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Social norm strength varies between cultures with respect to norm referent, norm type, contextualization, normative properties, and valence

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Allon Vishkin[1], Lisya Kaspi[2], Yuri Miyamoto[3,4], Tomotaka Okuyama[4], Min Young Kim[5] & Maya Tamir[2]

Leading theoretical accounts in cultural psychology argue that social norms are generally stronger in certain cultures across different types of norms. However, these theories have largely been based on studies focusing on a limited range of norms and specific measures, with little attention paid to which specific social norms are under consideration. To address this limitation, we assess social norms across a broader range of features, including norm referent (whether norms are for behaviors vs. emotions), norm type (prescriptive vs. descriptive), norm contextualization (context-specific vs. in general), norm assessment (homogeneity vs. concordances), and valence (for emotion norms: positive vs. negative). Two studies (total $N = 3344$) conducted in Japan, South Korea, the United States (Studies 1–2), and the United Kingdom (Study 2) reveal significant variation across all features. Furthermore, norms frequently vary more within cultural regions than between them, challenging the assumption of clear-cut cultural differences. These findings suggest that existing theories may have overstated cross-cultural differences in norm strength by having focused on a limited subset of norms, and highlight the need to consider which norms are assessed. As an alternative to the existing theories, and as a benchmark for future theoretical accounts, we propose a specificity principle for cultural differences in norm strength.

Social norms guide a wide array of human conduct, from cutting in line[1] to dividing resources[2], to feeling happy or sad[3]. In fact, social norms ostensibly can develop in relation to any human conduct. This ubiquity suggests that cultures will vary in which social norms they follow based on which norms they consider important. However, leading theoretical accounts in cultural psychology have maintained that social norms are generally stronger in certain cultures across different types or features of norms[4–6]. In what follows, we characterize the notion of norm strength, present these theoretical accounts, review recent evidence inconsistent with these accounts, and highlight limitations in the way norm strength has been studied to date. Finally, we identify a variety of features that distinguish between different types of social norms, and then present two studies that tested for cultural differences in social norms on these features.

Norm strength and intersubjective consensus

Social norms refer to intersubjective consensus within a given society about what is desirable or appropriate[7]. Such consensus may arise from a variety of sources, including expectations of informal social approval or disapproval, as well as formal institutional constraints such as laws and organizational rules. The present investigation focuses on the strength of this consensus, irrespective of the processes through which it arises. Norm strength, as we define it here, refers to the extent of intersubjective consensus regarding whether a given type of human conduct is desirable or appropriate in a given culture. Accordingly, norm strength can be assessed via intersubjective perceptions[8]. One consequence of greater norm strength is greater homogeneity[5,6,9,10], and so one way to capture norm strength is via measures of dispersion within a population, such as standard deviations[5,9,11]. Consequently, group differences in dispersion reflect differences in norm strength, even when the content of norms between groups is identical[12].

[1]Technion – Israel Institute of Technology, Haifa, Israel. [2]The Hebrew University of Jerusalem, Jerusalem, Israel. [3]The University of Wisconsin, Madison, WI, USA. [4]Hitotsubashi University, Tokyo, Japan. [5]Keimyung University, Daegu, South Korea. e-mail: allonv@technion.ac.il

Norm strength across cultures

According to leading accounts, some cultures have higher norm strength, whether those cultures are higher in collectivism[6] or tightness[4]. Collectivism refers to a cross-cultural dimension that orders societies based on the extent to which they focus on the needs and priorities of their social groups and interpersonal relationships versus the needs and priorities of the individual[6,13]. Greater norm strength has been identified as a central feature of collectivist cultures[6,14]. In such cultures, social norms are believed to be more salient and more likely to guide behavior[6], with "emphasis on behavior determined by social norms and duties rather than by pleasure or personal advantage" (ref. 14, p. 6). Moreover, more collectivist cultures are believed to condone a more limited range of appropriate behaviors and to endorse greater punishment for those who engage in norm-violating behaviors. In line with this perspective, empirical findings show that members of collectivist cultures are more likely to conform to social pressure[15], and to value uniqueness less[16]. Even so, the scope of these findings is limited when considered against the range of social norms that exist.

Cultural tightness refers to a cross-cultural dimension that orders societies based on the strength of their social norms as well as their tolerance for deviant behaviors[4,8,17], and overlaps to a substantial extent with collectivism[18]. Tighter cultures have a more limited range of socially sanctioned behaviors and lower tolerance of deviant behaviors, while looser cultures have both a wider range of socially sanctioned behaviors and higher tolerance of deviant behaviors. Thus, there are "societies that have strong norms and a low tolerance for deviant behavior", as compared to "societies that have weak norms and a high tolerance for deviant behavior" (ref. 4, p. 420). Evidence in support of the argument that cultural tightness is associated with tougher sanctions and punishment comes from a broad range of findings, such as tighter cultures being more likely to retain the death penalty[8]. Even so, the relation between cultural tightness-looseness and adherence to concrete, specific norms has hardly been tested—and where it has[8], results were aggregated across numerous social norms.

Overall, these accounts suggest that norm strength is greater in some cultures than others, a proposition with far-reaching implications that has nonetheless rarely been tested across diverse and concrete social norms. For instance, when comparing a tighter vs. a looser culture, would the former have stronger norms for cutting in line, dividing resources, and feeling happy or sad? These accounts presented above are less clear regarding their potential responses to this question. One possibility is the strong claim that they would predict that, yes, all norms are stronger in more collectivist or tighter cultures. Another possibility is the weaker claim that these cultures will generally have stronger norms across a variety of norms, even if there might be exceptions for particular norms. To date, the available evidence has been insufficient to distinguish between these possibilities. Meanwhile, recent evidence assessing the strength of concrete social norms has pointed to several instances in which social norms are not necessarily stronger in cultures considered to be more collectivist or tighter.

Norm strength across cultures: counter-evidence

Several findings have challenged the view that norm strength is greater in more collectivist or tighter cultures. Building on the leading view that collectivism is associated with norm strength, a meta-analysis of field experiments that used social norms to promote pro-environmental behaviors hypothesized that social norms will be more influential in promoting pro-environmental behaviors in more collectivist cultures[19]. In fact, results revealed a medium-sized effect in the opposite direction. Additional findings in environmental psychology have found that the effect of social norm interventions is not greater in tighter nations[20].

Further work challenging the leading theoretical accounts comes from research on emotion norms. One study found greater homogeneity regarding desirable and appropriate positive emotions, particularly for pride, in two cultures lower in collectivism (the United States and Australia) compared to two cultures higher in collectivism (China and Taiwan)[21]. The authors concluded that certain emotion norms are more adhered to in less collectivist cultures. Another study found that, contrary to their a priori predictions, priming people with an interdependence (vs. independence) mindset increased variability in emotional expressions[22]. Furthermore, contrary to predictions, collectivism predicted greater variability in the endorsement of emotion expressivity across 32 countries[23]. Leveraging these unexpected findings, a recent investigation examined adherence to emotion norms across cultures in four datasets[11]. Higher individualism was associated with greater adherence to emotion norms for both experienced emotions and valued emotions, possibly because individualist cultures prioritize internal states over public behaviors, leading to a greater emphasis on emotion norms. Furthermore, consistent with findings that deviation from the social norms in one's culture predicts lower well-being[24–26], distance from the emotional profile in one's country predicted lower well-being. Finally, cultural tightness did not predict adherence to emotion norms. Similar findings were obtained in an independent replication[27]. A further investigation found that immigrants from more individualist cultures acquire the emotion norms of their host culture to a greater extent, consistent with the notion that norm adherence is greater in more individualist cultures[28].

Why might collectivism predict lower strength of emotion norms, while previous findings have shown that collectivism predicts higher strength of behavioral norms? One possibility is that cultural differences in norm strength differ based on whether norms refer to emotions or to behaviors[11]. Another possibility is that the findings on emotions assessed norms in general, whereas studies on behaviors typically assess them within a particular context (e.g., singing in the library; ref. 29). Consistent with the observation that social norms are highly variable and can pertain to any aspect of human conduct, such explanations suggest there are norm-specific features that may affect norm strength across cultures. However, as we describe below, studies that have measured norm strength across these features are rare.

Scope of previous studies on norm strength across cultures

Most studies on norm strength have assessed no more than one to five distinct norms across cultures (e.g., refs. 29–31). The index of cultural tightness does not measure actual or perceived norms, but rather perceptions of norms (e.g., agreement with the item "There are many social norms that people are supposed to abide by in this country"[8]), which can lead to highly variable findings between samples[32]. The study on that created the index of cultural tightness also used a measure of concrete norms, targeting 12 behaviors and 15 situations, but they only report an aggregate statistic collapsed across all behaviors and situations, so it is not possible to assess variation between behaviors or situations. Similar assessments have been used more recently, but only in one cultural context[33]. Another index of tightness across the 50 United States[34] used indicators which do not speak directly to norms (e.g., percentage of individuals who report that religion is important in their daily lives), and none of the outcomes assessed norms directly. Some studies have assessed more than one feature of norms, but these have focused on a limited set of norms, such as a descriptive norm versus a prescriptive norm[35–38], and few have been assessed across cultures.

A few studies have gone beyond five norms. Two neuroimaging studies tested judgments of the perceived appropriateness of 34 behaviors in three different situations, but no other source of variability of norms was examined[39,40]. Another study assessed prescriptive norms of 19 emotions among three ethnic groups in the United States, and found ethnic differences using latent classes analysis chiefly on the basis of emotion valence[41]. Work on the acquisition of emotion norms among immigrants includes numerous emotions and situations, but then typically collapses across all emotions and situations in order to create a single score of norm adherence[42,43], preventing an examination of variability by these features. Finally, a recent investigation assessed several features of norms, but only for emotions[11]. Thus, studies assessing norms across several features are currently limited.

Features of norms

To summarize, leading theoretical accounts in cultural psychology have proposed that norms are stronger in some cultures than in others. However, some recent findings suggest that variation in norm strength across cultures may be more complex. Furthermore, the scope of social norms and their relevant features that have been tested is relatively limited, potentially concealing more complex patterns of cultural variability. The purpose of this investigation, then, is to examine cultural differences across multiple features of norms. These features were selected because they appear in the existing literature on cultural differences in norms and do not exhaust the ways in which norms vary.

Norm referent (behaviors vs. emotions). Much of the early work on norms developed following demonstrations that people do not adhere to "selfish" behaviors in economic games, contrary to expectations of economic models of rationality[2,44]. This discrepancy was attributed to the functioning of cooperative social norms. Accordingly, the literature on social norms focuses on behaviors as their main referent. However, social norms also apply to emotions, such as which emotions are appropriate to feel, share, or express[23,45]. Furthermore, norms for emotions and behaviors may be distinct[46]. Thus, an important feature distinguishing norms is whether they refer to emotions or behaviors.

Contextualization (general vs. contextual). Social norms can apply to behaviors or emotions in general, as well as in specific contexts. Lying may be counter-normative in general, but normative when its motive is prosocial[47]. Excitement may be normative in some cultures in general[48], but counter-normative in specific contexts, such as a funeral. Another feature distinguishing norms, then, is whether they refer to an emotion or behavior in general, or in a particular context.

Norm type (prescriptive vs. descriptive). Norms may be perceived as what an individual views as common (descriptive norms) or as what an individual views as approved by others (prescriptive or injunctive; ref. 35). Some studies have examined which norm type is more likely to affect behavior[35,49] and one study found greater cultural variation in the effect of prescriptive (vs. descriptive) norms[37]. This may be due to the larger cultural variation in what is deemed appropriate or ideal, versus what behaviors people actually engage in[50]. Thus, while prescriptive and descriptive norms mutually constitute each other[36,51], they are also dissociable.

