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Loyalty From a Personal Point of View: A Cross-Cultural Prototype Study of Loyalty

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Loyalty is considered central to people's moral life, yet little is known about how people think about what it means to be loyal. We used a prototype approach to understand how loyalty is represented in Colombia and the United States and how these representations mediate attributions of loyalty and moral judgments of loyalty violations. Across seven studies ($N = 1{,}984$), we found cross-cultural similarities in the associative meaning of loyalty (Study 1) but found differences in the centrality of features associated with loyalty (Study 2) and the latent structure of loyalty representations (Study 3). Colombians represent loyalty in terms of more general moral characteristics, while U.S. participants represent loyalty in terms of interpersonal commitment, both in contrast with current approaches to loyalty. By comparing representations of loyalty and honesty, we establish that differences in loyalty conceptualizations reflect a different way of thinking about loyalty rather than morality more generally (Study 4). Further, Colombians attributed greater loyalty to individuals with general moral characteristics compared to participants from the U.S. sample (Study 5) and were more likely to classify nonloyal values as loyalty-related (Study 6). While the centrality of prototypical features predicts categorizing norm violations as loyalty-related, differences in prototypical structure account for differences in the severity of moral judgment for such violations (Study 7), which suggests that loyalty representations have similar functions, even though these representations differ in structural characteristics.

Public Significance Statement

Do people think differently about loyalty in other cultures? This study suggests that Colombians represent loyalty differently than people in the United States. For Colombians, general moral qualities of honesty, kindness, and caring are more central to being loyal. Differences in thinking about loyalty were associated with differences in how people from Colombia and the United States make moral judgments about loyalty violations. Theoretically, our results challenge the descriptive adequacy of theoretical characterizations of loyalty in terms of individual-to-group commitments. Methodologically, our studies provide a model of how prototype analysis can help design culturally sensitive instruments to study variation in moral attitudes.

Keywords: loyalty, honesty, prototype analysis, cross-cultural comparison, moral judgment

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Loyalty and Group Cohesion

It is widely believed that loyalty plays a central role in binding communities (Brewer & Brown, 1998; Curry et al., 2019; Graham et al., 2013; Shaw et al., 2017). Forming and sustaining effective coalitions is a recurrent problem of social life. Loyalty is thought to foster ingroup attachment by helping to subordinate individual interests to the interests of the group (Hildreth et al., 2016; Zdaniuk & Levine, 2001). This aspect of loyalty is considered culturally universal: Insofar as human beings face challenges of forming and sustaining coalitions (especially beyond small kin networks), loyalty emerges as a value to facilitate group cohesion (Graham et al., 2013; Schwartz, 1992).

This picture is shared across anthropology, psychology, and philosophy. Shweder et al. (1997) hypothesized that loyalty forms part of the ethic of community and aims to preserve institutions and social order (see also Mattingly & Throop, 2018). Accordingly, research has found that behavior is considered loyal to the extent that it enhances group welfare (Abrams & Brown, 1989; Brewer & Brown, 1998; Burton, 1990; Scott, 1965). Loyalty is typically expressed through complying with norms that are significant to one's group identity (Louis et al., 2005; Sassenberg et al., 2011). Philosophers have likewise claimed that the demands of loyalty are largely dependent on one's relationships to the institutions and practices that are an important feature of social life (Baron, 1984; MacIntyre, 1984; McConnell, 1983). Concerns for loyalty are believed to be triggered by group challenges. Key loyalty-related virtues are patriotism and a willingness to sacrifice oneself for the group (Graham et al., 2013). The demands of loyalty, then, pertain to what one owes to their group.

While there is widespread agreement about loyalty-sustaining bonds within a group, surprisingly little research has been done to understand how people think about loyalty in everyday life. While loyalty is likely a universal dimension of morality (Atari et al., 2023; Schwartz, 1992), it is possible that cultural variation in the importance of different institutions, relationships, and practices across cultures might lead to diverging conceptions of what it means to be loyal and, perhaps, on how loyalty fulfills its function. This implies that different kinds of events could be considered relevant to loyalty and that moral evaluations of these events might differ culturally. For example, people in the United States might value sports teams in a different way than Brazilians, such that a coach celebrating the victory of a rival team is considered disloyal and morally wrong among people in the United States but not Brazilians (Marques et al., 2020). Thus, to understand the extent to which conceptualizations of loyalty are culturally universal, we wanted to understand both how people think about loyalty and how representations of loyalty might vary cross-culturally.

The Challenge of Translating Methods

Making comparisons across groups requires methods that preserve validity across samples. There are well-known problems related to translation and method bias that can raise difficulties for cross-cultural research (Barrett, 2020; Hruschka et al., 2018). The study of morality, however, raises additional problems that make meaningful cross-cultural comparisons elusive.

As mentioned above, two groups might view the same event differently. Two groups might see the same event as violating different sets of moral norms (Jiménez-Leal et al., 2024). Relatedly, one group might see an event as violating some moral norm, while the other group sees it as a nonmoral event. Spitting in the street, stomping on a flag, or marrying your first cousin might seem morally wrong to some, while others might perceive these events as matters of convention (Buchtel et al., 2015; Marques et al., 2020).

These issues raise questions for top–down approaches to studying moral psychology. On this approach, researchers assume a system of widely held moral norms or considerations and develop response items that are meant to capture the different dimensions of the system. Insofar as this taxonomy represents something basic about moral thinking, similar items should elicit similar responses across cultural groups. However, measures of moral judgment are validated across different groups by excluding items that highlight differences in moral attitudes among cultural groups. For instance, in the Portuguese validation of the moral foundations vignettes (MFV), a set of short vignettes that depict moral violations across different moral foundations (Clifford et al., 2015), Brazilian researchers identified 23 items that did not receive the predicted responses: Two vignettes depicting moral wrongs (as indicated by U.S. responses) were rated by most Brazilian participants as "not morally wrong," nine vignettes did not load onto any factors during an exploratory factor analysis, nine other vignettes were cross-loaded on multiple factors (corresponding to multiple moral foundations), and three vignettes loaded onto a factor that differed from the predicted factor based on moral foundations theory (MFT). These vignettes were excluded from the validated Portuguese MFV.

By removing items that draw out potentially relevant cultural differences, responses to the validated instruments become more readily interpretable. But the downside is that it makes the instrument less suitable for capturing relevant cultural differences. Why, for example, do United States participants but *not* Brazilian participants tend to consider marriage between first cousins morally wrong? In short, responses to the instrument might reveal agreement in the evaluation of the validated items at the cost of obscuring cross-cultural differences in the conceptualization of the relevant moral domain. But these differences might drive interesting variation in "real-world" moral evaluation.

Prototype Analysis

To understand the extent to which conceptualizations of loyalty (or any other wide domain of morality) is culturally universal, we must develop methods for making cross-cultural comparisons in people's conceptualizations of the different domains of moral evaluation. To clarify how people think about loyalty and the extent to which such thinking varies across cultural groups, we utilized a bottom–up empirical approach that relies on prototype analysis.

Some categories are represented in terms of features that reliably co-occur among members of the category. For example, the category *BIRD* is partly represented in terms of features like "having a beak" or "having wings" (Rosch, 1975). The prototype for *BIRD*, then, consists at least of these two features. The associative meaning of a category consists in all properties contained in a prototype (Hassebrauck, 1997). Categorization judgments are made by comparing features of the target with the relevant prototype, evaluating the similarity between the target and the prototype, and making a classification decision based on evidence of similarity (Minda & Smith 2011).

