) promote social reciprocity (7). In the present work, we bring such ideas into contact with six browser-based gratitude interventions deployed across 34 countries—ultimately providing insights into the extent to which our understanding of gratitude is shaped and constrained by decisions about which cultures and practices we study.

To understand why and how gratitude practices evolved across the globe, researchers need to consider both cultural universalities and cultural idiosyncrasies. Unfortunately, our understanding of how different gratitude practices operate in different cultural contexts has developed slowly. According to a recent meta-analytic review, the typical study on gratitude interventions documents what happens when people in the United States (≈50% of all tests) count their blessings (≈49% of all tests) (8). Deviations from this norm have helped uncover its epistemic constraints: differences in cultures and practices matter. For instance, gratitude interventions are currently estimated to create large shifts in well-being in Hong Kong, but virtually no shifts in Japan (8). At the level of practices, counting blessings is estimated to produce small improvements in well-being, but such effects appear to double when further imagining life without those blessings (8). Such results suggest gaps in our understanding of gratitude—gaps that become increasingly concerning amid calls to consider preexisting cultural practices and contexts before acting upon claims and interventions typically validated in Western contexts (9–11).

The accumulation of evidence, thus far, suggests that claims about the effects of gratitude may not generalize beyond the study of a specific practice or culture. However, it is challenging to isolate the impact of these differences because research efforts typically differ in more than one way (12). For example, consider two papers by Emmons and McCullough (13) and Chan (14). On one hand, Emmons and McCullough (13) examined the effects

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of a) a gratitude journaling practice on b) self-reported affect and health among c) participants in the United States. In contrast, Chan (14) examined the effects of a) a Naikan-style variant of a gratitude journaling practice on b) self-reported subjective well-being among c) participants in the People's Republic of China. The two investigations differ in multiple ways: the chosen gratitude interventions, the measured outcomes, and the sampled cultures. This makes it difficult to later understand the isolated effects of any of these differences, even via meta-analysis (8).

In the midst of rich theorizing about the function (6), evolution (7), and potential societal benefits of gratitude (5), it is becoming increasingly pressing to understand the extent to which the theorized and documented effects of gratitude generalize to different practices and cultures. It is also desirable to refresh the knowledge base in the midst of calls for more open science practices (4), culturally diverse sampling plans (10), and coordination among researchers (15, 16). To accomplish these goals, we formed the Global Gratitude Collaboration: a megastudy that systematically evaluated the impact of a variety of gratitude interventions on a variety of well-being-related outcomes measured across a variety of countries.

In the present work, we recruited participants across 34 countries purposively sampled to cover a broad set of cross-cultural differences. (For more information, see *Country Sampling* and *Participant Sampling*.) Participants were invited to complete a short (≈20 min) browser-based experiment available in up to 15 languages. After providing consent, participants were randomly assigned to complete one of six gratitude practices (e.g., writing a gratitude letter) or one of three control exercises (e.g., writing about recent events). (For more information, see *Gratitude Practice Sampling*.) Immediately after completing the task, participants completed a battery of questionnaires measuring six reviewed outcomes: positive affect, negative affect, optimism, life satisfaction, envy, and feelings of indebtedness.

Results

Sample Characteristics. The final sample consisted of 10,696 participants from 34 countries (Fig. 1*B*). Notably, these countries not only capture a large range of a general measure of cultural distance (Fig. 1*A*), but also measures of specific cultural differences (Fig. 1*C*). To illustrate this point, we considered preexisting estimates of the extent to which all countries vary in 12 specific cultural domains (e.g., cultural tightness vs. looseness; Fig. 1*C*, gray curves) (10). We then compared this to the distribution observed among our sampled countries (Fig. 1*C*, blue curves). As shown in Fig. 1*C*, there was often extensive overlap between these two distributions (M = 69%, SD = 11%, Min = 51%, Max = 87%). This suggests that our sample successfully captured large proportions of between-country variation across several culturally relevant domains.

Overall Effects. We first describe the overall effects of gratitude (vs. control) practices, averaged across all 6 sampled practices and 34 sampled countries. Immediately after completing gratitude (vs. control) practices, participants reported hypothesis-consistent a) increases in positive affect (d = 0.37, 95% CI [0.28, 0.45], P < 0.001), b) decreases in negative affect (d = −0.22, 95% CI [−030, −0.14], P < 0.001), c) increases in optimism (d = 0.24, 95% CI [0.18, 0.30], P < 0.001), d) increases in life satisfaction (d = 0.12, 95% CI [0.07, 0.16], P < 0.001), e) decreases in envy (d = −0.16, 95% CI [−0.24, −0.07], P < 0.001) and f) increases in indebtedness (d = 0.15, 95% CI [0.07, 0.24], P < 0.001). See Fig. 2 for more information.