Normative properties (constraint vs. prioritization)

We distinguish between two properties of norm strength: normative constraint and normative prioritization. Normative constraint refers to the extent to which judgments about a specific norm vary within a culture, reflecting consensus regarding that norm. It is indexed by within-culture homogeneity, such that stronger constraint appears as higher homogeneity[5,6,9,10], such as smaller standard deviations[5,9,11]. In contrast, normative prioritization refers to the extent to which individuals share a common ordering of multiple norms—namely, how the various items are prioritized relative to each other. This property is indexed by concordances, operationalized as profile correlations between individuals' responses and the average cultural profile across a set of norms[43]. Importantly, these two properties need not covary (see Fig. 1 in ref. 11). A culture may exhibit high normative constraint, indicating agreement about the appropriateness of each item considered in isolation, while exhibiting low normative prioritization, indicating limited agreement about which norms are most salient or consequential.

Valence (positive vs. negative). Emotions are distinguished primarily by the dimensions of valence and arousal[52], although there is evidence that valence is primary[53]. Initial findings suggest that cultural differences in emotion norms are moderated by valence. An early study found that individualist cultures have greater adherence to emotion norms for positive emotions, and pride in particular[21]. Meanwhile, another study found that associations between individualism and norm strength were sometimes stronger for negative emotions than for positive emotions[11]. Similarly, associations between individualism and norm strength were found to be moderated by valence, which was further moderated by norm type (descriptive vs. prescriptive)[27]. Thus, valence is a meaningful feature that distinguishes between different emotion norms.

The present investigation

Two studies examined cultural differences in the strength of social norms across these five features of norms in four countries. The studies followed preregistered research questions regarding whether cultural differences in norm strength vary by these features, but no specific predictions were made. Study 1 compared participants from a highly individualist, English-speaking Western country—the United States—with two countries from the cultural region of East Asia—Korea and Japan. Study 2 included the United Kingdom as another sample from a highly individualist, English-speaking Western country. These samples were selected because they fall neatly into distinct cultural regions[54,55]. Furthermore, these countries are relatively evenly distributed on the index of tightness-looseness[8]. The index has a mean of 6.5 and standard deviation of 2.7. Scores for the four countries are 5.1 (United States), 6.9 (United Kingdom), 8.6 (Japan), and 10.0 (South Korea), with the two Western countries lower in tightness compared to the two East Asian countries. Overall, a bit more than half a standard deviation distinguishes each country on the US-UK-Japan-Korea continuum, and 1.8 standard deviations distinguish the loosest and the tightest country. Furthermore, this rank order of the four countries is the same on the dimension of individualism-collectivism[56], with which tightness-looseness has significant overlap[18].

Building on previous theoretical work[6,10], norm strength can be captured not only through explicit references to societal expectations but also through the extent of intersubjective consensus of responses within a population, as captured by indices of dispersion[5,9,11]. Similarly, measures of concordance—that is, the degree to which individuals' responses align—can capture normative consensus even for items not overtly framed in normative terms[42,43]. Guided by this reasoning, our studies assessed the appropriateness of behaviors as a way to tap into norm strength. In Study 1, participants rated how appropriate each behavior was based on their personal judgment, capturing within-culture consensus in individual evaluations. In Study 2, participants rated how appropriate each behavior was in their country, providing a more direct assessment of perceived societal consensus. This design allowed us to compare individual-level and society-level manifestations of the same underlying normative processes, cf. ref. 57.

This research makes two contributions to the literature on social norms and culture. First, it challenges the prevailing assumption that norm strength is a unitary, culture-level property that generalizes across features of norms. Second, adopting a creative-destruction approach[58], this work does not seek only to challenge existing theories, but also concludes by proposing a specificity principle as an alternative account.

Methods

Transparency and openness

Study 1 was preregistered on October 9th, 2023, including sample sizes, measures, analyses, and exclusion criteria [aspredicted.org/nd9c-cv7h.pdf]. Study 2 was preregistered on March 30th, 2024, including sample sizes, measures, analyses, and exclusion criteria [aspredicted.org/vsgr-vmjz.pdf]. The preregistration of Study 2 was identical to that of Study 1, with the following exceptions: it included the United Kingdom as a fourth sample (and accordingly a larger number of observations) and specified a different age range (38–58). The preregistrations referred to most of the features of norms investigated here, some under primary analyses and others under secondary analyses. In particular, the preregistered research questions proposed to investigate norms between regions (the U.S. vs. Japan and South Korea), within a cultural region (Japan vs. South Korea), based on norm referent (behaviors vs. emotions), and based on contextualization (general

vs. contextual). A section in the preregistration on planned secondary analyses includes variation based on norm type (prescriptive vs. descriptive; the former is presented as the main analysis), normative properties (homogeneity vs. concordances), and valence (positive vs. negative) for emotion norms.

Below, we report how we determined our sample size, all data exclusions, and all measures in the study. All data, analysis code, and research materials are available at https://osf.io/8b4wk/?view_only=958db4cea49f413daa29450aa700cdd4. Data were analyzed using R, version 4.4.1.

Participants

Study 1. The unit of the main analysis as recorded in the preregistrations is the standard deviation of each item (behavior or emotion) in each country. Thus, a test of power can determine not how many participants were needed, but how many items were needed. We retrieved effect sizes on Japan-U.S. differences in the standard deviations of contextless norms, available for both descriptive and prescriptive norms from previous work[59]. A power analysis for a paired-samples t-test revealed that 80% power can be reached with 10 emotion items for descriptive norms in general, and 13 emotion items for prescriptive norms in general. Accordingly, the assessment of emotion norms included 13 emotion items. Meanwhile, for the assessment of behavior norms, we opted for 12 behaviors because we followed a previous measure with 12 behaviors which has been validated cross-culturally[8].

Given that sample sizes of participants could not be determined by the power analysis, we opted for sample sizes in the same range as in the study to determine power[59]. That study had sample sizes of 167 for Japan and 353 for the United States. We aimed to collect samples of 250 participants for each of the two surveys in every country, for a total of 1500 participants.

Participants were preselected for having been born in their respective country (Japan, Korea, and the U.S.), for being current residents of it, and for being native speakers of the main language in their respective country. These criteria were applied uniformly across all countries to standardize the reference population being sampled. Because one of our primary outcomes was within-country consensus regarding social norms, this approach reduced the possibility that cross-national differences in demographic composition (e.g., immigration status or language background) would contribute to observed differences in within-country variability. In addition, since perceptions of norms may vary between different generations, we sought to capture relatively homogenous samples within countries on the basis of age. Consequently, we preselected participants in the range of 25–35 years of age. Some participants managed to access the survey despite not meeting these preselection criteria, and so they were excluded from all data analyses. Samples were preselected for an even distribution of gender. Finally, following preregistered exclusion criteria, we excluded participants who failed at least one of two attention checks, and who completed the survey in less than one-third of the median completion time in their country.

For the Japanese sample, we ran the survey on the Japanese-language platform Crowdworks (https://crowdworks.co.jp/). Given our strict preselection criteria, particularly regarding age, we apparently used up the entire available sample on this platform. Therefore, we ran the rest of the survey on an additional Japanese-language platform, Lancer's (https://www.lancers.co.jp/). Japanese participants were compensated 250 yen (~$1.67) for their participation. An unanticipated problem emerged for responses from this platform: three different IPs appeared at least five times, covering a total of 121 participants. We removed all these participants prior to any analysis. No further exclusions were made beyond preregistered criteria. The final sample in Japan was 450 (42.9% male, 56.4% female, 0.6% self-labeled or did not report sex; M_{age} = 31.3, SD_{age} = 3.21). We obtained the American sample from the survey platform Prolific (www.prolific.co/), where participants were compensated $2.70 for participation. The American sample included 467 participants (48.4% male, 48.4% female, 3.2% self-labeled or did not report sex; M_{age} = 29.9, SD_{age} = 3.04). We obtained the Korean sample from the Korean-language survey platform Embrain (https://www.embrain.com), where participants were compensated for their participation directly by the platform. The Korean sample included 500 participants (50.0% male, 50.0% female; M_{age} = 29.9, SD_{age} = 2.98). The total sample size across all countries was 1417.

Study 2. We sought to recruit the same sample size per country as in Study 1. As in Study 1, participants were preselected for having been born in their respective country (Japan, Korea, the U.S., and the UK), current residents of it, and for being native speakers of the main language in their respective country, but the age range was older: 38–58. As in Study 1, some participants managed to access the survey despite not meeting these preselection criteria, and so they were excluded from all data analyses. No further exclusions were made beyond preregistered criteria. Samples were preselected for an even distribution of gender. Finally, following preregistered exclusion criteria, we excluded participants who failed at least one of two attention checks, and who completed the survey within one-third of the median completion time in their country.

We recruited the Japanese sample from a Japanese-language platform, Lancer's (https://www.lancers.co.jp/), where they were compensated 200 yen (~$1.33 dollars) for their participation. 482 participants were recruited in Japan (51.2% male, 48.5% female, 0.2% self-labeled or did not report sex; M_{age} = 46.1, SD_{age} = 5.65). We obtained the American sample and the sample from the United Kingdom from the survey platform Prolific (www.prolific.co/), where participants were compensated $2.70 the participation. The American sample included 458 participants (49.6% male, 49.6% female, 0.9% self-labeled or did not report sex; M_{age} = 46.9, SD_{age} = 5.98). The sample from the United Kingdom included 487 participants (50.3% male, 47.3% female; M_{age} = 48.1, SD_{age} = 6.08). We obtained the Korean sample from the Korean-language survey platform Embrain (https://www.embrain.com), where participants were compensated for their participation directly by the platform. The Korean sample included 500 participants (50.0% male, 50.0% female; M_{age} = 47.4, SD_{age} = 5.87). The total sample size across all countries was 1927.

Materials

Study 1. Surveys were prepared in three languages using a procedure similar to a translation and back-translation procedure[60]. The survey was prepared in English, translated into Japanese and Korean by bilingual speakers, and then this translation was compared to the original English version by another bilingual speaker to ensure accurate translations.

Contextual prescriptive norms. We used an existing measure to assess prescriptive norms for behaviors in particular contexts, and then modified this to create a measure of prescriptive norms for emotions in particular contexts.

Contextual prescriptive norms for behaviors. Contextual prescriptive norms for behaviors were assessed using the situational constraint measure[61] subsequently adapted to assess norm strength[8]. In the original measure, participants were asked to rate the appropriateness of engaging in 15 behaviors across 15 common situations. Gelfand et al. adapted this measure to include 12 behaviors and 15 situations that are relevant and familiar across cultures, as well as highly variable along the theoretical dimensions distinguishing both behaviors and situations. We used this cross-culturally validated measure, in which the following 15 situations were included: bank, doctor's office, job interview, library, funeral, classroom, restaurant, public park, bus, bedroom, city sidewalk, party, elevator, workplace, and movies. We also used the same behaviors as in Gelfand and colleagues, but during the process of translating the survey from English into Japanese and Korean we found that some items required clarification in order to be unambiguous and so added short explanations in parentheses in every language. The final list of 12 behaviors we used, with the short explanations in parentheses, are as follows: arguing, laughing, cursing/swearing, kissing (on the mouth), crying (shedding tears), singing, talking (having a conversation), flirting, listening to music, reading newspaper, bargaining (exchanging goods,

services, or privileges), and eating. All situations were crossed with all behaviors, for a total of 180 items (sample items: "Flirting when at the doctor's office"; "singing when at a party"). Participants were presented with the following prompt at the beginning of the measure:

> "From various sources in our everyday lives we have all developed a subjective "impression" or "feeling" for the appropriateness of any given behavior in a particular situation. Here, we are interested in your judgment of the appropriateness of particular behaviors in particular situations. Your task in each case is simply to rate how appropriate each behavior is, in the given situation."

Then, on each screen, they were presented with the following prompt before responding to the items: "How appropriate is the behavior in the given situation?". Responses to each item were completed on a 6-point scale from *extremely inappropriate* (coded as 1) to *extremely appropriate* (coded as 6).