Not all features are equally relevant to classification. As Fehr (1988) noted, some properties are more central than others to

classification decisions. To adapt one of her preferred examples, *being good at math* is more central to intelligence than *being able to tell good jokes*, even though both provide some evidence about the intelligence of the target. More central features provide stronger evidence of category membership. Thus, prototypes have an associative meaning (a set of features that map to a category) and a central tendency (features arranged in terms of centrality). Features are considered "prototypical" when they are both highly central and readily accessible when thinking about the concept (this accessibility can be understood in terms of how easily some feature comes to mind when thinking about features common to objects falling under the concept). Further, there might be latent dimensions underlying different features that constitute higher order structure within a prototype. For example, in a classic study of the prototypes of a moral person (Walker & Pitts, 1998), the features associated with being a moral person clustered into six groups: idealistic, loyal, has integrity, caring, fair, and confident.

Studies of conceptual prototypes typically involve at least two stages (Fehr, 1994; Horowitz & Turan, 2008). First, participants list features associated with the concept (free listing); then, another group rates how central those features are to the concept (centrality). The nonunique terms listed by the first group comprise the *associative meaning* of the concept for that group, while the frequency with which different terms are mentioned indexes the accessibility of a feature relative to the category (Hassebrauck, 1997). As mentioned above, highly accessible and central features are considered prototypical.

Prototype analysis has been used to study conceptualizations of moral phenomena (Carmona et al., 2022; Gulliford et al., 2021; Osswald et al., 2010; Walker & Pitts, 1998). The benefit of the prototype analysis is that it provides a bottom–up empirical approach to understanding how people think about different aspects of morality. The process of producing and rating features related to a concept provides insight into how moral categories are represented while minimizing places where researchers impose normative assumptions on participants. Thus, prototype analysis is a worthwhile complement to corresponding top–down approaches in moral psychology.

Prototype analysis has also been used to assess cross-cultural differences in the conceptualization of normative phenomena (Cross et al., 2014; Smith et al., 2007; Vauclair et al., 2014). However, these studies did not examine the extent to which differences in how people think about normative phenomena inform moral judgments of norm-related events. Examining the connection between normative prototypes and judgment is crucial for understanding how moral prototypes inform moral cognition and how cultural variation in moral judgment corresponds to different conceptualization of moral categories. The present study is the first attempt to connect prototype analysis to potential cross-cultural differences or similarities in judgment.

Loyalty in Colombia and the United States

We examined conceptualizations of loyalty because we thought they might exhibit more cultural variability relative to other moral categories. This prediction was based on both theoretical considerations and empirical evidence.

Individuals who are exceptionally loyal are expected to exhibit patriotism and a willingness toward self-sacrifice (Curry et al., 2022; Graham et al., 2013; Peterson & Seligman, 2004; Zdaniuk & Levine, 2001). As group structures change, the demands for loyalty might vary even as dispositions toward loyalty arise from similar adaptive pressures. Some evidence suggests that judgments of loyalty—and its moral importance—vary as a function of sociocultural factors that affect group identity. Greater historical prevalence of infectious diseases (known as pathogen prevalence) is negatively correlated with individualism, female sociosexuality, and democratization (Murray & Schaller, 2010). Individuals from countries with greater historical pathogen prevalence make stronger endorsements of binding norms (authority, loyalty, and sanctity) compared to individuals from countries with lower historical pathogen prevalence (Makhanova et al., 2019; van Leeuwen et al., 2012). The explanation for this effect is that individuals who faced a greater threat of disease were forced to rely more heavily on groups. Relatedly, individuals with stronger tendencies toward collectivism tend to endorse loyalty more strongly compared to individuals with stronger tendencies toward individualism (Enke, 2019; Yilmaz et al., 2016).

Empirical considerations also suggest that conceptualizations of loyalty might exhibit cross-cultural differences. Evidence for cross-cultural differences in loyalty judgments emerged from a recent attempt to validate the MFV in Latin America (Jiménez-Leal et al., 2024). After translating and culturally adapting the original MFV, we relied on diverse samples from Colombia (COL), Peru, and Argentina, where we consistently found that participants failed to identify loyalty violations in a way that aligned with responses from the United States. In fact, Latin American participants tended to categorize loyalty violations as "not morally wrong" or as belonging to a different foundation, such as fairness, echoing internal consistency issues of the loyalty category measured with the Moral Foundations Questionnaire (Atari et al., 2023; Nejat & Hatami, 2019). Given that the vignettes had been validated in English, there were several possible explanations for the observed cultural differences in judgment. While it could be the case that the instruments do not work the same way in different cultural contexts (Hruschka et al., 2018), another possibility is that people think about loyalty differently, which might translate into different views about the demands of loyalty and what counts as a violation of such demands. Of course, it is also possible that the concept of loyalty is similar but extended to different situations and relationships across cultural contexts. This study was designed to examine whether there are underlying differences in the conceptualization of morality to begin explaining the observed differences in loyalty judgments. Given the findings on historical pathogen prevalence, we had reason to predict that these differences stemmed from different conceptualizations of loyalty.

The theoretical and empirical reasons for examining loyalty also informed our decision to compare Colombia and the United States. Beyond the evidence from the validation effort, the United States and Colombia also differ on several cultural variables associated with moral attitudes and judgment. The United States has a substantially lower historical pathogen prevalence compared to Colombia (−0.89 compared to 0.27; index is normalized, such that $n > 0$ indicates pathogen prevalence greater than average). Colombians also exhibit substantially lower individualism than people from the United States (13 compared to 91 based on the index in Hofstede, 2001). Using a modified version of the Cultural Fixation index (Muthukrishna et al., 2020), we estimated that Colombia is as culturally distant from the United States as Japan, Kenya, and Kazakhstan (see additional online Figure S1). These measures suggested that Colombians might think

differently about the nature of loyalty rather than simply applying the same concept differently to different situations.

Further, Colombians are known to exhibit a low degree of generalized social trust toward individuals in comparison to people in the United States (Ortiz-Ospina et al., 2024) and lower institutional trust than average citizens of Organisation for Economic Co-operation and Development countries (Organisation for Economic Co-operation and Development, 2023). Under a generalized climate of distrust, loyalty might be regarded as more central to morality and behavior regulation than it would be under conditions of generalized trust. In fact, preliminary results suggest that loyalty, as a virtue, tends to figure more prominently in Colombian conceptions of what a moral person is. In a prototype study with a Colombian sample, Carmona-Díaz et al. (2024), 11% of participants listed "loyalty" as a key characteristic of being moral. Subsequently, when participants were asked to rate the centrality of features associated with being moral, loyalty was considered one of the strongest indicators of being moral. Similar studies show that loyalty in the United States is not strongly associated or highly central to representations of being a good person (Smith et al., 2007) or virtue (Gulliford et al., 2021). Thus, even if Colombian and U.S. participants have similar conceptions of loyalty, loyalty might play a weightier role in Colombian moral evaluations. The studies presented here were also designed to track down these differences.

If there are differences in how people in the United States and Colombia think about loyalty, this could be due to specific differences in conceptualizations of loyalty or representative of broader differences in moral thinking more generally. For this reason, we conducted studies on the representation of honesty in both Colombia and the United States. We chose honesty as a comparison class because it is a category of moral experience reflected in everyday life (Hofmann et al., 2014; Saucier, 2009) and has, for these reasons, been considered a "candidate" foundation (Atari et al., 2023; Graham et al., 2013). Honesty is also associated with concepts of moral character (Vauclair et al., 2014) and goodness (Smith et al., 2007) that are highly accessible across cultural contexts. Additionally, there was a recent study of honesty prototypes among people in the United States that provided a baseline for interpreting our results. Because honesty is likely conceptualized as a moral value, measuring conceptualizations of honesty and loyalty would provide some evidence as to whether Colombians and people from the United States merely think differently about *morality* or whether, in some cases, they think differently about specific moral values.