Heterogeneity between Practices vs. Countries. Each of the above effect size estimates represents the average of 204 more granular estimates of the effects of 6 different interventions completed in 34 different countries. However, for all outcomes other than life satisfaction, [$I^2 \approx 0.00$, $Q(611) = 533$, $P = 0.99$], these effect sizes exhibited significant heterogeneity [see Fig. 2; 15% < all I^2 < 33%; 719 < all $Q(611)$ < 936; all P < 0.002]. More specifically, the effects of gratitude varied across both systematically sampled practices ($0.00 < \tau_{practice} < 0.08$) and countries ($0.10 < \tau_{country} < 0.19$). For example, writing a gratitude text led to the greatest hypothesis-consistent change across all measured outcomes in all countries (95% CI [0.21, 0.34])—whereas merely listing gratitudes led to the least amount of hypothesis-consistent change (95% CI [0.09, 0.22]; Fig. 3, Panel *A*). At the country level, participants in Mexico reported the most hypothesis-consistent change across practices and outcomes (95% CI [0.56, 1.11]), whereas participants in Norway reliably reported the least (95% CI [−0.26, 0.37]; Fig. 3, Panel *B*).*

Fig. 2 decomposes these patterns more comprehensively for each outcome, with point estimates of a) the overall effect of each gratitude practice, averaged across all sampled countries (red dots), b) the overall effect observed in each country, averaged across all sample gratitude practices (blue dots), as well as c) the 1,224 underlying estimates of the effects of each practice in each country (purple dots). (Machine readable copies of all effect sizes are openly available and linked in *SI Appendix*).

By systematically varying both the sampled countries and practices, we aimed to derive relatively unconfounded estimates of the importance of each of these factors. Excluding life satisfaction, we observed between 1.62 and 4.43 times more heterogeneity across countries ($\tau_{country}$, blue curves) than across practices ($\tau_{practice}$, red curves; see Fig. 2). Practically, this suggests we can make more precise predictions about previously unstudied gratitude practices than previously unstudied countries. Using 95% prediction intervals, we estimate that a study evaluating a new gratitude practice across all sampled countries will uncover differences in our measures of positive affect (95% PI [0.19, 0.51]), negative affect (95% PI [−0.32, −0.12]), optimism (95% PI [0.16, 0.31]), and life satisfaction (95% PI [0.09, 0.13])—but not envy (95% PI [−0.32, 0.01]), and indebtedness (95% PI [−0.04, 0.32]). Conversely, a study examining the same gratitude practices in a new country has much wider prediction intervals. Researchers should expect changes in our measures of positive affect (95% PI [0.02, 0.71])—but not necessarily negative affect (95% PI [−0.60, 0.17]), optimism (95% PI [−0.07, 0.55]), life satisfaction (95% PI [−0.09, 0.32]), envy (95% PI [−0.45, 0.13]), or indebtedness (95% PI [−0.12, 0.42]).

Evaluating Cross-Cultural Consistency and Moderators. To further characterize the degree to which the effects of gratitude practices (vs. control tasks) are consistent across cultures, we describe two indices: 1) the number of countries where we observed hypothesis-inconsistent effect size estimates (e.g., nil or negative effect on positive affect reports), and 2) the proportion of the estimated distribution of effects across countries that are theory-inconsistent. For the latter, we first estimated the model-implied distribution of effects across countries: $d \sim N(\beta_0, \tau^2_{country})$. Second, we estimated the proportion of this distribution that was inconsistent with our oft-hypothesized patterns (e.g., $d \leq 0$ for positive affect).

*Across all outcomes, the overall hypothesized effects of gratitude interventions were similarly estimated in Norway and the People's Republic of China. We focus on describing Norway because we were able to obtain a larger sample size in this country, and can thus speak more confidently about the results.