Contextual prescriptive norms for emotions. The measure of contextual prescriptive norms for emotions was created by adapting the measure of contextual prescriptive norms for behaviors. First, instead of behaviors, we created a list of emotions, divided almost evenly between positive and negative emotions: anger, sadness, fear, disgust, guilt, shame, happiness, surprise, calmness, excitement, sympathy, and love. We selected 13 emotions rather than 12 to adhere to the power analysis. These emotions were crossed with all contexts, for a total of 195 items (sample item: "happiness when at the doctor's office"; "excitement when at a party"). Second, prompts were modified to refer to emotions rather than behaviors. During data analysis it became apparent that an error led to the exclusion of the item "love when at the movies" in one of the samples. As a result, we excluded this item from all analyses.

General prescriptive norms. Prescriptive norms for behaviors in general were assessed for the 12 behaviors which appeared in the measure of contextual prescriptive norms using the same scale. Participants were presented with the following prompt:

> "In this study, we are interested in your judgment of the appropriateness of certain behaviors. From various sources in our everyday lives we have all developed a subjective "impression" or "feeling" for the appropriateness of any given behavior. Your task in each case is simply to rate how appropriate each behavior is, in general."

General prescriptive norms for emotions were assessed using the same prompt but in reference to the 13 emotions which appeared in the measure of contextual prescriptive norms for emotions.

General descriptive norms. Descriptive norms for behaviors and emotions in general were assessed using the same measure as general prescriptive norms, but with slightly different prompts. The prompt for behaviors was as follows: "How often in general do you engage in each of the following behaviors?". The prompt for emotions was as follows: "How often in general do you experience each of the following emotions?"

Study 2. Materials were the same as those used in Study 1, with modified instructions to assess societal perceptions. For instance, for the measure of contextual prescriptive norms for behaviors, participants were given the following instructions: "We are interested in how appropriate certain behaviors are perceived to be, in particular situations. Your task in each case is simply to rate how appropriate each behavior is perceived to be, in the [participants' country], in various situations." Then, on each screen, they were presented with the following prompt before responding to the items: "In [participants' country], how appropriate is each behavior in the given situation?". The measure of contextual prescriptive norms for emotions was identical but referred to emotions. Similar modifications meant to assess perceptions in one's country in particular were implemented in the measures of general prescriptive norms and general descriptive norms as well. The error which led to the exclusion of one item in the contextualized measure for emotions in Study 1 was corrected.

Procedure

Procedures were identical in both studies. Surveys were completed online and accessed via the survey platforms in participants' native language. After providing consent, participants were randomly assigned to the survey on emotions or behaviors. Surveys were completed in the following order: prescriptive norms (in general), prescriptive norms (contextualized), descriptive norms (in general), and demographics. The measures in general contained 12 or 13 items (for behaviors and emotions, respectively) and were presented on a single screen in a randomized order. The contextualized measures contained 182 or 197 items (for behaviors and emotions, respectively, including two attention check items) and could not fit onto a single screen. Therefore, we divided them into 15 or 16 screens (for behaviors and emotions, respectively), with 12–15 items on each screen. The order of screens, as well as the order of items within each screen, was randomized. No other measures were included in the survey.

Analyses

The normative properties (homogeneity to assess constraint and concordances to assess prioritization) were analyzed for every measure. Homogeneity was operationalized by standard deviations. For the measure of prescriptive and descriptive norms in general, standard deviations were computed for each behavior (emotion) in each country. For the measure of contextual prescriptive norms, standard deviations were computed for each behavior (emotion) and each situation in each country. Greater norm tightness is reflected in smaller standard deviations.

Concordances were operationalized by profile correlations[11,43,62]. First, we calculated mean country ratings for each behavior (emotion), and for the contextualized measure in each situation. Next, we computed Spearman correlations between these mean ratings and each participant's ratings. Finally, we used Fisher transformations to transform these correlations into a linear variable. For emotion norms, these were computed separately for positive emotions and for negative emotions[11]. Greater norm tightness is reflected in larger profile correlations.

For Study 1, following its preregistration, we first tested whether Japan and South Korea are similar or different in their norm tightness in order to establish whether their data can be collapsed and compared together against the American sample. 10 of the 18 comparisons between Japan and South Korea, discussed below and presented in Table 1A, B, emerged as significant. Therefore, following the preregistration, we analyzed Japan and South Korea separately. The approach for this as specified in the preregistration was to compare each sample to the United States. However, this does not enable testing for differences between Japan and South Korea. As a more suitable alternative, we first ran regression models with country as a categorical predictor of standard deviations or of profile correlations. These models coded country using two dummy variables. Then, we performed a one-way analysis of variance (ANOVA) on these models to examine whether the overall differences between the three countries were significant [Our original expectation, based on the existing literature, was that Korea and Japan would be more similar to each other than they would be to the United States (and the UK in Study 2). Accordingly, we preregistered an intent to conduct a comparison between cultural regions. However, the nuanced findings required analyzing each sample on its own. Accordingly, we deviated from the preregistration, such that our main inferential analysis tested for country differences on each measure of norm strength via a one-way ANOVA across all 3 (in Study 1) or 4 (in Study 2) countries. Then, following recent work explicating when alpha adjustment are warranted[63], we treated each follow-up pairwise comparison as independent in order to identify where the specific differences between countries lies. We report how these pairwise comparisons differ from the preregistered analyses in Tables A1 and A2 of the Supplemental Results.]. The significance tests and amount of variance explained (R^2) by country appear in columns 5 and 6, respectively, of Table 1A, B. Finally, we conducted pairwise comparisons between each pair of countries. These appear in superscripts in columns 2–4 of Table 1A, B.

Table 1 | Means and standard deviations for each country on each measure, and significance tests for between-country differences, for behaviors (1A) and emotion norms (1B; Study 1)

A. Behaviors			**Japan**	**Korea**	**USA**			***p* after controls[3]**
		N	M (SD)	M (SD)	M (SD)	One-way ANOVA	R^2, 95% CI	
General prescriptive	SD[1]	36	0.92^{a} (0.11)	0.90^{a} (0.17)	0.96^{a} (0.22)	$F(2,22) = 1.32$, $p = 0.286$	0.022 [0.001, 0.133]	0.079
	PC[2]	720	1.16^{a} (0.42)	$1.11^{a,b}$ (0.36)	1.05^{b} (0.40)	$F(2,717) = 4.60$, $p = 0.010$	0.013[0.002, 0.036]	0.010
Contextual prescriptive	SD	540	0.96^{a} (0.16)	1.11^{b} (0.19)	1.11^{b} (0.20)	$F(2,512) = 48.33$, $p < 0.001$	0.132 [0.091, 0.186]	<0.001
	PC	726	1.09^{a} (0.23)	1.10^{a} (0.22)	1.11^{a} (0.28)	$F(2,723) = 0.60$, $p = 0.550$	0.002[0.000, 0.017]	0.550
General descriptive	SD	36	0.92^{a} (0.17)	0.85^{b} (0.15)	$0.87^{a,b}$ (0.16)	$F(2,22) = 4.42$, $p = 0.024$	0.034 [0.006, 0.131]	0.014
	PC	727	1.01^{a} (0.38)	1.17^{b} (0.32)	1.01^{a} (0.40)	$F(2,724) = 16.15$, $p < 0.001$	0.043[0.020, 0.075]	<0.001
B. Emotions			**Japan**	**Korea**	**USA**			***p* after controls[3]**
		N	M (SD)	M (SD)	M (SD)	One-way ANOVA	R^2, 95% CI	
General prescriptive	SD[1]: positive	21	0.91^{a} (0.06)	0.96^{a} (0.08)	0.89^{a} (0.15)	$F(2,12) = 0.84$, $p = 0.457$	0.069[0.001, 0.160]	0.694
	SD: negative	18	1.16^{a} (0.05)	1.19^{a} (0.05)	1.37^{b} (0.06)	$F(2,15) = 23.62$, $p < 0.001$	0.735[0.008, 0.527]	<0.001
	PC[2]: positive	613	0.72^{a} (0.54)	0.60^{b} (0.58)	0.78^{a} (0.43)	$F(2,610) = 6.03$, $p = 0.003$	0.019[0.004, 0.049]	0.002
	PC: negative	596	0.33^{a} (0.53)	0.53^{b} (0.61)	0.56^{b} (0.59)	$F(2,593) = 8.84$, $p < 0.001$	0.029[0.010, 0.063]	<0.001
Contextual prescriptive	SD: positive	312	1.02^{a} (0.11)	1.11^{b} (0.13)	1.10^{b} (0.20)	$F(2,289) = 19.17$, $p < 0.001$	0.065[0.032, 0.114]	<0.001
	SD: negative	270	1.01^{a} (0.10)	1.16^{b} (0.09)	1.31^{c} (0.09)	$F(2,248) = 314.79$, $p < 0.001$	0.618[0.551, 0.685]	<0.001
	PC: positive	686	0.86^{a} (0.24)	0.86^{a} (0.27)	0.78^{b} (0.34)	$F(2,683) = 6.09$, $p = 0.002$	0.018[0.003, 0.046]	0.002
	PC: negative	686	0.41^{a} (0.21)	0.57^{b} (0.23)	0.52^{c} (0.24)	$F(2,683) = 28.54$, $p < 0.001$	0.077[0.046, 0.120]	<0.001
General descriptive	SD: positive	21	0.86^{a} (0.10)	0.86^{a} (0.10)	0.87^{a} (0.08)	$F(2,12) = 0.00$, $p = 0.999$	0.000[0.001, 0.138]	0.999
	SD: negative	18	0.91^{a} (0.07)	0.86^{a} (0.07)	0.87^{a} (0.06)	$F(2,15) = 0.97$, $p = 0.400$	0.103[0.010, 0.509]	0.058
	PC: positive	669	0.72^{a} (0.51)	0.59^{b} (0.51)	$0.66^{a,b}$ (0.49)	$F(2,666) = 3.78$, $p = 0.023$	0.011[0.002, 0.033]	0.023
	PC: negative	640	0.29^{a} (0.65)	0.79^{b} (0.56)	0.42^{c} (0.55)	$F(2,637) = 43.56$, $p < 0.001$	0.120[0.079, 0.172]	<0.001

Values with different superscripts in a given row differ at $p < 0.05$. Column *N* contains the number of observations included in the statistical inference test. [1]Standard deviations; smaller values indicate higher tightness. [2]Profile correlations; smaller values indicate lower tightness. [3]Control for standard deviations: absolute distance of mean from scale mid-point; Control for profile correlations: mean level across all items.

For Study 2, 14 of the 18 comparisons between Japan and South Korea, discussed below and presented in Table 2A, B, emerged as significant, as were 12 of the 18 comparisons between the U.S. and the UK. Therefore, following the stipulation in the preregistration, we analyzed each country separately.

Different regression models were carried out for the two different normative properties and the three different measures. For homogeneity of general prescriptive and general descriptive norms, we ran multilevel regressions predicting standard deviations with a fixed effect for country and random intercepts for behaviors (emotions). For homogeneity of contextual prescriptive norms, we ran multilevel regressions predicting standard deviations with a fixed effect for country and random intercepts for behaviors (emotions) and situations in a cross-classified multilevel structure. A concern for all these analyses is that smaller standard deviations on a given item may reflect larger distance of the mean of that item from the mid-point of the scale. This may result from cultural differences in response styles, such as a tendency to use the extremes of response scales rather than the middle values[64]. Therefore, we repeated these analyses while controlling for the absolute distance of each item's mean from the midpoint of the scale[11]. For concordances, we ran regressions predicting profile correlations from country, and repeated these analyses while controlling for the mean of all items included in the profile correlations (see, e.g., ref. 28).