The Present Study

The present study aims to systematically examine differences in how people think about loyalty in Colombia and the United States using prototype analysis (Fehr, 1988; Fehr & Russell, 1991; Gulliford et al., 2021; Horowitz & Turan, 2008). Assessing differences in everyday conceptions of loyalty facilitates understanding how representations of loyalty vary in different cultural contexts. This, in turn, has methodological benefits for developing tools to measure attitudes about loyalty (or other domains of moral thinking) that are sensitive to cultural specificities. To anticipate, different conceptualizations of moral categories might require adjusting our instruments from one group to the next in order to capture relevant cross-cultural variation.

Central Questions

Prototypes have an internal structure that can be compared across groups: the associative meaning, centrality, prototypicality (highly accessible/strongly central), and latent dimensions. This informs two central research questions:

> *Research Question 1:* Does the associative meaning of loyalty differ between the United States and Colombia?
>
> *Research Question 2:* Are different features of loyalty considered more central between Colombia and the United States?

An additional question concerns how representations of loyalty are related to moral judgment. According to MFT, loyalty constitutes a distinct domain of moral norms. Thus, people should view disloyal behavior as morally bad. One possibility, then, is that representations of loyalty may vary across cultures while serving similar functions in moral judgment. This informs a third question:

> *Research Question 3:* Do representations of loyalty inform moral judgments in a similar way between Colombian and U.S. participants?

Summary of Studies

We conducted seven studies (N = 1,984) to answer these questions. Studies 1 and 2 consist in the free-listing and centrality ratings characteristic of prototype analysis. Studies 3 and 5–7 corroborate the prototypical structure of loyalty for U.S. and Colombian participants identified in the initial studies by comparing the centrality of shared and culturally unique features (Study 3), assessing the effect of feature centrality on attributions of personal loyalty (Study 5), and measuring how quickly people categorize features as relevant to loyalty (Study 6). In Study 7, we examined how loyalty prototypes inform moral judgments across our samples. In Study 4, we compared the associative meaning and central tendencies of honesty representations between Colombia and the United States to assess whether differences in conceptualization reflect differences in thinking about morality or loyalty specifically. The institutional review board of Universidad de los Andes approved all studies, and the institutional review board at Providence College approved Study 6.

Transparency and Openness

We preregistered Experiments 3–7 to clearly establish design and analysis plans and to distinguish the confirmatory and exploratory aspects of our research. Materials, data, and code for all experiments, including preregistrations, are available on the Open Science Framework page of the project (https://osf.io/jfqe8/).

Study 1: The Associative Meaning of Loyalty

To assess the associative meaning of loyalty, participants from the United States and Colombia generated a list of features related to loyalty using open-response boxes.

Method

Participants

One hundred fifteen participants from the United States were recruited on Academic Prolific, while 114 Colombian participants were recruited through Netquest. Sample size was determined based on samples in recent cross-cultural prototype studies (Cross et al., 2014; Smith et al., 2007). Participants voluntarily completed demographic items after each study. For gender identity, participants were presented with three options: male, female, gender variant/nonconforming. Political affiliation and education information were also collected. For education, participants were presented with nine options related to different levels of schooling (e.g., high school degree, associate's degree). For political affiliation, participants expressed overall political preferences by selecting one of seven options: very left-leaning, left-leaning, somewhat left-leaning, middle of the road/unsure, somewhat right-leaning, right-leaning, and very right-leaning.

For the U.S. sample, 16 participants were excluded for not finishing the survey ($N = 99$; $M_{age} = 35.3$, $SD_{age} = 11.5$, 48% female, 49% male, 3% gender variant/nonconforming). For U.S. participants, 53% completed at least a bachelor's degree, and 66% identified as politically left-leaning, while 30% identified as politically right-leaning. For the Colombian sample, four participants were excluded for not finishing the survey, so our final sample was composed of 110 participants in total ($N = 110$; $M_{age} = 41.2$, $SD_{age} = 17.7$, 48% female, 52% male). Fifty percent of participants had completed at least a bachelor's degree. Fifty-five percent did not list a political preference, 10% identified as politically right-wing, and 27% identified as politically left-leaning.

Procedure

We adapted instructions from Fehr (1988). Participants were provided with sample responses related to *being terrified*. Then participants were asked to think about people they knew who were loyal, what thoughts they had about loyalty, and the circumstances in which they noticed loyalty. They were also explicitly told to list attributes common to loyal people rather than specific names or places. After reading the instructions, participants viewed a screen with 10 open-response boxes. Participants were told to write down characteristics related to loyalty for at least 2 min, and the advance button was hidden for this time.

We used the Spanish term *lealtad* as a translation of the English word *loyalty*. As in other cross-cultural prototype studies (Cross et al., 2014; Smith et al., 2007), instructions were translated and back-translated by researchers fluent in both Spanish and English. Researchers fluent in both languages agreed that *lealtad* provided the best translation for *loyalty*, so our use of the term mitigates concerns that differences between prototypes reflect construct bias.

Results

Tables 1 and 2 summarize the frequency of prototypical features for both Colombia and the United States (full item lists, including frequency and centrality ratings, are available in additional online material S2). U.S. participants spent an average of 5.28 min listing features ($SD_{min} = 3.8$) and produced an average of 8.10 responses, while Colombian participants spent 3.5 min on average ($SD_{min} = 1.7$) and listed an average of 8.3 responses. Features were extracted from the data by grouping common responses and nominalizing adjectives (e.g., *trustworthy* was changed to *trustworthiness* and *fiel* to *fidelidad*). Larger groups were formed from similar expressions (e.g., *keeps promises* and *keeping their word* were grouped together under "keeps promises"). To preserve subtle differences between linguistic categories, we kept different terms with similar meanings in distinct categories (e.g., *being dependable* and *being reliable* or *honestidad* and *sinceridad*). The one exception to this was when similar terms were mentioned by only one participant. Features mentioned by only one participant that could not be grouped into a higher order category were dropped from further analyses. Using this procedure, U.S. participants produced 81 nonunique features, and Colombian participants produced 71 nonunique features.[1]

We computed an index of interprototype similarity (Cantor et al., 1982), which represents the ratio of shared to unique attributes across lists (additional analyses included in additional online material S2). As the index approaches infinity, it reflects greater similarity between the associative meaning of representations. As the index approaches zero, it reflects greater dissimilarity. Members of the research team determined whether items were shared or unique. For each term, one-to-one mappings were used to determine whether terms were shared or unique. For example, if one term had three permissible translations, then only one translation would count

Table 1
Top 10 Most Central and Prototypical Loyalty Items for U.S. Participants

Feature	Frequency (%) (*Study* 1)	Centrality (*Study* 2)
Not betraying you	4.04	6.55 [6.44, 6.66]
Having your back	3.03	6.51 [6.4, 6.62]
Being there for you	**27.27**	**6.45 [6.34, 6.57]**
Not cheating on a romantic partner	2.02	6.4 [6.25, 6.49]
Willing to defend you	**10.10**	**6.37 [6.26, 6.49]**
Standing by you	**7.07**	**6.36 [6.24, 6.49]**
Unconditional support	3.03	6.33 [6.19, 6.47]
Sticking up for you	**7.07**	**6.34 [6.22, 6.45]**
Being on your side no matter what	3.03	6.21 [6.05, 6.38]
Not talking behind your back	4.04	6.25 [6.11, 6.39]
Trustworthiness	**43.43**	**6.16 [6.02, 6.29]**
Faithfulness	**15.15**	**5.98 [5.79, 6.18]**
Devotion	**7.07**	**5.97 [5.82, 6.13]**
Being dependable	**24.24**	**5.94 [5.77, 6.11]**
Being reliable	**10.10**	**5.88 [5.72, 6.04]**
Good friend	**22.22**	**5.85 [5.7, 6.01]**
Dedication	**18.18**	**5.76 [5.57, 5.95]**
Being trusting	**10.10**	**5.65 [5.45, 5.84]**
Truthfulness	**12.12**	**5.63 [5.43, 5.82]**
Honesty	**42.42**	**5.6 [5.42, 5.79]**

Note. Items in bold are prototypical based on their high frequency (>7%) and high centrality (>5.5). Features are sorted by centrality (as measured in Study 2). Values in brackets represent 95% confidence intervals. Six items (not betraying you, having your back, not cheating on a romantic partner, unconditional support, being on your side no matter what, and not talking behind your back) were rated as highly central but were not highly accessible.