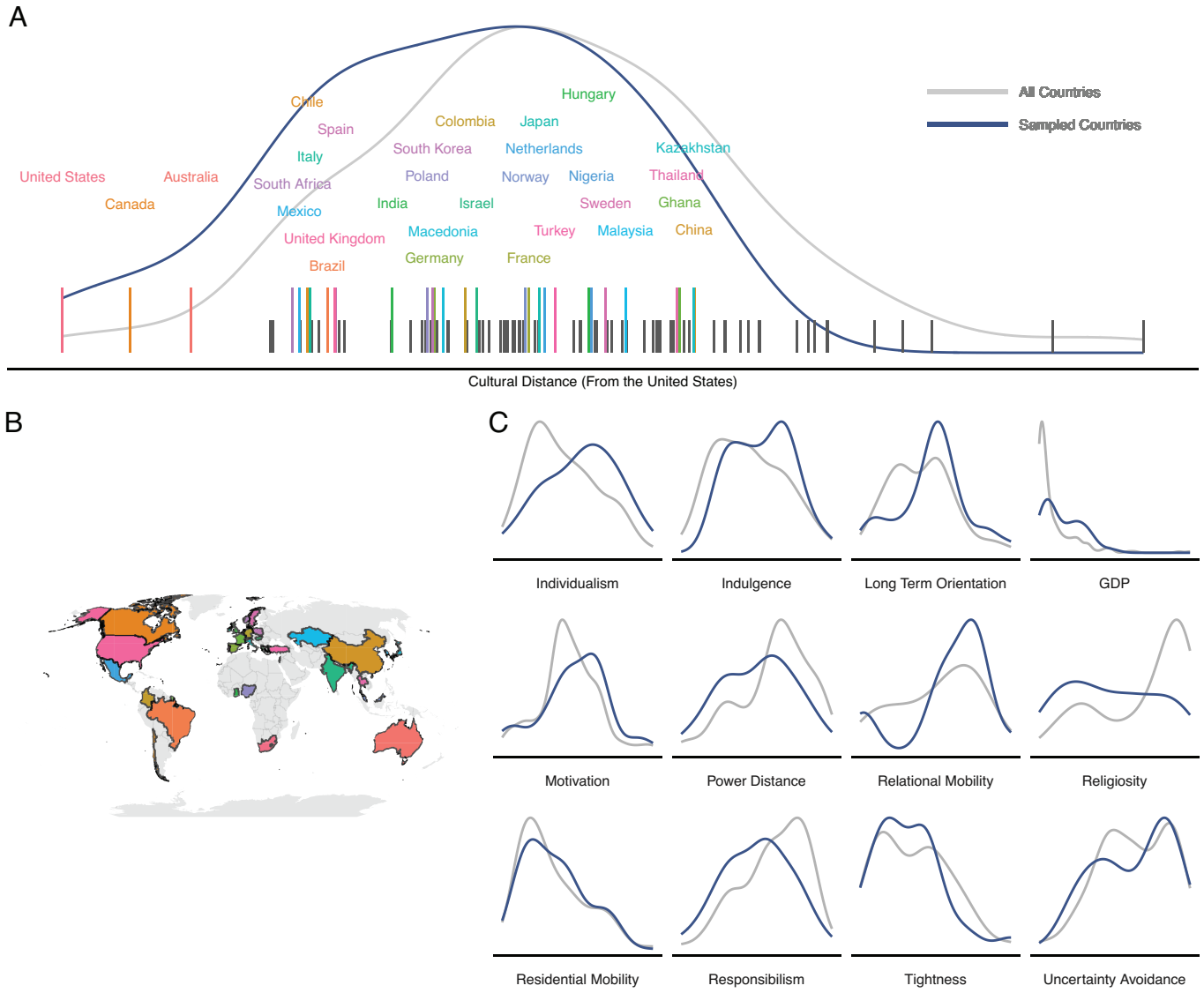

Fig. 1. Panel (*A*): Estimates of the extent to which 99 countries are culturally distinct from the United States of America (x-axis). Each tick represents a country. Nongray ticks indicate sampled countries. Cultural distance data for the following sampled countries were unavailable and are not pictured: Denmark, Greece, Ireland, Portugal. Panel (*B*): Nongray geographical boundaries indicate the 34 countries sampled in the present work. Panel (*C*): Distribution of cross-cultural variables across both sampled and unsampled countries. Panel (*A* and *C*): Gray curves represent the population distribution estimated from past research (see *Materials and Methods* for more details). Blue curves represent the distribution observed over countries sampled in the present work. All numeric variables are uniformly scaled (−1 to 1).

The most cross-cultural consistency was observed in positive affect (Fig. 2). Across every sampled country, we observed that gratitude interventions led to directional increases in positive affect reports. Furthermore, the estimated distribution of these effects suggest that they will be observed in over 98% of countries (even those we did not sample). Less cross-cultural consistency was observed for optimism (nil or negative effect size estimates in 4 countries; 6% of estimated between-country distribution), negative affect (5 countries, 13% of distribution), and indebtedness (5 countries, 13% of distribution) reports. The least cross-cultural consistency was observed for self-reported envy reports (7 countries, 14% of distribution) and life satisfaction (7 countries, 14% of distribution).

Observing relatively large degrees of heterogeneity across countries invites questions about why this might be the case. For each of our primary outcomes, we computed exploratory Bayesian correlations between a) the observed country-level effects of gratitude practices, and b) 12 cross-cultural moderators originally compiled to describe the sample (Fig. 1*C*). Gratitude interventions led to 1) lower increases in life satisfaction in countries higher in tightness (r = −0.40, 95% CI [−0.67, −0.04], $BF_{1,0}$ = 2.99, 2) larger increases in self-reported optimism in countries higher in indulgence (r = 0.42, 95% CI [0.10, 0.67], $BF_{1,0}$ = 5.20), 3) smaller increases in self-reported life satisfaction in countries higher in power distance (r = −0.45, 95% CI [−0.68, −0.13], $BF_{1,0}$ = 7.70), 4) smaller increases in self-reported indebtedness in countries with higher religiosity (r = −0.39, 95% CI [−0.64, −0.06], $BF_{1,0}$ = 3.53), and 5) larger increases in self-reported indebtedness in countries with higher GDP (r = 0.40, 95% CI [0.07, 0.65], $BF_{1,0}$ = 4.07). In the vast majority of other cases, evidence of specific cross-cultural moderators would be conventionally characterized as "anecdotal" (17). For example, in countries higher in tightness, we uncovered anecdotal evidence that gratitude interventions lead to weaker improvements in affect and optimism ($BF_{1,0}$ > 1.44).