Since the analyses on standard deviations summarize participants' responses into item-level standard deviations, they do not fully exploit the full structure of the data. Therefore, as a robustness analysis, we also estimated multilevel location-scale models[65]. These analyses account for the crossed participant-item structure while estimating both country means and country dispersions within a single model. Location-scale models have the additional advantage of explicitly modeling country-specific residual variances, thereby accommodating heteroscedasticity rather than assuming homogeneous residual variance across countries. The supplemental multilevel location-scale analyses, which modeled means and dispersions across countries using the full structure of the data, yielded substantively similar conclusions (Supplementary Tables A3 and A4). These analyses are presented as a robustness test and are not preregistered.

Ethics approval

Ethics approval was received by the Behavioral Sciences Research Ethics Committee of the Technion – Israel Institute of Technology. Approval #141735.

Results

Study 1

We break down the results into four sections on the basis of normative types (homogeneity and concordances) and norm referent (behaviors and emotions). Then, we review which norm features produce variability in the findings.

Homogeneity of norms for behaviors. Standard deviations differed between samples for contextual prescriptive and general descriptive norms for behaviors, and these findings held after controlling for the mean's absolute distance from the scale midpoint, but did not differ significantly for general prescriptive norms (see Table 1A; Fig. 1). Pairwise comparisons revealed that Japan is more homogeneous (smaller standard deviations) for contextual prescriptive norms, while Korea and the U.S. do not differ significantly. Meanwhile, Japan is least homogenous

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Table 2 | Means and standard deviations for each country on each measure, and significance tests for between-country differences, for behaviors (2A) and emotion norms (2B; Study 2)

A. Behaviors									
			Japan	**Korea**	**UK**	**USA**			***p* after controls[3]**
		N	M (SD)	M (SD)	M (SD)	M (SD)	One-way ANOVA	R^2, 95% CI	
General prescriptive	SD[1]	48	0.91[a] (0.13)	0.99[b] (0.16)	0.89[a] (0.19)	0.90[a,b] (0.22)	$F(3,33) = 2.76$, $p = 0.057$	0.053 [0.014, 0.186]	0.150
	PC[2]	949	1.32[a] (0.38)	1.07[b,c] (0.36)	1.09[b] (0.37)	1.01[c] (0.39)	$F(3,945) = 29.51$, $p < 0.001$	0.086[0.056,0.125]	<0.001
Contextual prescriptive	SD	720	0.94[a] (0.16)	1.11[b] (0.20)	0.98[c] (0.22)	1.07 [d] (0.20)	$F(3,691) = 32.91$, $p < 0.001$	0.104 [0.070, 0.148]	<0.001
	PC	964	1.14[a] (0.21)	1.04[b] (0.23)	1.20[c] (0.16)	1.15[a] (0.27)	$F(3,960) = 21.61$, $p < 0.001$	0.063[0.039,0.101]	<0.001
General descriptive	SD	48	0.76[a] (0.12)	0.86[b] (0.06)	0.69[c] (0.11)	0.75[a] (0.10)	$F(3,33) = 20.85$, $p < 0.001$	0.280 [0.161, 0.505]	<0.001
	PC	940	1.09[a] (0.37)	1.08[a] (0.42)	0.91[b] (0.33)	0.81[c] (0.37)	$F(3,936) = 29.87$, $p < 0.001$	0.087[0.057,0.127]	<0.001
B. Emotions									
			Japan	Korea	UK	USA			
		N	M (SD)	M (SD)	M (SD)	M (SD)	One-way ANOVA	R^2, 95% CI	*p* after controls[3]
General prescriptive	SD[1]: positive	28	0.98[a] (0.09)	0.98[a] (0.07)	1.07[a] (0.10)	1.05[a] (0.10)	$F(3,18) = 1.58$, $p = 0.228$	0.149[0.156,0.664]	0.181
	SD: negative	24	1.09[a,b] (0.08)	1.10[a] (0.07)	1.20[b] (0.09)	1.42[c] (0.06)	$F(3,15) = 44.03$, $p < 0.001$	0.756[0.292,0.724]	<0.001
	PC[2]: positive	864	0.87[a] (0.55)	0.33[b] (0.55)	0.44[c] (0.47)	0.40[b,c] (0.43)	$F(3,860) = 53.95$, $p < 0.001$	0.158[0.111,0.212]	<0.001
	PC: negative	873	0.40[a,b] (0.51)	0.50[a] (0.62)	0.25[b] (0.53)	0.34[b] (0.55)	$F(3,869) = 3.85$, $p = 0.009$	0.013[0.003,0.036]	0.009
Contextual prescriptive	SD: positive	420	0.92[a] (0.08)	0.99[b] (0.09)	0.97[b] (0.15)	1.08[c] (0.19)	$F(3,396) = 41.66$, $p < 0.001$	0.146[0.099,0.208]	<0.001
	SD: negative	360	0.92[a] (0.09)	1.01[b] (0.07)	1.07[c] (0.13)	1.25 [d] (0.11)	$F(3,337) = 256.85$, $p < 0.001$	0.581[0.519,0.645]	<0.001
	PC: positive	963	0.88[a] (0.26)	0.76[b] (0.28)	0.87[a] (0.23)	0.80[b] (0.31)	$F(3,959) = 11.37$, $p < 0.001$	0.034[0.017,0.062]	<0.001
	PC: negative	962	0.38[a] (0.18)	0.45[b] (0.23)	0.57[c] (0.23)	0.51 [d] (0.23)	$F(3,958) = 32.03$, $p < 0.001$	0.091[0.066,0.127]	<0.001
General descriptive	SD: positive	28	0.74[a] (0.06)	0.80[b] (0.05)	0.69[a] (0.05)	0.71[a] (0.05)	$F(3,18) = 7.67$, $p = 0.002$	0.390[0.162,0.639]	0.002
	SD: negative	24	0.77[a] (0.04)	0.85[b] (0.05)	0.74[a] (0.07)	0.87[b] (0.04)	$F(3,15) = 14.33$, $p < 0.001$	0.495[0.289,0.707]	<0.001
	PC: positive	877	0.71[a] (0.55)	0.37[b] (0.64)	0.46[b,c] (0.51)	0.49[c] (0.48)	$F(3,873) = 15.64$, $p < 0.001$	0.051[0.027,0.086]	<0.001
	PC: negative	812	0.42[a] (0.52)	0.83[b] (0.53)	0.50[a] (0.51)	0.63[c] (0.54)	$F(3,808) = 25.28$, $p < 0.001$	0.086[0.055,0.127]	<0.001

Means with different superscripts in a given row differ at $p < 0.05$. Column *N* contains the number of observations included in the statistical inference test. [1]Standard deviations; smaller values indicate higher tightness. [2]Profile correlations; smaller values indicate lower tightness. [3]Control for standard deviations: absolute distance of mean from scale mid-point; Control for profile correlations: mean level across all items.

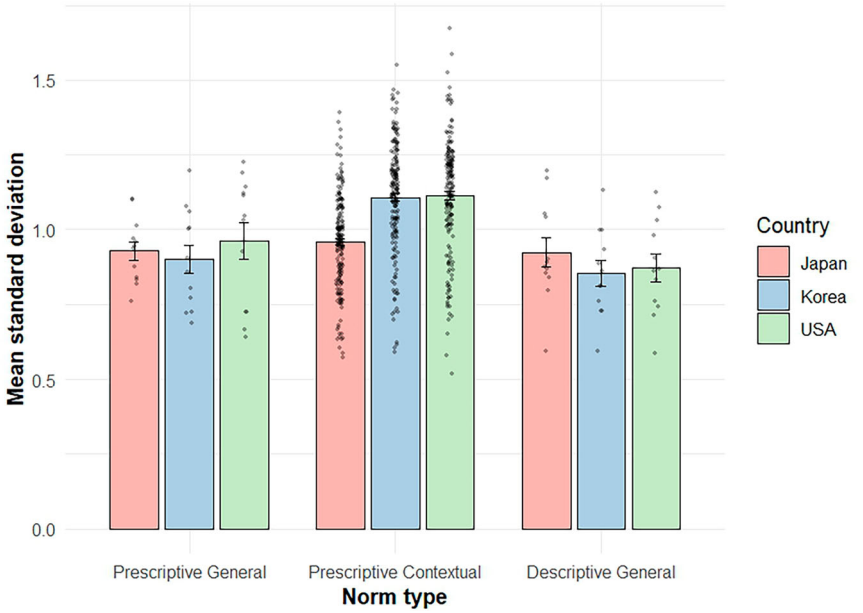


Fig. 1 | Standard deviations by country of prescriptive norms in general, prescriptive contextualized norms, and descriptive norms in general for behaviors (Study 1). Bars represent standard errors.

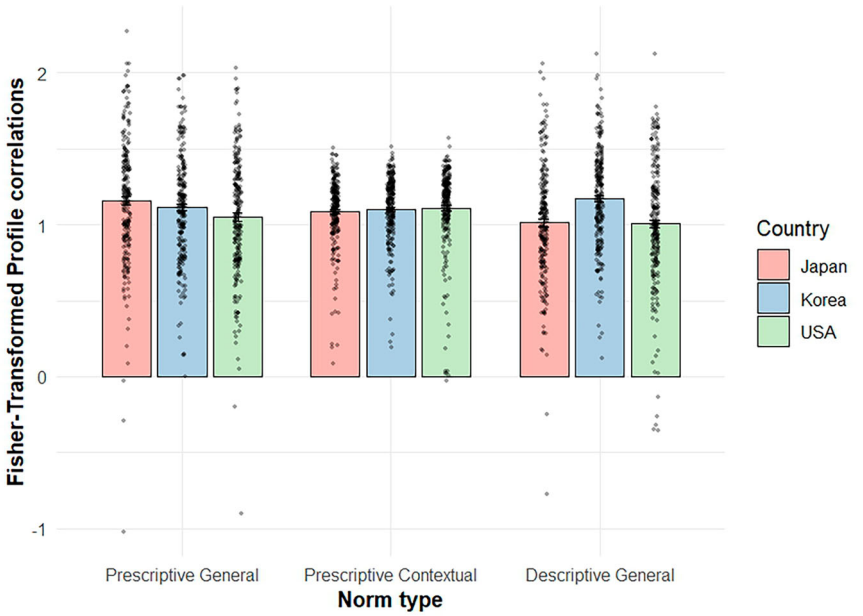


Fig. 2 | Profile correlations of prescriptive norms in general, prescriptive contextualized norms, and descriptive norms in general for behaviors (Study 1). Bars represent standard errors.

for general descriptive norms and Korea is the most homogenous, with the United States not significantly differing from either. These findings reveal significant variability: on one measure homogeneity is greatest in Japan (contextual prescriptive norms), whereas on another measure (general descriptive norms) homogeneity is greater in Korea than in Japan.

Concordances of norms for behaviors. Profile correlations differed between samples for general prescriptive and general descriptive norms for behaviors, but did not significantly differ for contextual prescriptive norms (see Table 1A and Fig. 2). Pairwise comparisons revealed higher concordances (larger profile correlations) for general prescriptive norms in Japan than the U.S., with Korea not significantly different from either. Meanwhile, concordances for general descriptive norms are highest in Korea compared to both Japan and the U.S., which do not significantly differ from each other. These findings reveal significant variability: on one measure concordances are highest in Japan (general prescriptive norms), whereas on another measure (general descriptive norms) concordances are highest in Korea.