[1] Being patriotic/*patriotismo* was not listed by participants in the United States or Colombia. Because some theoretical frameworks predict that patriotism is a key virtue related to loyalty, we included it in Study 2 for both samples. U.S. participants considered *being patriotic* to be a poor indicator of loyalty ($M = 3.18$), while Colombian participants were roughly indifferent toward patriotism as an indicator of loyalty ($M = 4.05$).

Table 2
Top 10 Most Central and Prototypical Loyalty Items for Colombian Participants

Feature	Frequency (%) (*Study* 1)	Centrality (*Study* 2)
Fidelidad (faithfulness)	**32.73**	**6.49 [6.36, 6.61]**
Confiabilidad (trustworthiness)	**52.73**	**6.41 [6.27, 6.54]**
Honestidad (honesty)	**62.73**	**6.34 [6.17, 6.51]**
Sinceridad (sincerity)	**37.27**	**6.34 [6.17, 6.51]**
Respeto (being respectful)	**38.18**	**6.24 [6.06, 6.42]**
Ética (ethical)	**24.55**	**6.19 [6.01, 6.37]**
Compromiso (commitment)	**14.55**	**6.09 [5.91, 6.28]**
No hablar mal a espaldas de los demás (not talking behind your back)	3.64	6.09 [5.85, 6.32]
Principios (principled)	2.73	6.08 [5.88, 6.28]
Cumplimiento de promesas (keeps promises)	**11.82**	**6.08 [5.88, 6.27]**
Franqueza (frankness)	**11.82**	**5.97 [5.77, 6.17]**
Buen amigo (good friend)	**35.54**	**5.9 [5.7, 6.1]**
Apoyo (being supportive)	**21.82**	**5.86 [5.68, 6.05]**
Incondicionalidad (being dependable)	**25.45**	**5.85 [5.66, 6.04]**
Responsabilidad (responsibility)	**16.36**	**5.8 [5.57, 6.02]**
Coherencia (consistency)	**16.36**	**5.78 [5.59, 5.98]**
Firmeza (being steadfast)	**9.09**	**5.73 [5.53, 5.94]**
Solidaridad (solidarity)	**8.18**	**5.65 [5.43, 5.86]**
Disposición a escuchar (good listener)	**7.27**	**5.6 [5.37, 5.83]**
Empatía (empathetic)	**10.91**	**5.59 [5.37, 5.81]**
Compañerismo (collegiality)	**10.91**	**5.57 [5.37, 5.77]**
Constancia (constant)	**10**	**5.57 [5.36, 5.79]**
Ser Cumplido (fulfilling duties)	**8.18**	**5.57 [5.35, 5.8]**

Note. Items in bold are prototypical based on their high frequency (>7%) and high centrality (>5.5). Features are sorted by centrality (as measured in Study 2). Values in brackets represent 95% confidence intervals. Two items (*principios* and *no hablar mal a espaldas de los demás*) were rated as highly central but were not highly accessible.

as shared. Fifty-three terms were mentioned by participants in both samples, and 54 terms were considered unique (similarity index = .98). This represents a relatively high level of similarity between the two lists, indicating a large overlap between the associative meaning of loyalty between people in Colombia and the United States.

Discussion

Study 1 examined differences in the associative meaning of loyalty between the United States and Colombia. While loyalty prototypes exhibited high similarity, some clear differences emerged. For example, two prototypical loyalty features for Colombians (*ser cumplido* [fulfilling duties] and *ética* [ethical]) were not part of the associative meaning of loyalty for U.S. participants.

The next study assessed ratings of centrality for these features to better understand similarities and differences across loyalty prototypes.

Study 2: Centrality of Loyalty Features

Method

Participants

We recruited 200 U.S. participants on Academic Prolific and 200 Colombian participants using Netquest. Sample size was calculated to match previous cross-cultural prototype studies (Cross et al., 2014; Smith et al., 2007). Two participants were excluded from the U.S. sample for self-reported distraction ($N_{U.S.} = 198$, $M_{age} = 37.3$, $SD_{age} = 14.1$, 49% female), and 19 participants were excluded from the Colombian sample ($N_{COL} = 181$, $M_{age} = 41.34$, $SD_{age} = 16.7$, 53% female). No data were analyzed prior to excluding participants.

Procedure

Using features generated in Study 1, participants saw all nonunique features produced by people from their country. We adapted instructions from Fehr (1988) describing the concept of a prototype and an example of centrality using the concept of "intelligence." Participants were then asked to rate the centrality of features using a 7-point Likert scale (1 = *this feature is not a good indicator of loyalty*, 4 = *unsure*, 7 = *this feature is an extremely good indicator of loyalty*). Instructions and scale labels were translated and back-translated by bilingual members of the research team to ensure similar meanings. Feature order was randomized across participants.

Results

Tables 1 and 2 summarize mean centrality ratings of prototypical items for U.S. and Colombian participants (complete summaries are available in additional online material S2). While some highly central features were not highly accessible, there was a modest correlation between frequency and centrality for both U.S. ($r = .30$, 95% CI [.09, .49], $p = .006$) and Colombian participants ($r = .53$, 95% CI [.34, .68], $p < .001$). The correlation between frequency and centrality was significantly higher for Colombian compared to U.S. participants (Fischer's r-to-z transformation, $p < .001$).

Following a previous cross-cultural prototype study (Cross et al., 2014), we identified the prototypical aspects of loyalty as the features that are both high in frequency (7% or more) and in centrality ($M = 5.5$ or more). Fifteen terms from the U.S. sample counted as prototypical: *being there for you*, *willing to defend you*, *standing by you*, *sticking up for you*, *trustworthiness*, *faithfulness*, *devotion*, *being dependable*, *being reliable*, *good friend*, *dedication*, *being trusting*, *truthfulness*, and *honesty*. Twenty-two terms from the Colombian sample counted as prototypical: *honestidad* (honesty), *confiabilidad* (reliability), *respeto* (being respectful), *sinceridad* (sincerity), *buen amigo* (good friend), *fidelidad* (being faithful), *incondicionalidad* (unconditional support), *ética* (being ethical), *apoyo* (having your back), *coherencia* (being consistent), *responsabilidad* (being responsible), *franqueza* (frankness), *compañerismo* (collegiality), *empatía* (empathic), *constancia* (perseverance), *firmeza* (being steadfast), *ser cumplido* (fulfilling commitments and duties), *solidaridad* (solidarity), *disposición a escuchar* (willingness to listen), *cumplimiento de promesas* (keeps promises), and *compromiso* (commitment). There was no evidence for a statistically significant difference in the mean centrality of these prototypical features across countries, $t(345.23) = 0.75$, $p = .45$. Of the prototypical features, 13 were mentioned by both U.S. and Colombian participants, while eight were unique to one or the other sample.

In total, most features associated with loyalty were shared across the cultural samples (68% of U.S. features were shared, and 61% of Colombian features were shared). That number increased for

prototypical features: 86% of the prototypical features for the United States and 81% for Colombia were shared. For the United States, the unique prototypical features were *being trusting* and *being devoted*. For Colombia, the unique prototypical features were *ser cumplido* (fulfilling duties), *compañerismo* (companion), *solidaridad* (solidarity), *honradez* (not stealing), and *ética* (ethical).