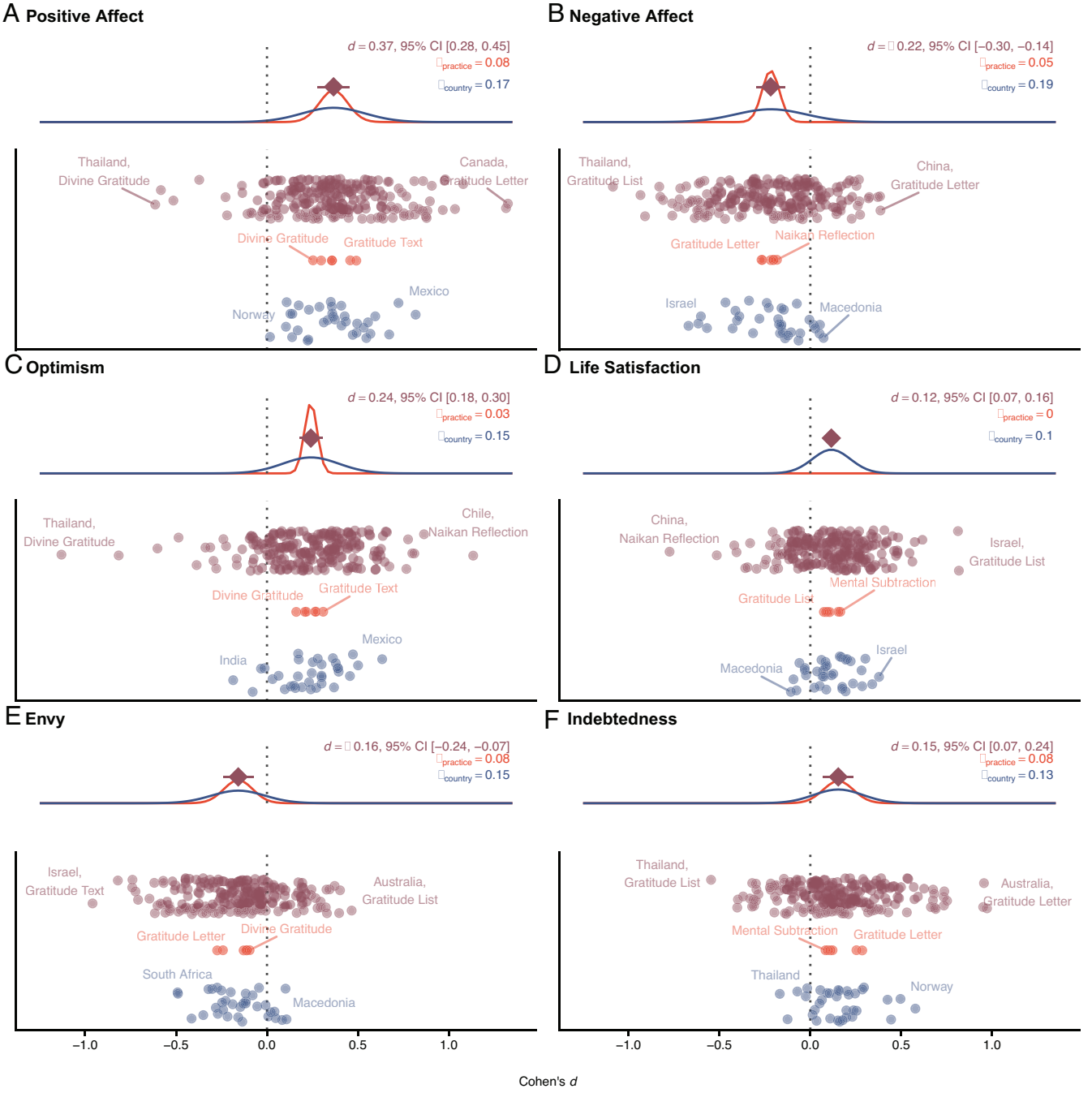

Fig. 2. Estimated effects of gratitude practices (x-axis, Cohen's *d*) on affect, optimism, life satisfaction, envy, and indebtedness (plotted in panels *A*–*F*). Purple diamonds represent overall effect size estimates, with corresponding lines representing the 95% CI. Dots represent country-specific (blue), practice-specific (red), and country-practice-specific (purple) effect size estimates. Density curves represent the estimated distribution of effects across different countries (blue) and practices (red) level.

Discussion

Inspired by the ubiquitous nature of gratitude across cultures (1–3), we systematically evaluated the effects of a) 6 experimentally manipulated gratitude practices (compared to 3 control conditions) on b) 6 psychological outcomes measured in c) 34 countries purposively sampled to maximize modern-day cultural distinctiveness. Results provide 3 main findings.

First, consistent with prior theories, short browser-based gratitude interventions led to immediate and measurable improvements in psychological states linked to human flourishing, relative to control tasks (5–7). Consistent with Wood et al. (5) focus on subjective well-being, we found that gratitude practices improved feelings of positive affect, negative affect, optimism, and life satisfaction. Consistent with Algoe's (6) emphasis on social bonds, we found that gratitude practices decreased feelings of envy, reflecting reduced perceptions of antagonism in one's relationships. Last, consistent with McCullough et al. (7) focus on reciprocity, we found that gratitude practices increased feelings of indebtedness, reflecting stronger motivation for social reciprocity.