Homogeneity of norms for emotions. Standard deviations differed between samples for general prescriptive norms for negative emotions and contextual prescriptive norms for both positive and negative emotions, and these findings held after controlling for the mean's absolute distance from the scale midpoint (see Table 1B and Fig. 3). For general prescriptive norms, Japan and South Korea were equally homogenous, and significantly more homogeneous (smaller standard deviations) than the U.S., but only for negative emotions. For contextual prescriptive norms, Japan was more homogenous than Korea, which was equivalent to the U.S. for positive emotions but more homogeneous for negative emotions. Two of these findings reveal larger differences between the U.S. and the East Asian samples than within the East Asian samples (general

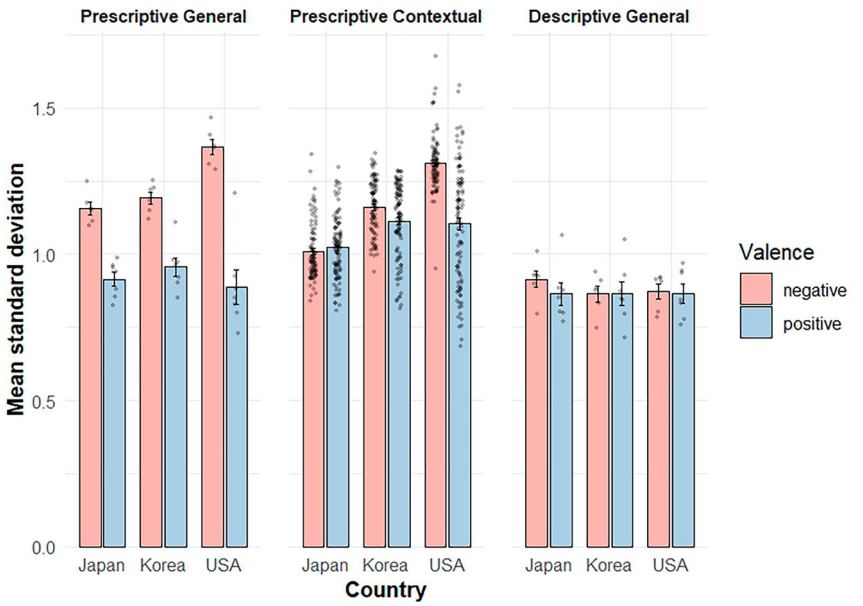


Fig. 3 | Standard deviations of prescriptive norms in general, prescriptive contextualized norms, and descriptive norms in general for emotions (Study 1). Bars represent standard errors.

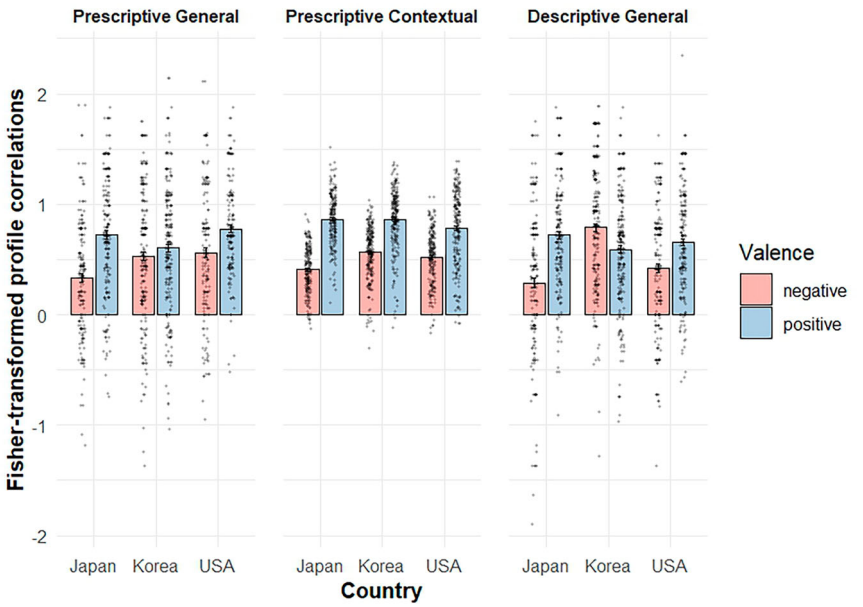


Fig. 4 | Profile correlations of prescriptive norms in general, prescriptive contextualized norms, and descriptive norms in general for emotions (Study 1). Bars represent standard errors.

prescriptive norms for negative emotions, and contextual prescriptive norms for negative emotions). Moreover, they reveal greater variability between samples for negative emotions than for positive emotions. No significant differences emerged for standard deviations of general descriptive norms for negative emotions.

Concordances of norms for emotions. Profile correlations differed between samples for both positive and negative emotions across all three measures (see Table 1B and Fig. 4). For negative emotions, concordances were always lowest in Japan and highest in Korea, with the United States either falling in the middle (contextual prescriptive and general descriptive norms) or not significantly different from Korea (general prescriptive norms). Meanwhile, for positive emotions, concordances in Japan were always highest or equally high as another sample. Meanwhile, Korea was the lowest for general prescriptive norms and general descriptive norms, while the U.S. was lowest for contextual prescriptive norms. Findings reveal disparate patterns depending on valence: Japan had the lowest concordances for negative emotions, but the highest concordances for positive emotions. In all these instances, then, for all negative emotions, differences between the two East Asian samples were typically as large or even larger than between them and the American sample.

Summary of findings in Study 1: sources of variation. Of the 18 analyses, 13 revealed significant differences between samples. How do these significant differences map on to the features of norms? We review how findings vary by each feature below. In these comparisons, we focus on the particular feature while holding other sources of variation constant. For instance, when comparing the effect of different normative properties, we look within the same norm type, contextualization, norm referent, and valence; when comparing the effect of different norm types, we look within the same normative property, contextualization, norm

referent, and valence; and so on. We conclude by reviewing differences between and within cultural regions.

Normative properties (constraint vs. prioritization). Do the two normative properties (constraint assessed via homogeneity and prioritization assessed via concordances) predict a consistent pattern? In some instances, significant differences for homogeneity predicted the same pattern of findings for concordances. For instance, for general descriptive norms for behaviors, Korea was more homogenous than Japan and also had higher concordances, both of which indicate higher tightness in Korea (vs. Japan). However, in some instances they predicted an inconsistent pattern. For instance, for contextual prescriptive norms for negative emotions, Korea was less homogenous than Japan, yet had higher concordances than Japan. Thus, normative properties are a feature driving meaningful variation in norm tightness between the samples.

Norm type (prescriptive vs. descriptive). Some patterns are consistent among general prescriptive and general descriptive norms. For instance, for concordances of positive emotions, a similar pattern emerged across both general prescriptive and general descriptive norms: Korea had the lowest concordances, whereas Japan had the highest concordances (or equally highest). However, in several instances, effects were significant for one norm type but not another norm type. Non-significance may be driven by limited degrees of freedom and so we interpret this difference with caution.

Contextualization (general vs. contextual). The most direct comparison for contextualization is between general prescriptive and contextual prescriptive norms. For norms for behaviors, Japan had higher tightness than the U.S. across both general and contextual prescriptive norms. Likewise, for negative emotions, homogeneity was greatest in Japan and weakest in the United States, with Korea in the middle. However, concordances for positive emotions demonstrated a variable pattern: the American sample had significantly higher concordances than the Korean sample for general prescriptive norms, but significantly lower concordances than the Korean sample for contextual prescriptive norms. Thus, contextualization is a feature driving meaningful variation in norm tightness between the samples.

Norm referent (emotions vs. behavior). Homogeneity for contextual prescriptive norms revealed similar patterns for both referents: Japan was more homogeneous than both Korea and the U.S. for behaviors, as well as for both positive and negative emotions. However, for concordances, the pattern varied by emotion valence. For instance, concordances were higher in Korea for both behaviors and negative emotions, yet the opposite pattern of findings emerged for positive emotions. Thus, norm referent may be a feature with meaningful variation in cultural differences in norm tightness only when accounting for valence as well.

Valence. Valence revealed relatively similar patterns for homogeneity of contextual prescriptive norms: Japan was the most homogeneous for both positive and negative emotions, while the U.S. was the least homogeneous (or equally less homogeneous as Korea). However, divergent findings emerged for concordances. Compared to Korea, Japan had higher (or equally high) profile correlations for positive emotions across all three measures of norms, while Korea had higher profile correlations for negative emotions across all three measures of norms (Fig. 4). Thus, valence is a feature driving meaningful variation in emotion norm tightness between the samples.

Between cultural regions. The American sample differed from at least one of the two East Asian samples in 11 of the 13 significant analyses. However, in two of these 11 analyses it was situated between the two East Asian samples, and in six of these analyses it only differed significantly from one of the East Asian samples but did not differ significantly from the other sample. In all the remaining three analyses in which the American sample differed from both samples in the same direction, the American sample demonstrated lower tightness (less homogeneity and weaker concordances). These findings reveal that *when* the American sample differed directionally from both East Asian samples, it fell on the side of lower tightness. However, this is the exception more than the rule, as it occurred in only 3 of 18 analyses.

Within cultural regions. The East Asian samples differed from each other in 10 of the 18 analyses. By comparison, the American and Korean samples differed in 7 of the analyses, and the American and Japanese samples in 9 of the analyses. The variation within the East Asian cultural region is thus slightly greater than between East Asia and the United States.

Study 2

As in Study 1, we break down the results into four sections on the basis of normative properties (homogeneity to assess constraint and concordances to assess prioritization) and norm referent (behaviors and emotions). Then, we review sources of variability in the findings.

Homogeneity of norms for behaviors. Standard deviations differed between samples for contextual prescriptive and general descriptive norms for behaviors, but did not significantly differ for general prescriptive norms, and these findings held after controlling for the mean's absolute distance from the scale midpoint (see Table 2A; Fig. 5). Pairwise comparisons revealed that Korea was the least homogenous across all norms, while the most homogenous was Japan or the UK, depending on the norm type. Differences between Korea and Japan were as large as differences between the two cultural regions (for general descriptive norms), or even larger than between the two cultural regions (for contextual prescriptive norms).

Concordances of norms for behaviors. Profile correlations differed between samples for all three measures (see Table 2A and Fig. 6). No country had the consistently highest or lowest profile correlations across the three measures. Japan had higher profile correlations for general prescriptive norms compared to each of the other three samples. For both contextual prescriptive norms and general descriptive norms, differences between cultural regions were smaller than differences within cultural regions. However, the direction of the differences reversed: the Western samples had higher profile correlations for contextual prescriptive norms (vs. the East Asian samples), but had lower profile correlations for general descriptive norms.

Homogeneity of norms for emotions. Standard deviations differed between samples for all three emotion norm measures and both valences, except for positive general prescriptive norms, and these findings held after controlling for the mean's absolute distance from the scale midpoint (see Table 2B and Fig. 7). A comparison of explained variance (Table 2B) revealed that differences between samples were consistently larger for negative emotions than for positive emotions. With the exception of positive general descriptive norms, standard deviations were as large or largest in the USA relative to other samples, followed by the UK in four of the five remaining cases. This pattern was reversed for positive general descriptive norms, where Korea had the largest standard deviations (for positive emotions), or standard deviations as large as another country (for negative emotions).