To understand the latent structure of participant ratings of centrality, we conducted exploratory factor analyses using maximum likelihood extraction methods and oblique rotation with geomin rotation criteria (Hattori et al., 2017). Oblique rotation was selected because the method allows for latent factors to be correlated. Separate models were fit using alternative criteria (quartimax and equimax). In the Colombian sample, alternative models converged on the same solution. In the U.S. sample, two solutions were identified, but both solutions exhibited a high degree of congruence among rotated factor loadings across both solutions (minimum = .85). For U.S. and Colombian participants, most extraction methods identified five latent factors. We dropped items that loaded less than .40 on a factor or that loaded greater than .40 on more than one factor, as recommended in recent practice (Clark & Watson, 2019). Sample factor loadings are summarized in Table 3 (see additional online Tables S3 and S4 for summaries of rotated factors and pattern matrix coefficients in additional online material S3).

Despite similar numbers of latent factors for both samples, the items loading on these factors were somewhat different. While the warmth/competence dimensions shared many items across groups, different aspects of loyalty are stressed within each sample. For example, defensiveness is distinct for the Colombian sample, while similar items were subsumed under the dimension of interpersonal commitment for the U.S. sample.

Discussion

Studies 1 and 2 provided evidence for similarities and differences in loyalty prototypes between the United States and Colombia. In both the United States and Colombia, prototypical features of loyalty are related to interpersonal commitment (being there for you, willing to defend you, being reliable, good friend, etc.). In Colombia, participants rated general moral qualities as more prototypical of loyalty compared to the United States (*ética* [ethical], *respeto* [being respectful], *sinceridad* [sincere], *responsabilidad* [responsibility], *empatía* [empathetic], *ser cumplido* [fulfilling duties], etc.). While loyalty prototypes in the United States include some general moral qualities (truthfulness, honesty), the Colombian representation of loyalty contained general ethical terms that were uniquely prototypical, including *ser cumplido*, *responsabilidad*, and *ética*. This suggests that Colombian loyalty prototypes represent more general moral characteristics compared to people in the United States and that these characteristics have stronger central tendencies. And, while Colombian loyalty prototypes included features related to interpersonal commitment as prototypical (*incondicionalidad* [being dependable], *apoyo* [being supportive], *firmeza* [being steadfast]), these were interspersed with a greater number of general moral characteristics. This suggests that the Colombian prototype of loyalty is less differentiated compared to the prototype of loyalty in the United States.

Another noteworthy aspect of these results is that people in both the United States and Colombia appear to represent loyalty in terms

Table 3
Sample Factor Loadings for Centrality Ratings in Study 2

	United States			Colombia		
Factor	Item			Item		
Warmth/competence	Being respectful	Compassionate	Competence	Cariño (caring)	Servicialidad (helpfulness)	Generosidad (generous)
Interpersonal commitment (U.S.)/moral values (COL)	Having your back	Not betraying you	Standing by you	Justicia (just)	*Principios* (principled)	*Prudencia* (prudent)
Personal integrity (U.S.)/truthfulness (COL)	Being steadfast	Commitment	Dedication	Honestidad (honesty)	Confiabilidad (trustworthiness)	Ética (ethical)
Authority (U.S.)/perseverance (COL)	Obedience	Being patriotic			Constancia (constant)	
Trustworthiness (U.S.)/defensiveness (COL)	Honesty	Trustworthiness	Truthfulness	Guarda secretos (willing to keep secrets)	Defender (willing to defend you)	Respaldo (having your back)

Note. U.S. = United States; COL = Colombia.

of interpersonal relationships rather than relationships with a group. Prototypical features of loyalty include traits and characteristics that are primarily about interactions with close others, such as *good friend/buen amigo*, *standing by you/apoyo*, *being there for you*, *compañerismo*,[2] and so on (Schwartz, 1992). Relatedly, neither sample associated *being patriotic/patriotismo* with being a loyal person, and these features were not considered central to the concept of loyalty. This runs contrary to some predictions of MFT, which frames loyalty partly in terms of individual commitment to group welfare and cites patriotism as a key virtue related to loyalty (Graham et al., 2013, p. 68). However, MFT also predicts that loyalty is associated with willingness toward self-sacrifice, which aligns with how participants in both the United States and Colombia represented loyalty in these studies.

Study 3: Comparing the Structure of Loyalty Representations

To explicitly compare these representations across cultures, we presented a combined list of both the shared and culturally unique features associated with loyalty to different samples of participants located in the United States and Colombia to better understand how culture-specific features of loyalty prototypes are represented.

Method

Participants

We recruited 155 U.S. participants over Academic Prolific, while 155 Colombian participants were recruited over Netquest. An a priori power analysis showed that for a two-way analysis of variance (ANOVA) to have 80% power to detect effect sizes reported in similar studies (f = .23–.27) at standard error threshold ($p < .05$), 151 participants per group were needed. To account for attrition and exclusions, we overrecruited by 5%. One participant was excluded from the U.S. sample based on preregistered exclusion criteria ($N_{U.S.}$ = 154, M_{age} = 34.8, SD_{age} = 13.6, 47% female). One participant was excluded from the Colombian sample based on preregistered exclusion criteria (N_{COL} = 154, M_{age} = 34.8, SD_{age} = 13.6, 47% female).

Materials and Procedure

We combined all shared and unique features listed by participants from the United States and Colombia to create a list of 103 items. All items were translated and back-translated by bilingual members of the research team. Procedure was identical to Study 2. Shared items were listed only once. All items were presented in random order.

Results

A 2 × 2 ANOVA found evidence for a significant two-way interaction between country and uniqueness, $F(2, 200) = 5.93$, $p = .003$, $\eta_p^2 = .06$, 90% CI [.01, .11]. To clarify this interaction, we computed tests of simple main effects. Colombian participants rated unique Colombian features of loyalty as more central (M = 5.38, 95% CI [5.11, 5.65]) than U.S. participants (M = 4.35, 95% CI [4.08, 4.63]), $t(200) = 6.01$, $p < .001$, $d = 1.64$, 95% CI [1.08, 2.20]. Colombian participants rated shared features of loyalty as more central ($M = 5.65$, 95% CI [5.46, 5.84]) than U.S. participants (M = 5.26, 95% CI [5.07, 5.45]), $t(200) = 3.29$, $p = .001$, $d = 0.63$, 95% CI [0.25, 1.01]. However, there was no evidence that Colombian participants rated unique U.S. features of loyalty as less central (M = 5.12, 95% CI [4.81, 5.43]) than U.S. participants ($M = 4.87$, 95% CI [4.56, 5.18]), $t(200) = 1.29$, $p = .20$, $d = 0.40$, 95% CI [−0.21, 1.01] (see Figure 1).

To understand the latent structure of centrality ratings across groups, we conducted an exploratory factor analysis. Optimal factors for each sample were determined using bi-cross-validation with early-stopping-alteration (Sun et al., 2012). Five factors were recommended for the U.S. sample, and three factors were recommended for the Colombian sample. We applied varimax rotation to initial factor loadings for both models. Alternative rotation methods obtained similar results (minimum congruence for both the United States and Colombia >.9). We dropped items that loaded less than .4 on any factor or loaded greater than .4 on more than one factor (Table 4). Rotated factors with pattern matrix coefficients are summarized in additional online Table S5 (see additional online material S4).

For Colombian and U.S. participants, the first factor reflected general moral characteristics, although qualities related to concern ("empathetic," "loving") and honesty ("truthfulness," "sincerity") loaded onto distinct factors for the U.S. sample (see additional online Figure S2 for a visualization of differences in rotated factor loadings). The second factor reflected the relationship between personal trust and loyalty. For Colombian participants, a subset of personal trust items loaded on a distinct factor related to interpersonal commitment.