Second, results provide relatively unconfounded estimates of the extent to which differences in practices and cultures moderate the effects of gratitude interventions. For example, writing a gratitude text or letter led to the greatest amount of measured change

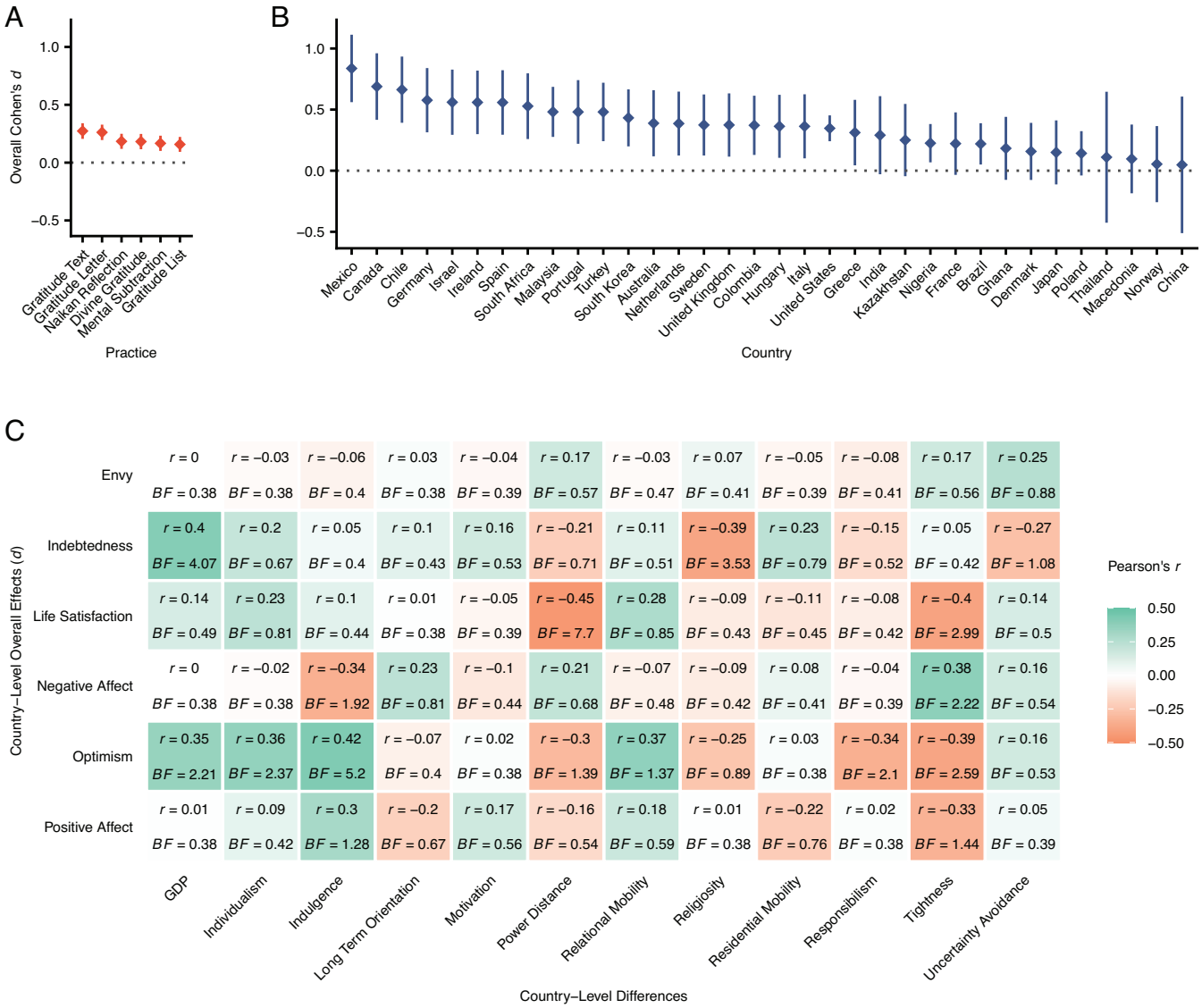

Fig. 3. Panel (*A*): The average observed hypothesis-consistent effect of each gratitude practice (x-axis), averaged across six primary outcomes and 34 countries. Diamonds represent point estimates that cover the full 95% CI. Panel (*B*): The average observed hypothesis-consistent effect change observed within each country (x-axis), averaged across six primary outcomes and six gratitude practices. Diamonds represent point estimates, and lines represent 95% CI. Panel (*C*): Correlation matrix displaying correlations between a) the observed country-level effects of gratitude on 6 primary outcomes (y-axis), and b) 12 potential cross-cultural moderators (x-axis). The strength of the correlation is represented by Pearson's *r* values, as well as the color of the grid. The strength of evidence is represented by Bayes Factors ($BF_{1,0}$).

in moods, life outlooks, and social evaluations—whereas merely listing the things one is grateful for led to the least amount of measured change. These differences, however, were far less inferentially consequential than differences between countries, which were linked to between ≈1.5 and 4.5 times more heterogeneity across studied outcomes. For example, combined across all outcomes, the estimated effects of gratitude were largest in Mexico and close to zero in Norway.

Third, an examination of more specific outcomes suggests that some effects of gratitude are more culturally universal than others. For example, results suggest that gratitude practices nearly universally make people feel more positive—a notable finding given that higher levels of positive affect are linked to a variety of other desirable life outcomes, such as income, job performance, and health (18–20). Other effects, however, appear to be less consistent across countries, illustrating cultural differences in subjective experiences during gratitude practices. For example, some theories posit that gratitude practices evolved to promote social reciprocity. However, model-derived estimates suggest that our sampled practices only increase our measure of social indebtedness in 87% of modern-day countries. (See *Limitations* for suggestions for future improvements to our outcomes, measures, and procedures.)