Concordances of norms for emotions. Profile correlations differed between samples for both positive and negative emotions across all three measures (see Table 2B and Fig. 8). For the general measures, the East Asian samples had higher profile correlations for specific valences: Japan had higher profile correlations for positive general prescriptive norms, as well as for positive general descriptive norms, compared to each of the three other samples. Meanwhile, Korea had higher profile correlations for negative general prescriptive norms, as well as for negative general descriptive norms, compared to each of the three other samples. A different pattern of findings emerged for contextual prescriptive norms,

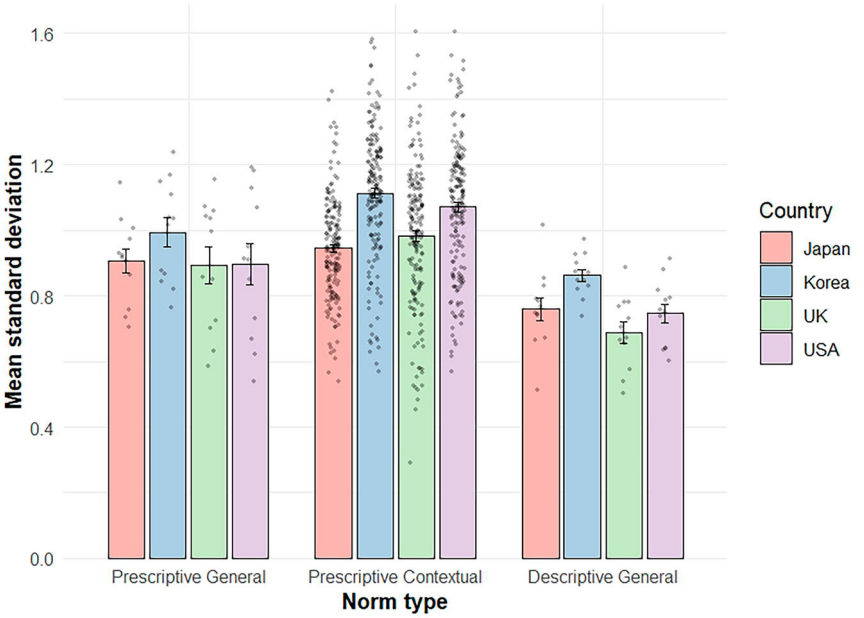


Fig. 5 | Standard deviations by country of prescriptive norms in general, prescriptive contextualized norms, and descriptive norms in general for behaviors (Study 2). Bars represent standard errors.

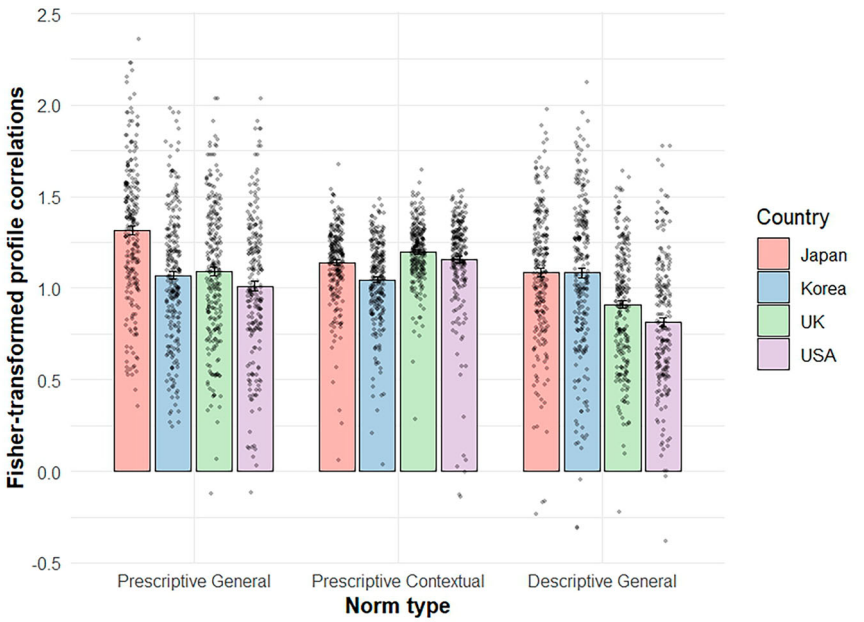


Fig. 6 | Profile correlations of prescriptive norms in general, prescriptive contextualized norms, and descriptive norms in general for behaviors (Study 2). Bars represent standard errors.

where the Western samples had higher profile correlations than the East Asian samples for positive and negative emotions, except for positive emotions in Japan. For all measures, then, valence plays an important moderating role.

Summary of findings in Study 2: sources of variation. Of the 18 analyses, 16 revealed significant differences between samples. Below, we map these significant differences onto sources of variation. In these comparisons, we focus on the type of variation while holding other sources of variation constant, as in Study 1. We conclude by reviewing differences between and within cultural regions.

Normative properties (constraint vs. prioritization). Differences between samples were consistent across measures of homogeneity (reflecting constraint) and measures of concordances (reflecting prioritization) in some instances. For example, for contextual prescriptive norms for behaviors, Japan and the UK were most homogenous and Korea was the least homogenous, with the U.S. falling in between. Accordingly, on the same measure, Japan and the UK had the highest profile correlations and Korea had the lowest profile correlation, with the U.S. falling in between. However, in some instances they predicted an inconsistent pattern. For instance, with respect to contextual prescriptive norms for negative emotions, Korea and Japan were more homogenous than the UK and the U.S., yet they had lower profile correlations on the same measure (compare Figs. 7 and 8). Normative properties are thus a feature with meaningful variation in tightness between the samples.

Norm type (prescriptive vs. descriptive). Some patterns of findings were consistent between general prescriptive and general descriptive norms. For instance, the same pattern of findings emerged for these two types regarding emotion norms (compare general prescriptive and general descriptive in Fig. 8). However, in many instances, findings differed and even diverged. For

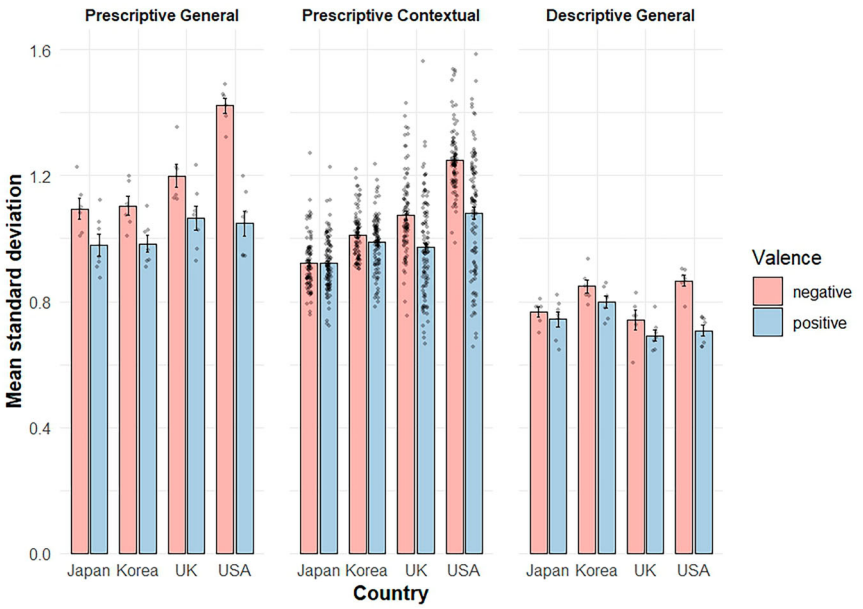


Fig. 7 | Standard deviations of prescriptive norms in general, prescriptive contextualized norms, and descriptive norms in general for emotions (Study 2). Bars represent standard errors.

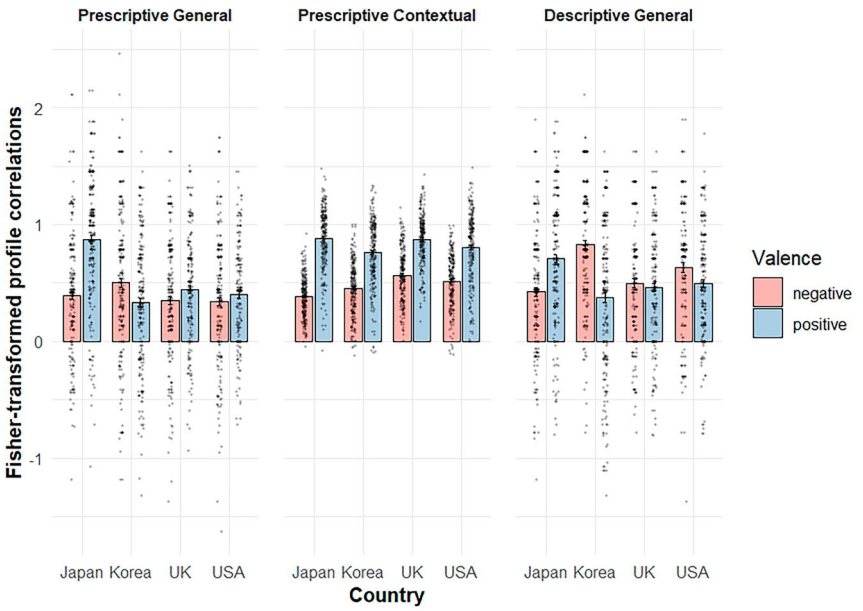


Fig. 8 | Profile correlations of prescriptive norms in general, prescriptive contextualized norms, and descriptive norms in general for emotions (Study 2). Bars represent standard errors.

instance, standard deviations were significantly larger in the UK than in Korea for general prescriptive negative emotion norms, but the findings reversed for general descriptive negative emotion norms. Norm type is thus a feature with meaningful variation in tightness between the samples.

Contextualization (general vs. contextual). The most direct comparison for contextualization is between general prescriptive and contextual prescriptive norms. In both instances, standard deviations for behaviors were greater in Korea than in any other sample (see Fig. 5). Likewise, the pattern of findings for standard deviations of emotion norms were highly similar (compare general prescriptive and contextual prescriptive in Fig. 7). However, divergent patterns appeared for profile correlations of emotions, particularly for negative emotions (compare general prescriptive and contextual prescriptive in Fig. 8): profile correlations of general prescriptive norms for negative emotions were greatest in Korea, while profile correlations of contextual prescriptive norms for negative emotions were lower in Korea than in the UK and the U.S. Thus, contextualization is a feature with meaningful variation in tightness between the samples.

Norm referent (emotions vs. behavior). No consistent patterns emerged across both norm referents when holding the other features constant. For example, for contextual prescriptive norms, standard deviations with a behavioral referent were smallest in Japan, followed by the UK, U.S., and Korea (all pairwise comparisons significant). Meanwhile, standard deviations of contextual prescriptive norms for negative emotions were smallest in Japan, followed by Korea, the UK, and the U.S. (all pairwise comparisons significant). Thus, norm referent is a feature with meaningful variation in tightness between the samples.

Valence. Valence revealed relatively similar patterns for homogeneity of contextual prescriptive norms: Japan was the most homogeneous for both positive and negative emotions, while the U.S. was the least homogeneous,

Table. 3 | Overall norm strength averaged across features

		Japan	Korea	USA	UK
Study 1	Standard Deviations	0.96	1.00	1.04	–
	Concordances	0.73	0.81	0.77	–
Study 2	Standard Deviations	0.89	0.97	0.92	1.01
	Concordances	0.80	0.71	0.70	0.68

with Korea and the UK falling in the middle. However, divergent findings emerged for concordances. Compared to Korea, Japan had higher profile correlations for positive emotions across all three measures of norms, while Korea had higher (or equally high) profile correlations for negative emotions across all three measures of norms (Fig. 8). Thus, valence is a feature with meaningful variation in tightness between the samples.

Between cultural regions. In all 16 of the analyses with significant differences, at least one of the two Western samples differed from at least one of the two East Asian samples. However, only in 4 of the analyses did both samples from one cultural region differ in the same direction from both samples in the other cultural region (e.g., profile correlations of general descriptive norms for behaviors). The Western samples demonstrated lower norm strength than the East Asian samples (less homogeneity and lower concordances) in three of these four instances, but the opposite pattern emerged in the fourth instance. Moreover, in nine of the analyses, norm strength was greater in at least one Western sample (relative to at least one East Asian sample). Thus, while the two cultural regions account for variation in norm strength, findings do not fall neatly on the distinction between Western and East Asian regions, despite both countries in the Western region having lower tightness ratings than both countries in the East Asian region.

Within cultural regions. The East Asian samples differed from each other in 14 of the 18 analyses and the Western samples differed from each other in 12 of the 18 analyses. By comparison, Japan and the UK differed in 11 of the analyses, and Japan and the U.S. differed in 12 of the analyses. Korea and the UK differed in 14 of the analyses, and Korea and the U.S. differed in 12 of the analyses. The variation within cultural regions is thus no smaller than the variation between cultural regions.