Differences in the specific characteristics associated with these larger categories were identified. For example, *truthfulness*, *honesty*, and *sincerity* loaded on a separate factor for U.S. participants, whereas these items loaded on the same factor as other features related to personal trust for Colombians (*not betraying you*, *being there for you*, *not cheating*, etc.). Similarly, features related to defensiveness formed a separate factor for people in Colombia, whereas in the United States, these features loaded on the same factor as other features related to interpersonal commitment.

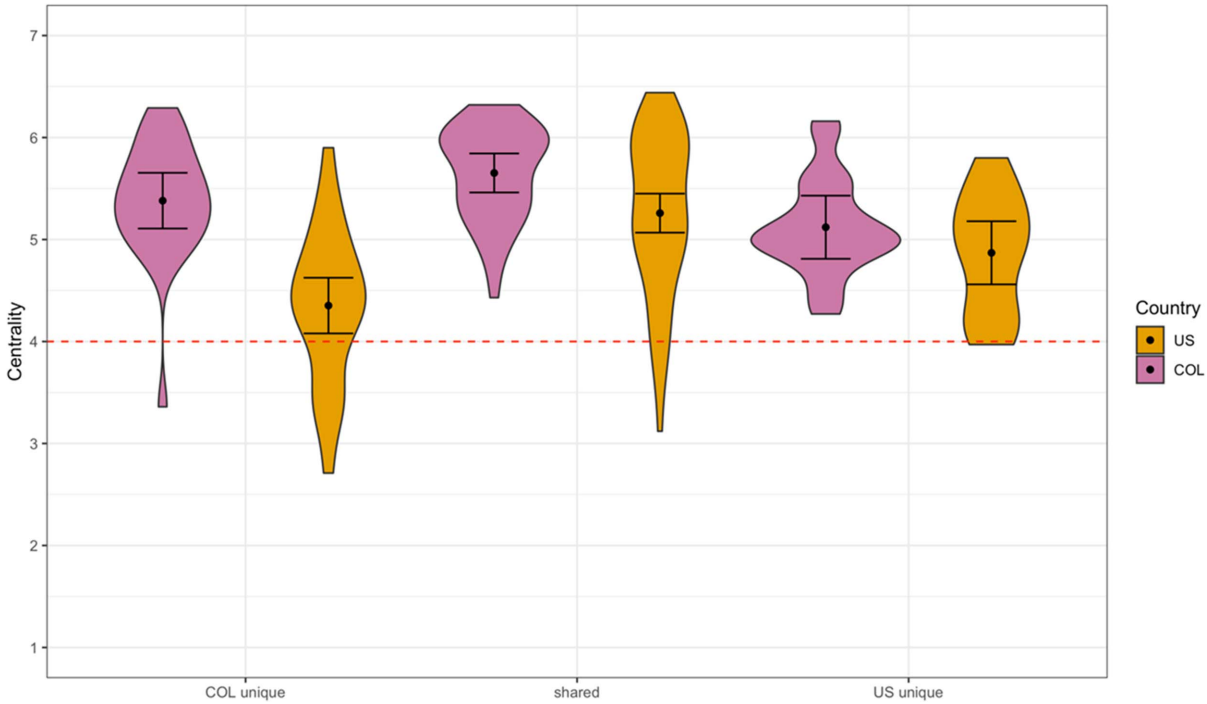
Factor analyses indicated potential differences in how loyalty is represented cross-culturally. We examined whether these latent variables were associated with different levels of centrality. We computed global means for factors that shared many items across countries by taking the average of centrality ratings for each item within a factor. To make meaningful comparisons, we compared centrality ratings for the two factors that explained the highest degree of variance for both countries (moral values and personal trust).

A 2(Factor) × 2(Country) ANOVA found evidence for a significant interaction between factor and country, $F(1, 612) = 28.59$, $p < .001$, $\eta_p^2 = .04$, 90% CI [.02, .07]. To understand this interaction, we conducted tests of simple main effects (Figure 2). Colombian participants considered moral values items to be more central (M = 5.25, 95% CI [5.06, 5.44]) to loyalty than U.S. participants (M = 4.20, 95% CI [4.01, 4.39]), $t(612) = 8.87$, $p < .001$, $d = 1.01$, 95% CI [0.78, 1.24]. There was no evidence for a difference between centrality ratings for personal trust items between Colombian (M = 6.01, 95% CI [5.82, 6.20]) and U.S. participants ($M = 5.86$, 95% CI [5.67, 6.04]), $t(612) = 1.30$, $p = .19$, d = 0.15, 95% CI [−0.08, 0.37].

[2] *Compañero* can be translated as *mate* (as in classmate, teammate, etc.). But the term does not necessarily imply group membership. *Compañero sentimental*, for example, stands for *romantic partner*. The noun is a cognate of company, *compañía*.

Figure 1

Ratings of Centrality by Feature Uniqueness Across the United States and Colombia in Study 3



Note. U.S. = United States; COL = Colombia. See the online article for the color version of this figure.

Discussion

The latent structure of loyalty representations differed between participants from the United States and Colombia. These differences suggested that defensiveness might play a distinctive role in Colombian representations of loyalty, while trust and interpersonal commitment might be differentially related to Colombians and people from the United States. Differences in the central tendencies of features related to loyalty were reflected in the different underlying factor structure of centrality judgments across our samples.

We found further evidence for cultural differences in the central tendencies of several features related to loyalty. When these culturally unique features were presented to the other sample, some of them were not recognized as central. The features that are unique to Colombian representations of loyalty—and not recognized as central by participants from the United States—include several general moral characteristics (e.g., fulfilling duties [*ser cumplido*], being ethical [*ética*]). In general, Colombian participants considered general moral characteristics to be more central to loyalty than their U.S. counterparts. This suggests that Colombian representations of loyalty are more integrated with general moral values than representations of loyalty in the United States. This difference, however, could be understood as a general cultural difference about how people from Colombia and the United States think about morality rather than a specific difference about loyalty. Colombians might, in general, more readily associate morality with everyday concepts that characterize interpersonal interactions. To better understand the relationship between loyalty and morality and the cross-cultural variability of this relationship, we conducted another study on the features associated with honesty in Colombia and the United States and the centrality of those features to being considered honest.

Study 4: Comparing Representations of Honesty and Loyalty

In Studies 1–3, there was evidence that general moral characteristics are more central to Colombian representations of loyalty than in the United States. Does this indicate a difference in how people in Colombia and the United States think about morality more generally? One possibility is that Colombians generally associate interpersonal concepts with morality compared to people from the United States. However, if people from Colombia and the United States both represent some interpersonal concepts in general moral terms, this would suggest that the differences related to loyalty representations reflect a cultural difference in thinking about loyalty rather than a cultural difference in thinking about morality. To examine this, we compared representations of honesty in Colombia and the United States.

Method

Participants

Two hundred thirty-five participants were recruited for the free-listing phase (115 in the United States on Academic Prolific and 120 in Colombia using Netquest). For the U.S. sample, no participants were excluded from the survey ($N = 115$; $M_{age} = 39.9$, $SD_{age} = 13.9$, 48.2% female, 50% male, 0.9% gender variant/nonconforming). For

Table 4
Sample Items for Factor Loadings in Study 3

Colombia			United States				
Moral value	Personal trust	Interpersonal commitment	Moral value	Interpersonal commitment	Concern	Personal trust	N/A[a]
Responsabilidad (responsibility)	*Está ahí para ti* (being there for you)	*Apoyo* (standing by you)	*Courage*	*Standing by you*	*Empathetic*	*Truthfulness*	
Amabilidad (kindness)	*Confiabilidad* (trustworthiness)	*Estar dispuesto a hacer sacrificios* (being willing to sacrifice)	*Humility*	*Trustworthiness*	*Loving*	*Honesty*	
Coraje (courage)	*Fidelidad* (faithfulness)	*Tener relaciones cercanas* (having close relationships)	*Strong sense of justice*	*Unconditional support*		*Sincerity*	
Ser cumplido (fulfilling duties)	*No te miente* (not lying to you)	*Complicidad* (close ally)	*Encouragement*	*Being dependable*		*Not cheating*	

Note. N/A = no loadings.
[a] No items loaded on this factor and met the cutoff criteria.

the Colombian sample, 44 participants were excluded for either not providing responses or self-reporting distraction ($N = 91$; $M_{age} = 40.9$, $SD_{age} = 15.1$, 53.8% female, 46.2% male). U.S. participants produced 7.8 responses on average ($SD = 2.3$) and spent 2.9 min ($SD = 35$ s) providing responses. Colombian participants produced 7.8 responses on average ($SD = 2.4$) and spent 2.9 min ($SD = 89$ s) providing responses.