Of course, in addition to estimating heterogeneity between countries, we provide preliminary evidence of cross-cultural moderators that may help characterize the evolution, nature, and function of these differences. Our results provide evidence that many effects of gratitude practices are moderated by factors like cultural tightness, power distance, indulgence tendencies, and religiosity. For example, in countries that are more culturally tight vs. loose, we uncovered preliminary evidence that gratitude practices lead to smaller improvements in affect, optimism, and overall life satisfaction. In other words, results suggest that a comprehensive understanding of gratitude will ultimately need to consider how individuals manage their desires in light of social, relational, and religious constraints. However, for a variety of other potentially theory-relevant cultural differences (e.g., long-term orientation), results suggest that more research is needed.

Practically, our results highlight the importance of considering information about specific practices and cultures when evaluating proposals to leverage gratitude-based interventions to promote human flourishing (for a critical review, see ref. 4). An examination of prediction intervals suggests that researchers can have far more confidence that our patterns will replicate when studying a new gratitude practice vs. a new culture. Ultimately, though, to maximize the efficacy of such initiatives, researchers need to carefully consider not only which interventions to deploy, but also which world regions and outcomes to target. To facilitate such considerations, we share machine readable copies of all 1,224 effect sizes estimated in the present work.

Limitations and Future Directions. Although we sought to evaluate a relatively comprehensive set of countries, gratitude practices, and outcomes, our efforts could not be truly exhaustive in any of these domains.

Relative to past work, we captured a fuller breadth of modern-day cultural variability. However, we did not capture the full range. Future researchers can consider expanding the range by conducting both direct replications (more commensurable) and nondirect replications (less commensurable) of our protocols in nonsampled countries that are ultradistinct from the United States (e.g., Bahrain, Vietnam, and Andorra) (10, 21). Similarly, future research can expand investigations of cross-cultural variability beyond the nation-level examined in the present work. For example, the range of cultural variation could be decomposed in a more granular manner by estimating values at specific subregions. The observed range of cultural variation may also be further expanded by studying particularly unique groups, like a) communities with strong indigenous ties (e.g., the San of Southern Africa), b) adherents to relatively unusual religious practices (e.g., practitioners of the ancient religion, Zoroastrianism), and c) relatively geographically isolated groups (e.g., the Ik of Northeastern Uganda).

Similarly, we examined a variety of gratitude practices previously studied in experimental contexts (8). However, we have not yet captured the full breadth of gratitude-related practices. For example, we did not study some of the most culturally significant celebrations of gratitude, such as the Mid-Autumn festival (East & Southeast Asia), Bhogi Pandigal (South India), or Erntedankfest (Germany, Austria, Switzerland). We have preliminarily concluded that higher degrees of heterogeneity are observed across countries vs. practices. However, it is possible that such conclusions could be overturned once researchers study a wider variety of gratitude-related practices or interventions.

In addition to considering a wider range of outcomes, researchers may consider alternative assessments of our outcomes of interest. We most notably experienced challenges measuring indebtedness, despite ultimately uncovering hypothesized effects. The observed low reliability of our two-item measure may be driven by differences in how people—both within and between cultures—conceptualize the meaning of words associated with the construct. For instance, indebtedness can be construed as transactional (e.g., paying off social debt to avoid owing a favor later) or value based (e.g., following moral code; 22). Ambiguity about the connotation of adjectives associated with the construct—both in English and beyond—may partially explain our measurement challenges. As researchers adopt and develop more refined measures of indebtedness, our understanding of the size and nature of its links with gratitude practices may evolve too.

Perhaps our most limiting methodological feature was our focus on shifts in well-being measured immediately after a one-shot intervention. Theoretically and practically, it is important to consider both immediate and long-term gratitude practices and effects. For example, consider proposals to leverage gratitude interventions to improve human flourishing. Repeatedly engaging in our sampled practices may very well translate to stronger or longer-term shifts in life satisfaction and other life outcomes (13). However, such possibilities were not evaluated in the present work. Similarly, participating in more time-intensive gratitude customs—like Thanksgiving dinners and Mid-Autumn festivals—may produce effects that are more psychologically varied and intense. Such possibilities were not evaluated in the present work—but future opportunities to study such cultural events are expected to emerge, cyclically.

Last, although we sought to derive relatively precise comparisons of variation between countries and gratitude practices, some seemingly innocuous confounding remains. For example, participants often varied both in their country of origin and their spoken language. Some country sampling plans relied more on local volunteers whereas others relied more on online panels. Data quality may vary across sites. Such challenges are common in large cross-cultural data collection efforts (23). Nonetheless, sensitivity analyses thus far suggest that our conclusions are robust (*SI Appendix*, Table S5).