Summary of findings: average norm strength by country. One possible interpretation of the preceding findings is that, despite the variability across individual features, norm strength may still follow the ordering predicted by the prevailing theory of cultural tightness-looseness[8] when averaged across all features. If so, norm strength should follow a progression from the USA → UK → Japan → Korea. To examine this possibility, we averaged all measures of homogeneity and concordances for each country (Table 3). However, the averages were inconsistent with this pattern and the overall differences between countries were small. In Study 1, averaged standard deviations were only slightly larger in the United States than in Korea (0.04) or Japan (0.08). Furthermore, this trend partially reversed in Study 2, where averaged standard deviations were slightly smaller in the United States than in Korea (0.05). Similarly, averaged concordances were nearly indistinguishable between Korea, the United States, and the United Kingdom.

Discussion

The strength of social norms influences how individuals conduct themselves within a society. Across two studies with samples from 3 to 4 countries, we found that the extent to which norms are stronger in a particular country is dependent on five different features of social norms. This pattern held across the two studies, which differed regarding their type of judgment (personal vs. social perceptions), age range (25–35 vs. 38–58), and the inclusion of a UK sample. Furthermore, norm strength was not consistently greater in the tighter and more collectivist East Asian countries than in the looser and more individualist Western countries. Our primary focus is on demonstrating that existing accounts are inconsistent with cultural differences in norm strength when these are assessed across numerous features of norms, in line with an understanding that refuting a scientific theory is more consequential than corroborating a scientific theory[66]. Even so, in the spirit of creative destruction[58], we also suggest a way forward by proposing a specificity principle for cultural differences in norm strength, as described below.

Theoretical Implications

Leading theoretical accounts in cultural psychology contend that the strength of social norms is greater in some cultures than in others, whether those cultures are higher in collectivism[15] or tightness[4], or even historical pathogen prevalence[5]. Qualifying this view, a small set of findings has found that norm strength—particularly for those pertaining to pro-environmental behavior[19] or to emotions[11,21,22,27,28,67]—is higher in more individualist cultures. However, the findings for both sets of claims are limited because every previous study has assessed a narrow slice of social norms. The present findings challenge the leading view that countries differ systematically in norm strength across various features of norms. They also challenge the idea that countries can be indexed based on the extent of their tightness (cultural tightness or looseness; ref. 8). Findings were also inconsistent with the prediction that in more collectivist cultures norm strength is greater for behavioral norms, but weaker for emotion norms[11]. This might be due to not sampling the entire spectrum of individualism-collectivism as in previous studies, or it might be due to this account being incorrect.

A potential response to the present findings is that, although norm strength varies across individual features, tighter cultures nevertheless exhibit greater norm strength when these features are aggregated. The additional analysis presented in Table 3 provides little support for this interpretation. Even after averaging across all measures, the predicted ordering of countries did not emerge, and differences between countries remained small. These findings suggest that the variability documented throughout this investigation is not merely noise around a stronger underlying trend, but reflects meaningful heterogeneity in cultural differences in norm strength.

The findings from two studies have led us to conclude that cultural differences in norm strength are dependent on numerous features of norms. A critique of this conclusion is that while we show substantial variability in norm strength due to the various features of norms, this variability is not systematic. The validity of such a critique is limited because findings from Study 2 are very similar to findings from Study 1, indicating that they are stable and replicable across slightly different prompts and different age groups. These include the following similar sets of results: (1) The two analyses which were nonsignificant in Study 2 were also nonsignificant in Study 1; (2) Standard deviations of contextual prescriptive norms for behaviors were smaller in Japan than in Korea (compare Figs. 1 and 5), with the U.S. similar or identical to Korea; (3) Japan had higher profile correlations for general prescriptive norms for behaviors than the U.S., and Korea had higher profile correlations for general descriptive norms for behaviors than the U.S. (compare Figs. 2 and 6); (4) Standard deviations were larger in the U.S. than both Japan and Korea for general prescriptive norms for negative emotions (compare Figs. 3 and 7), as well as for contextual prescriptive norms for negative emotions (compare Figs. 3 and 7); (5) Profile correlations for positive emotions are higher in Japan than in Korea for general prescriptive norms and general descriptive norms (compare Figs. 4 and 8), while (6) the opposite findings emerge for negative emotions for both contextual prescriptive norms and general descriptive norms (compare Fig. 4 with Fig. 8). Accordingly, while results may be difficult to interpret given their dependence on the various features we examined, they are consistent to a substantial degree across studies. This indicates that the findings uncovered here across the different features of social norms are systematic and can be elucidated in future research. One possibility is that

there is a misconstrued focus in the literature on *strength of social norms* as a unitary construct. As we noted earlier, social norms can develop with regards to any human conduct, and there is little reason to expect that the strength of all social norms will function in a similar manner. An analogous approach has been adopted in the field of acculturation research, wherein a specificity principle asserts that "specific setting conditions of specific people at specific times moderate specific domains in acculturation by specific processes" (ref. 68, p. 3). Likewise, strength of a given social norm may depend on the particular array of features that make up that social norm, as well as idiosyncratic cultural concepts. For instance, there is a Korean concept called *nunchi* which refers to the ability to gauge others' emotions and social cues, and it is particularly important in detecting others' negative emotions[69]. This belief may drive greater strength of negative emotions in Korea in particular, as indeed was demonstrated for concordances both of general prescriptive norms for negative emotions and of general descriptive norms for negative emotions. We present the specificity principle as a benchmark to which future theoretical accounts of cultural differences in social norms can be compared. It can be falsified if future research demonstrates consistency across levels of any single feature. For example, if proponents of the dimension of cultural tightness-looseness[8] were to show that country-level tightness predicts greater strength of contextual norms for behaviors, as well as general norms for behaviors, that would falsify the specificity principle by showing that contextualization is not a relevant factor in predicting cultural differences in norm strength. Alternatively, if they were to show that country-level tightness predicts greater strength of descriptive norms for behaviors, as well as prescriptive norms for behaviors, that would falsify the specificity principle by showing that normative properties are not a relevant factor in predicting cultural differences in norm strength. To the extent that future theoretical accounts yield demonstrably better empirical predictions than the specificity principle, they can argue for broader and more generalizable claims about cultural differences in norm strength than any existing account, this work included. Scientific progress can proceed through a period in which a simple theory is replaced by a more descriptive account before a new, more general theory emerges. We view the specificity principle as occupying this intermediate role: it provides a benchmark against which future, more parsimonious theories can be evaluated.

Limitations and future directions

The present investigation examines strength of social norms based on self-report measures. These are the most common measures for assessing norm strength across cultures (e.g., refs. 8,29–31,37). While assessments of norm strength via self-report are valuable because norm adherence is more directly influenced by an individual's perception of the norm than by actual norm adherence[70], the consequences of norms are meaningful so long as they influence actual norm-adhering behavior. A limited number of studies have assessed actual norm-adhering behavior (e.g., ref. 35), and an even more limited number of studies have assessed actual norm-adhering behavior across cultures[5,15]. Future work can extend the present findings by assessing norm-adhering behavior across cultures for a variety of norms which vary by the features investigated here.

This work has investigated five different features of social norms. However, additional features exist, and they merit investigation as well. For instance, a distinction has been drawn between socially conditioned or conventional norms, versus moral norms[2]. Moral norms (vs. non-moral norms) are inferred based on people's prosocial motives for following them[71] and their violation is considered more severe[72]. Moral norms are also less likely to be updated than more conventional norms[51]. Further work has established that some norms are easier to learn and harder to update based on how readily they are detected[73]. Other norms vary based on whether their prescriptions are categorical (e.g., taboos, which are never normative), scale-sensitive (e.g., using shared resources, which is appropriate only at a certain amount), or history-sensitive (e.g., dependent on the extent to which a certain individual made a certain contribution; ref. 74). Still other norms may vary on the reference groups that provide the norms, such as peer groups versus high-status role models[75]. Future work can determine which features of social norms explain meaningful cultural variation in norm strength, and which features do not. More broadly, the literature currently lacks a general framework that organizes the multiple dimensions along which social norms vary. An important direction for future research is therefore to develop such a framework, thereby providing a more comprehensive basis for theorizing about cultural variation in social norms.

The present studies focused on four industrialized societies that are frequently contrasted in the cultural psychology literature and that differ systematically in both tightness-looseness and individualism-collectivism. Although future work should determine whether the present pattern extends to a broader range of cultural contexts, the substantial heterogeneity observed even within this limited set of societies suggests that variation in norm strength cannot be adequately characterized solely in terms of broad cultural dimensions or regional classifications.

Data availability

Data are publicly available on the Open Science Framework (https://osf.io/8b4wk/?view_only=958db4cea49f413daa29450aa700cdd4; Vishkin et al.[76]).

Code availability

R scripts are publicly available on the Open Science Framework (https://osf.io/8b4wk/?view_only=958db4cea49f413daa29450aa700cdd4; Vishkin et al.[76]).

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References

1. Fagundes, D. The social norms of waiting in line. *Law Soc. Inq.* **42**, 1179–1207 (2017).
2. Bicchieri, C. *The Grammar of Society: The Nature and Dynamics of Social Norms* (Cambridge University Press, 2006).
3. Chentsova-Dutton, Y. E., Senft, N. & Ryder, A. G. In *The Positive Side of Negative Emotions* (ed. Parrott, W. G.) 146–178 (Guilford Press, 2014).
4. Gelfand, M. J. Culture's constraints: international differences in the strength of social norms. *Curr. Dir. Psychol. Sci.* **21**, 420–424 (2012).
5. Murray, D. R., Trudeau, R. & Schaller, M. On the origins of cultural differences in conformity: four tests of the pathogen prevalence hypothesis. *Personal. Soc. Psychol. Bull.* **37**, 318–329 (2011).
6. Triandis, H. C. The self and social behavior in differing cultural contexts. *Psychol. Rev.* **96**, 506–520 (1989).
7. Gelfand, M. J. & Jackson, J. C. From one mind to many: the emerging science of cultural norms. *Curr. Opin. Psychol.* **8**, 175–181 (2016).
8. Gelfand, M. J. et al. Differences between tight and loose cultures: a 33-nation study. *Science* **332**, 1100–1104 (2011).
9. Uz, I. The index of cultural tightness and looseness among 68 countries. *J. Cross. Cult. Psychol.* **46**, 319–335 (2015).
10. Gelfand, M. J., Nishii, L. H. & Raver, J. L. On the nature and importance of cultural tightness-looseness. *J. Appl. Psychol.* **91**, 1225–1244 (2006).
11. Vishkin, A. et al. Adherence to emotion norms is greater in individualist cultures than in collectivist cultures. *J. Pers. Soc. Psychol.* **124**, 1256–1276 (2023).
12. Savani, K., Wadhwa, M., Uchida, Y., Ding, Y. & Naidu, N. V. R. When norms loom larger than the self: susceptibility of preference-choice consistency to normative influence across cultures. *Organ. Behav. Hum. Decis. Process.* **129**, 70–79 (2015).
13. Markus, H. R. & Kitayama, S. Culture and the self: implications for cognition, emotion, and motivation. *Psychol. Rev.* **98**, 224–253 (1991).
14. Triandis, H. C. *Individualism & Collectivism* (Taylor & Francis, 1995).
15. Bond, R. & Smith, P. B. Culture and conformity: a meta-analysis of studies using Asch's (1952b, 1956) line judgment task. *Psychol. Bull.* **119**, 111–137 (1996).