Four hundred nine participants were recruited for the centrality study (201 in the United States on Academic Prolific and 208 in Colombia using Netquest). For the U.S. sample, no participants were excluded from the survey per preregistered exclusion criteria ($N = 201$, $M_{age} = 40.2$, $SD_{age} = 13.6$, 47.2% female, 49.7% male, 2% gender variant/nonconforming). For the Colombian sample, 39 participants failed preregistered exclusion criteria ($N = 169$, $M_{age} = 42.6$, $SD_{age} = 16.4$, 45% female, 54.4% male, 0.6% gender variant/nonconforming).

Materials and Procedure

The same procedure from Studies 1 and 2 were used. The Spanish term *honestidad* was selected to translate honesty.

Results

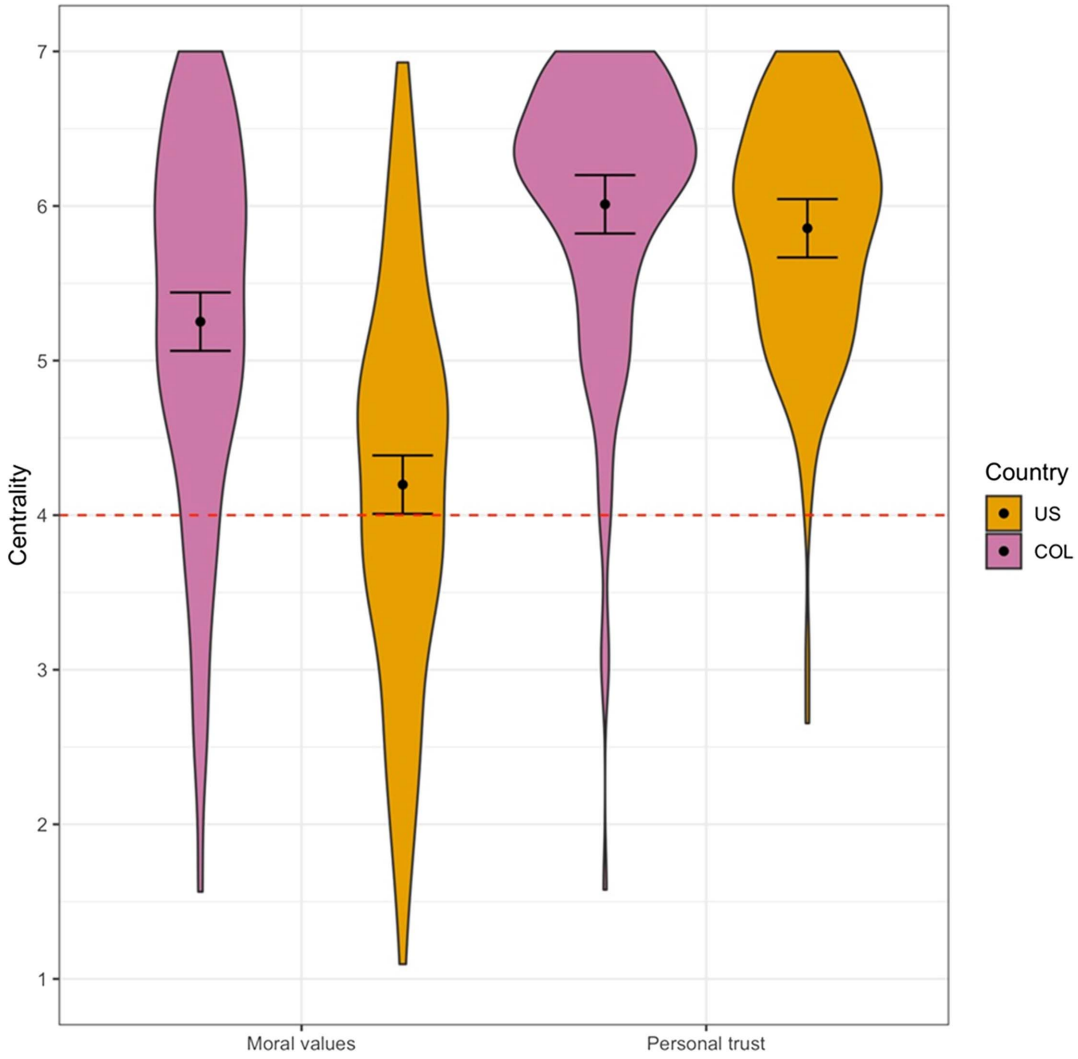
Tables 5 and 6 summarize the frequency and centrality of prototypical and highly central features for both Colombia and the United States (full results are summarized in additional online material S5). We used the same feature extraction method as Study 1. Using this procedure, U.S. participants produced 61 nonunique features, and Colombian participants produced 82 nonunique features.

As with loyalty, there was evidence for a modest correlation between frequency and centrality for both U.S. ($r = .37$, $p < .001$) and Colombian participants ($r = .41$, $p < .001$). Using the Fisher r-to-z transformation, we found no evidence for a statistically significant difference between these correlations ($z = -0.45$, $p = .65$).

Using the benchmarks for prototypicality outlined in Study 2, we found some differences in the prototypical features of honesty. Seven terms from the U.S. sample counted as prototypical: not lying, truthfulness, trustworthy, being transparent, having integrity, being ethical, and being genuine.[3] Twenty-three items from the Colombian sample counted as prototypical: honradez (*integrity/not stealing*), actuar correctamente (*act correctly*), decir la verdad (*telling the truth*), transparencia (*transparency*), confiabilidad (*reliability*), no mentir (*not lying*), sinceridad (*sincerity*), ética (*being ethical*), rectitude (*rectitude*), ser incorruptible (*being incorruptible*), franqueza (*frankness*), integridad (*having integrity*), fidelidad (*faithful*), lealtad (*loyalty*), conciencia (*awareness*), cumplimiento de promesas (*keeping promises*), responsabilidad (*responsibility*), ser justo (*being fair*), coherencia (*being consistent*), ser claro (*being clear*), respeto (*being respectful*), compromiso (*commitment*), and decencia (*decency*).

[3] This aligns with the results of a recent prototype study of honesty conducted in the United States (Reynolds et al., 2023). Reynolds et al. found that truthfulness is the feature most prototypically associated with people in the United States. As with our study, they also found that being trustworthy, having integrity, and being ethical (moral) were considered prototypical of honesty. While participants associated not lying with honesty, Reynolds et al. found that not lying was a behavioral category strongly associated with being an honest person (see Study 4). One important difference is that being transparent and being genuine both emerged as prototypical features in our study but were not mentioned by participants sampled by Reynolds et al.

Figure 2
Ratings of Centrality by Factor and Country in Study 3



Note. Error bars represent 95% confidence intervals. U.S. = United States; COL = Colombia. See the online article for the color version of this figure.

We computed an index of interprototype similarity to compare the overlap between honesty representations among U.S. and Colombian samples. As with loyalty, members of the research team determined whether items were shared or unique. We used a one-to-one mapping scheme, so only one translation could count as shared with a counterpart. Forty-three features were shared across samples, while 57 unique terms were produced (similarity index = 0.75). While this suggests a modest degree of overlap, the index is lower than the one computed for loyalty representations (see Study 1).