Conclusion

In the present work, we evaluated the effects of 6 gratitude practices (vs. 3 control conditions) on 6 psychological outcomes measured across 34 countries purposively sampled to maximize cultural distinctiveness. Taken together, our findings advance our understanding of gratitude in three ways: 1) they confirm that gratitude interventions lead to immediate improvements in mood, subjective outlooks, and social evaluations; 2) they quantify the extent to which these effects vary across both culture and practices; and 3) they identify promising, though largely exploratory, cultural moderators that may help explain when and why gratitude interventions backfire. In addition to refining our understanding of gratitude, such results strike a cautionary policy-related note: although gratitude-based interventions are broadly beneficial, their effectiveness may not always generalize to newly studied populations and practices. Gratitude, it seems, is a powerful psychological practice, but one whose effects are shaped by the manner and cultural ecology in which it is practiced.

Materials and Methods

Ethics. Each research group either a) received approval from their local Ethics Committee or Institutional Review Board to conduct the study (e.g., University of California, San Diego Approval No. #807871), b) indicated that their institution does not require approval to conduct this type of research, or c) indicated that the study was covered by a preexisting approval. All participants were asked for consent before participating.

Transparency and Openness. The project preregistration, materials, data, and code are openly available at https://osf.io/ae385/ (24). The present work focuses on describing patterns via meta-analysis, but *SI Appendix*, Table S3 contains summaries of converging results from mixed-effect regressions fit on participant-level data. The present work also focuses on the hypothesized effects of gratitude on six outcomes, but the Supplemental Information contains preregistered confirmations of effects on three additional outcomes: guilt, attitudes toward life (25), and sense of self (26). Our sampling plan was based on resource constraints, as opposed to statistical power. Specifically, we sought to collect as much data as possible before the end of a funding period.

Overview of Procedure. We recruited participants across 34 countries to participate in a short (≈20 min) browser-based experiment available in up to 15 languages. Most participants completed the study on their own device, but some used a device provided by an in-person experimenter. See *SI Appendix*, Table S1 for each site's data collection modality.

After providing consent, participants were randomly assigned to complete one of six gratitude practices (e.g., writing a gratitude letter) or one of three control exercises (e.g., writing about recent events). Afterward, participants completed a battery of questionnaires measuring immediate subjective changes in multiple outcomes, six discussed here: positive affect, negative affect, optimism, life satisfaction, envy, and indebtedness. Afterward, participants completed several demographics surveys and were debriefed.

Country Sampling. To evaluate the extent to which the effects of gratitude practices are similar across cultures, we sought to capture a broad distribution of modern-day cultural variation. To do so, we relied on the Cultural Distance index: a measure of the overall extent to which two countries differ across a variety of cultural domains (10). More technically, cultural distance is represented using the fixation index: a method often used in genetics to quantify the genetic distinctiveness of two populations (27). The Cultural Distance index applies this same approach to a variety of measures of cultural differences from the World Values Survey, providing a summary-level measure of the overall cultural distinctiveness of nearly 100 modern-day countries.

To determine which countries would maximize estimated coverage of modern cultural variation, we considered the extent to which each country was distinct from the most commonly studied context: the United States (Fig. 1*A*) (8). We then worked to recruit collaborating researchers (and/or panel providers) in each country with the goal of purposively sampling as much of the cultural distance range by the end of a funding timeline (August 2025). For example, we included countries that are relatively similar to the United States (e.g., Canada), somewhat dissimilar to the United States (e.g., Germany), and highly dissimilar to the United States (e.g., Kazakhstan, Fig. 1*A*). This led to a total sample of 34 countries (Fig. 1*B*).

To describe the cultural differences between our sampled countries, we first leveraged the Culture Factor dataset (28) to compile estimates of the extent to which each country promotes individualism (i.e., social independence), indulgence (i.e., emphasis on pleasure), long-term orientation (i.e., focus on future goals), motivation (i.e., drive for achievement), and power distance (i.e., acceptance of social hierarchy). We then supplemented with additional estimates of residential mobility (i.e., frequency of geographic moves) (29), religiosity (i.e., importance of religion) (30), relational mobility (i.e., opportunities for new social ties) (31), tightness (i.e., strength of social norms) (32), responsibilism (i.e., emphasis on social responsibility) (33), and Gross Domestic Product (GDP) (34). See Fig. 1*C* for more information.

Participant Sampling. Across the 34 countries described above, we recruited participants through a variety of mediums (e.g., community announcement or panel providers), modalities (e.g., with an in-person experimenter vs. completely online), incentive structures (e.g., course credit or financial payment), and languages (e.g., English or Kazakh). Non-English materials were developed via backtranslation procedures with collaborating researchers (35).

In total, we recruited 15,499 participants. After excluding participants who did not finish at least 95% of the survey ($n = 4{,}725$), did not complete all dependent variables (n = 76), and/or failed to record their site location ($n = 2$), we were left with 10,696 participants (43% male, 55% female, 2% other or not reported; age $M = 31.80$, $SD = 12.60$). See *SI Appendix*, Tables S1 and S2 for site- and condition-specific demographics.

Gratitude Practice Sampling. In addition to sampling a broad range of countries, we sought to sample a broad range of practices previously studied by gratitude researchers (36). We chose six, which we compared to three commonly used control conditions.[†] This left us with nine total conditions, randomly assigned between subjects.