16. Kim, H. & Markus, H. R. Deviance or uniqueness, harmony or conformity? A cultural analysis. *J. Pers. Soc. Psychol.* **77**, 785–800 (1999).
17. Gelfand, M. J., Harrington, J. R. & Jackson, J. C. The strength of social norms across human groups. *Perspect. Psychol. Sci.* **12**, 800–809 (2017).
18. Minkov, M., Akaliyski, P., Kaasa, A. & Welzel, C. The nature and utility of cultural tightness–looseness: evidence for reconsideration. *J. Int. Bus. Stud.* https://doi.org/10.1057/s41267-025-00803-0 (2025).
19. Bergquist, M., Nilsson, A. & Schultz, W. P. A meta-analysis of field-experiments using social norms to promote pro-environmental behaviors. *Glob. Environ. Chang.* **59**, 101941 (2019).
20. Acierno, J. et al. Conformity to social norm interventions is not amplified in tighter nations. *Commun. Psychol.* **4**, 68 (2026).
21. Eid, M. & Diener, E. Norms for experiencing emotions in different cultures: Inter- and intranational differences. *J. Pers. Soc. Psychol.* **81**, 869–885 (2001).
22. Fischer, A. H., Rotteveel, M., Evers, C. & Manstead, A. S. R. Emotional assimilation: how we are influenced by others' emotions. *Cah. Psychol. Cogn.* **22**, 223–245 (2004).
23. Matsumoto, D. et al. Mapping expressive differences around the world: the relationship between emotional display rules and individualism versus collectivism. *J. Cross. Cult. Psychol.* **39**, 55–74 (2008).
24. Gebauer, J. E., Sedikides, C. & Neberich, W. Religiosity, social self-esteem, and psychological adjustment: on the cross-cultural specificity of the psychological benefits of religiosity. *Psychol. Sci.* **23**, 158–60 (2012).
25. Stavrova, O., Fetchenhauer, D. & Schlösser, T. Why are religious people happy? The effect of the social norm of religiosity across countries. *Soc. Sci. Res.* **42**, 90–105 (2013).
26. Stavrova, O. & Luhmann, M. Are conservatives happier than liberals? Not always and not everywhere. *J. Res. Pers.* **63**, 29–35 (2016).
27. Smith, P. B. et al. Which cultural dimensions predict variations in emotional conformity? An extension of Vishkin et al. (2023) across 28 nations. *J. Cross. Cult. Psychol*. https://doi.org/10.1177/00220221251376543 (2025).
28. Vishkin, A. & Kitayama, S. Emotion concordance is higher among immigrants from more individualist cultures: implications for cultural differences in adherence to emotion norms. *Emotion* **24**, 1721–1736 (2024).
29. Eriksson, K. et al. Perceptions of the appropriate response to norm violation in 57 societies. *Nat. Commun.* **12**, 1–11 (2021).
30. Eriksson, K. et al. Cultural universals and cultural differences in meta-norms about peer punishment. *Manag. Organ. Rev.* **13**, 851–870 (2017).
31. Stamkou, E. et al. Cultural collectivism and tightness moderate responses to norm violators: effects on power perception, moral emotions, and leader support. *Personal. Soc. Psychol. Bull.* **45**, 947–964 (2019).
32. Treviño, L. J., Egri, C. P. & Ralston, D. A. A multi-country, multi-sector replication challenge to the validity of the cultural tightness-looseness measure. *Asia Pacific J. Manag.* **735**, 764 (2021).
33. Kalkstein, D. A., Hook, C. J., Hard, B. M. & Walton, G. M. Social norms govern what behaviors come to mind—and what do not. *J. Pers. Soc. Psychol.* **124**, 1203–1229 (2023).
34. Harrington, J. R. & Gelfand, M. J. Tightness-looseness across the 50 United States. *Proc. Natl. Acad. Sci. USA* **111**, 7990–7995 (2014).
35. Cialdini, R. B., Reno, R. R. & Kallgren, C. A. A focus theory of normative conduct: recycling the concept of norms to reduce littering in public places. *J. Personal. Soc. Psychol.* **58**, 1015–1026 (1990).
36. Eriksson, K., Strimling, P. & Coultas, J. C. Bidirectional associations between descriptive and injunctive norms. *Organ. Behav. Hum. Decis. Process.* **129**, 59–69 (2015).
37. Moon, C., Weick, M. & Uskul, A. K. Cultural variation in individuals' responses to incivility by perpetrators of different rank: The mediating role of descriptive and injunctive norms. *Eur. J. Soc. Psychol.* **48**, 472–489 (2018).
38. Raihani, N. J. & McAuliffe, K. Dictator game giving: the importance of descriptive versus injunctive norms. *PLoS ONE* **9**, 1–17 (2014).
39. Mu, Y., Kitayama, S., Han, S. & Gelfand, M. J. How culture gets embrained: cultural differences in event-related potentials of social norm violations. *Proc. Natl. Acad. Sci. USA* **112**, 15348–15353 (2015).
40. Salvador, C. E., Mu, Y., Gelfand, M. J. & Kitayama, S. When norm violations are spontaneously detected: an electrocortical investigation. *Soc. Cogn. Affect. Neurosci.* **15**, 319–327 (2020).
41. Senft, N., Doucerain, M. M., Campos, B., Shiota, M. N. & Chentsova-Dutton, Y. E. Within- and between-group heterogeneity in cultural models of emotion among people of European, Asian, and Latino Heritage in the United States. *Emotion* **23**, 1–14 (2022).
42. De Leersnyder, J. Emotional acculturation: a first review. *Curr. Opin. Psychol.* **17**, 67–73 (2017).
43. De Leersnyder, J., Mesquita, B. & Kim, H. S. Where do my emotions belong? A study of immigrants' emotional acculturation. *Personal. Soc. Psychol. Bull.* **37**, 451–463 (2011).
44. Young, H. P. The evolution of social norms. *Annu. Rev. Econom.* **7**, 359–387 (2015).
45. Mesquita, B., Boiger, M. & De Leersnyder, J. Doing emotions: the role of culture in everyday emotions. *Eur. Rev. Soc. Psychol.* **28**, 95–133 (2017).
46. Vishkin, A. & Tamir, M. Emotion norms are unique. *Affect. Sci*. 453–457 https://doi.org/10.1007/s42761-023-00188-z (2023).
47. Levine, E. E. & Schweitzer, M. E. Are liars ethical? On the tension between benevolence and honesty. *J. Exp. Soc. Psychol.* **53**, 107–117 (2014).
48. Tsai, J. L. Ideal affect: Cultural causes and behavioral consequences. *Perspect. Psychol. Sci.* **2**, 242–259 (2007).
49. Borsari, B. & Carey, K. B. Descriptive and injunctive norms in college drinking: a meta-analytic integration. *J. Stud. Alcohol* **64**, 331–341 (2003).
50. Tsai, J. L., Knutson, B. & Fung, H. H. Cultural variation in affect valuation. *J. Pers. Soc. Psychol.* **90**, 288–307 (2006).
51. Deutchman, P., Kraft-Todd, G., Young, L. & McAuliffe, K. People update their injunctive norm and moral beliefs after receiving descriptive norm information. *J. Pers. Soc. Psychol.* **128**, 1–18 (2025).
52. Russell, J. A. A circumplex model of affect. *J. Pers. Soc. Psychol.* **39**, 1161–1178 (1980).
53. Kron, A., Goldstein, A., Lee, D. H.-J., Gardhouse, K. & Anderson, A. K. How are you feeling? Revisiting the quantification of emotional qualia. *Psychol. Sci.* **24**, 1503–1511 (2013).
54. Inglehart, R. & Baker, W. E. Modernization, cultural change, and the persistence of traditional values. *Am. Sociol. Rev.* **65**, 19–51 (2000).
55. Schwartz, S. H. A theory of cultural value orientations: explication and applications. *Comp. Sociol.* **5**, 137–182 (2006).
56. Hofstede, G., Hofstede, G. J. & Minkov, M. *Cultures and Organizations: Software of the Mind* (McGraw Hill, 2010).
57. Vignoles, V. L. et al. Are Mediterranean societies "cultures of honor?": prevalence and implications of a cultural logic of honor across three world regions. *Personal. Soc. Psychol. Bull*. https://doi.org/10.1177/01461672241295500 (2024).
58. Tierney, W. et al. Creative destruction in science. *Organ. Behav. Hum. Decis. Process.* **161**, 291–309 (2020).
59. Kuppens, P., Ceulemans, E., Timmerman, M. E., Diener, E. & Kim-Prieto, C. Universal intracultural and intercultural dimensions of the recalled frequency of emotional experience. *J. Cross. Cult. Psychol.* **37**, 491–515 (2006).
60. Brislin, R. W. Back-translation for cross-cultural research. *J. Cross. Cult. Psychol.* **1**, 185–216 (1970).

61. Price, R. H. & Bouffard, D. L. Behavioral appropriateness and situational constraint as dimensions of social behavior. *J. Pers. Soc. Psychol.* **30**, 579–586 (1974).
62. De Leersnyder, J., Mesquita, B., Kim, H., Eom, K. & Choi, H. Emotional fit with culture: a predictor of individual differences in relational well-being. *Emotion* **14**, 241–245 (2014).
63. Rubin, M. *When to Adjust Alpha during Multiple Testing: A Consideration of Disjunction, Conjunction, and Individual Testing*. *Synthese* Vol. 199 (2021).
64. Chen, C., Lee, S. Y. & Stevenson, H. W. Response style and cross-cultural comparisons of rating scales among East Asian and North American students. *Psychol. Sci.* **6**, 170–175 (1995).
65. Hedeker, D., Mermelstein, R. J. & Demirtas, H. Modeling between-subject and within-subject variances in ecological momentary assessment data using mixed-effects location scale models. *Stat. Med.* **31**, 3328–3336 (2012).
66. Popper, K. R. *Conjectures and Refutations: The Growth of Scientific Knowledge (5th edn)* (Routledge, London, 1963).
67. Matsumoto, D., Yoo, S. H. & Nakagawa, S. Culture, emotion regulation, and adjustment. *J. Pers. Soc. Psychol.* **94**, 925–37 (2008).
68. Bornstein, M. H. The specificity principle in acculturation science. *Perspect. Psychol. Sci.* **12**, 3–45 (2017).
69. Robertson, S. Korean Nunchi and well-being. *Sci. Relig. Cult.* **6**, 103–109 (2019).
70. Tankard, M. E. & Paluck, E. L. Norm perception as a vehicle for social change. *Soc. Issues Policy Rev.* **10**, 181–211 (2016).
71. Eom, K. & Choy, B. K. C. Is common behavior considered moral? The role of perceived others' motives in moral norm inferences and motivation about environmental behavior. *J. Exp. Soc. Psychol.* **116**, 104684 (2025).
72. Smetana, J. G., Wong, M., Ball, C. & Yau, J. American and Chinese Children's evaluations of personal domain events and resistance to parental authority. *Child Dev* **85**, 626–642 (2014).
73. Hertz, U. Learning how to behave: Cognitive learning processes account for asymmetries in adaptation to social norms. *Proc. R. Soc. B Biol. Sci.* **288**, 20210293 (2021).
74. Hertz, U. A cognitive approach to learning, monitoring, and shifting social norms. *Curr. Opin. Psychol.* **60**, 101917 (2024).
75. Morris, M. W. & Liu, Z. Psychological functions of subjective norms: reference groups, moralization, adherence, and defiance. *J. Cross. Cult. Psychol.* **46**, 1279–1287 (2015).
76. Vishkin, A. et al. Data and analysis code for "Social norm strength varies between cultures with respect to norm referent, norm type, contextualization, normative properties, and valence. *Open Science Framework* https://osf.io/8b4wk/?view_only=958db4cea49f413daa29450aa700cdd4 (2026).

Author contributions

A.V. and M.T. contributed equally to the conceptualization and study design. L.K. led the preparation of the study materials. A.V., Y.M., T.O., and M.Y.K. led data collection. A.V. led the funding acquisition, analyses, and writing of the original draft. M.T. contributed to manuscript editing.

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Competing interests

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Correspondence and requests for materials should be addressed to Allon Vishkin.

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