The six gratitude practices included: 1) writing a list of things or circumstances you are grateful for (Gratitude List) (13); 2) writing a letter to someone you are grateful to (Gratitude Letter) (37); 3) writing and sending a text to someone you are grateful to (Gratitude Text) (37); 4) Naikan-meditation-like reflection on things you are grateful for (Naikan Reflection) (14); 5) writing about how your life would be different without something you are grateful for (Mental Subtraction) (38, 39); and 6) writing a letter of gratitude to a divine figure or God (Divine Gratitude) (40).

The three control conditions included: 1) a no-treatment, measurement-only control (Measurement Only) (41); 2) writing about any events that happened to you recently (Events List) (41); and 3) writing about interesting events that happened to you recently (Interesting Events List) (41). See *SI Appendix*, Table S2 for condition instructions, and *SI Appendix*, Table S3 for manipulation checks confirming that gratitude practices increase self-reported gratitude.

Outcomes of Interest. After completing one of the nine randomly assigned practices, participants indicated the extent to which 20 adjectives described their current psychological state ("1 = strongly disagree" to "7 = strongly agree"). In the present work, we focus on items related to 5 dependent variables, presented randomly across four blocks of questionnaires:

- Positive affect ("happy," "joyful," "pleased," "content," and "satisfied"; Cronbach's $\alpha = 0.92$),
- Negative affect ("sad," "depressed," "nervous," and "anxious"; $\alpha = 0.85$)
- Optimism ("optimistic" and "hopeful"; $\alpha = 0.81$)
- Envy ("envious," "bitter," and "jealous"; $\alpha = 0.74$)
- Indebtedness ("indebted" and "obligated"; $\alpha = 0.39$, see *Limitations*)

Using the same rating scale, participants also completed a 5-item measure of a 6th dependent variable: life satisfaction (e.g., "In most ways my life is close to my ideal"; $\alpha = 0.88$) (42).

Analytic Strategy. Our analysis strategy was designed to accomplish three goals. First, we sought to evaluate whether gratitude interventions, in general, produce predicted improvements in affect, life outlooks, and feelings of envy and indebtedness (5–7). Second, we sought to systematically quantify the extent to which such effects are consistent across different practices (e.g., counting your blessings vs. imagining your life without them). Third, we sought to quantify the extent to which such effects are consistent across different countries (e.g., the United States vs. Kazakhstan). To do so, we leveraged random effects meta-analysis. (See *SI Appendix*, Table S3 for converging results from preregistered mixed-effect regressions.)

For each outcome of interest (e.g., positive affect), we calculated the standardized mean difference (Cohen's d_s) between a) a gratitude practice, and b) an average of three control conditions. We averaged the three control conditions to summarize results more concisely, but the interested reader can review similar patterns from all possible pairwise comparisons in *SI Appendix*, Table S3. This provided us with estimates of the effect of each gratitude intervention in each country (Fig. 2, purple dots).

As a reminder, our design systematically varied both the sampled gratitude practice (p) and country (c). This allows us to examine the overall efficacy of each gratitude practice (averaged across all sampled countries; Fig. 2, red dots), as well as the overall amount of change in each country (averaged across all studied practices; Fig. 2, blue dots). More formally, we estimated the extent to which the effects of gratitude vary across practices and countries using meta-analysis with inverse variance weights. Here, β_0 represents the overall effect of all studied practices in all studied countries; $\tau^2_{practice}$ represents variation in the effect across different studied practices; and $\tau^2_{country}$ represents variation in the effect across different countries.

$$d \sim \beta_0 + \mu_{practice} + \mu_{country} + \varepsilon,$$

$$\mu_{practice} \sim N\left(0, \tau^2_{practice}\right),$$

$$\mu_{country} \sim N\left(0, \tau^2_{country}\right).$$

Evaluating Cross-Cultural Consistency. To further convey the extent to which the effects of gratitude are similar across cultures, we considered two additional approaches. First, we simply counted the number of countries where we observed hypothesis-inconsistent effect size estimates (regardless of the significance of those estimates). For example, we report the number of countries where the estimated effect of gratitude on life satisfaction was nil or negative ($\widehat{d}_{country} \leq 0$). However, one limitation of this approach is that hypothesis-inconsistent effect size estimates could a) be systematically linked to a moderator (e.g., $\tau_{country}$) or b) reflect mere sampling error (ε). Thus, we considered a second index: model-derived estimates of the proportion of countries that exhibit theory-inconsistent effect size estimates. Once again, consider life satisfaction. First, we estimated the model-implied distribution of effects across countries: $N(\beta_0, \tau^2_{country})$. Second, we estimated the proportion of this distribution that was inconsistent with the hypothesis ($d \leq 0$).

[†]We intentionally did not include another frequently used control: having participants write about hassles in their daily life. Based on past work, we expected that this task would decrease peoples' subjective well-being, leading to biased estimates of the effectiveness of gratitude interventions (44).

Last, we examined cross-cultural predictors of between-country variation in the effects of gratitude practices. For each of our primary outcomes of interest, we computed pairwise correlations between a) the observed country-level effects of gratitude, and b) 12 cross-cultural moderators originally compiled to describe the nature of our sample (Fig. 1*C*). Because these analyses involve a relatively small number of observations and a relatively large number of unplanned analyses, we focus on the degree of evidence via Bayes Factors ($BF_{1,0}$) with uninformed priors (43).

Data, Materials, and Software Availability. Data, material, code data have been deposited in https://osf.io/ae385/ (24).

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