This might be due to divergent peripheral features. When looking at loyalty features, 68% of features listed by U.S. participants are shared with features mentioned by Colombians, while 61% of features listed by Colombian participants are shared with features mentioned by people from the United States. That number increases when looking at prototypical features: 86% of prototypical U.S. features and 81% of prototypical Colombian features are shared with their cultural counterparts. The relative similarity of the proportion of shared features at each level suggests modest overlap across the entire representational structure. The representation of honesty is somewhat different. Seventy percent of features listed by U.S. participants are shared with features mentioned by Colombians, while only 53% of features listed by Colombians are shared with features mentioned by people from the United States. However, there is high overlap of prototypical features across both samples: 83% (6/7) of prototypical U.S. features are shared, while 78% (18/23) of prototypical Colombian features are shared. This suggests that greater differentiation of honesty representations is driven by less central features rather than differences in the prototypical structure of honesty.

To understand the latent structure of the centrality ratings, we conducted exploratory factor analyses using the same procedure as Study 2. Separate models were fit using alternative criteria (quartimax, varimax, and equimax). In both samples, alternative models converged on a two-factor solution. For the U.S. sample, all prototypical items loaded on the same factor. For the Colombian

Table 5
Top 10 Most Central and Prototypical Honesty Items for U.S. Participants

Feature	Frequency (%)	Centrality
Not lying	**15**	**6.53 [6.39, 6.68]**
Truthfulness	**42**	**6.53 [6.4, 6.65]**
Not cheating	3	6.06 [5.9, 6.22]
Trustworthy	**42**	**6.06 [5.89, 6.22]**
Being transparent	**12**	**5.89 [5.72, 6.06]**
Having integrity	**11**	**5.8 [5.62, 5.99]**
Admitting mistakes	3	5.73 [5.56, 5.9]
Accountability	3	5.66 [5.47, 5.85]
Being ethical	**10**	**5.59 [5.4, 5.79]**
Authenticity	4	5.54 [5.35, 5.74]
Being genuine	**11**	**5.53 [5.32, 5.74]**
Taking responsibility	6	5.52 [5.33, 5.71]
Keeping promises	3	5.46 [5.25, 5.66]
Forthcoming	7	5.42 [5.23, 5.62]
Being moral	13	5.32 [5.11, 5.54]
Being straightforward	16	5.31 [5.12, 5.51]
Sincerity	17	5.28 [5.05, 5.52]

Note. Items in bold are prototypical based on their high frequency (>7%) and high centrality (>5.5).

sample, all but four items loaded on the same factor. Decencia (*decency*) loaded on a different factor, while responsabilidad (*responsibility*), ser justo (*being fair*), and compromise (*commitment*) did not load uniquely on either factor (see additional online material S5 for complete factor loadings and additional analyses).

Discussion

Study 4 examined whether the differences identified in loyalty prototypes among people from Colombia and the United States reflected a difference in how these populations think about morality generally or a difference in how these populations think about loyalty. The results of Study 4 failed to provide evidence that Colombians and people from the United States think about morality in fundamentally different ways. Instead, while we found evidence for differences in what counts as prototypical of honesty or the latent structure of honesty representations, we also found that being ethical is diagnostic of honesty for both samples. Thus, for people from the United States, honesty is related to morality in a way that loyalty is not.

This means that people from the United States do associate at least one specific moral trait with being an ethical person. We take this to mean that people from the United States and Colombia think about loyalty differently and that this difference is partly moral: Being ethical is much more strongly associated with being loyal for Colombians than for people from the United States. Studies 5–7 were designed to further understand these differences and their relationship to other decision-making processes.

Study 5: Attributions of Loyalty Based on Cultural Uniqueness and Morality

Method

Participants

We recruited 67 U.S. participants over Academic Prolific and 67 Colombian participants through Netquest. An a priori power analysis showed that for a two-sample t test to have 95% power to detect effect sizes comparable to the smallest effect sizes identified in previous studies ($d = .60$) at standard error thresholds ($p < .05$), 61 participants per group were recommended. To account for attrition and exclusions, we overrecruited by 10%. One participant was excluded from the U.S. sample based on preregistered exclusion criteria ($N_{U.S.} = 66$, $M_{age} = 38.2$, $SD_{age} = 12.2$, 49% female, 51% male). Due to simultaneous enrollment, 71 participants were recruited through Netquest ($N_{COL} = 71$, $M_{age} = 41.2$, $SD_{age} = 15.0$, 54% female, 46% male). No data were analyzed prior to stopping collection.

Materials and Procedure

Participants were presented with 16 short descriptions of people with different characteristics (devoted, does not lie, cares about others over their reputation, is willing to sacrifice, ethical, principled, reasonable, collegial, good listener, communicative, attentive, encouraging, admirable, intelligent, humanistic). All descriptions had the same form: "You see someone who is [characteristic]."

Table 6
Top 10 Most Central and Prototypical Honesty Items for Colombian Participants

Feature	Frequency (%)	Centrality
Honradez (*honesty/integrity*)[a]	**25**	**6.42 [6.28, 6.56]**
Actuar correctamente (*act correctly*)	**11**	**6.39 [6.24, 6.55]**
Decir la verdad (*tell the truth*)	**13**	**6.36 [6.22, 6.5]**
Transparencia (*transparency*)	**21**	**6.32 [6.16, 6.47]**
Confiabilidad (*reliability*)	**17**	**6.29 [6.14, 6.43]**
No engañar (*not deceiving*)	5	6.26 [6.1, 6.42]
Tener principios (*having principles*)	3	6.26 [6.1, 6.42]
Tener valores (*having values*)	3	6.24 [6.08, 6.39]
No mentir (*not lying*)	**12**	**6.22 [6.05, 6.39]**
Sinceridad (*sincerity*)	**59**	**6.22 [6.05, 6.38]**
Ética (*ethical*)	**9**	**6.2 [6.03, 6.37]**
Rectitud (*rectitude*)	**9**	**6.19 [6.03, 6.36]**
Ser incorruptible (*being incorruptible*)	**8**	**6.14 [5.95, 6.33]**
Franqueza (*frankness*)	**14**	**6.1 [5.93, 6.26]**
Integridad (*having integrity*)	**16**	**6.1 [5.92, 6.27]**
Fidelidad (*faithful*)	**7**	**6.08 [5.89, 6.27]**
Lealtad (*loyalty*)	**33**	**6.07 [5.88, 6.26]**
Conciencia (*awareness*)	**7**	**6.05 [5.87, 6.22]**
Honorabilidad (*honorable*)	5	5.99 [5.8, 6.18]
Credibilidad (*credibility*)	3	5.97 [5.78, 6.15]
Cumplimiento de promesas (*keeping promises*)	**8**	**5.96 [5.77, 6.15]**
Moralidad (*morality*)	4	5.95 [5.76, 6.14]
Veracidad (*veracity*)	4	5.94 [5.76, 6.12]
Responsabilidad (*being responsible*)	**34**	**5.92 [5.73, 6.11]**
Ser justo (*being fair*)	**10**	**5.9 [5.71, 6.1]**
Coherencia (*being consistent*)	**8**	**5.89 [5.71, 6.08]**
Ser claro (*being clear*)	**8**	**5.87 [5.67, 6.06]**
Respeto (*being respectful*)	**32**	**5.78 [5.57, 5.99]**
Compromiso (*commitment*)	**7**	**5.72 [5.52, 5.92]**
Sensatez (*sanity*)	4	5.62 [5.43, 5.81]
Disciplina (*discipline*)	3	5.53 [5.32, 5.75]
Decencia (*decency*)	8	5.5 [5.28, 5.72]

Note. Items in bold are prototypical based on their high frequency (>7%) and high centrality (>5.5).
[a] *Honradez* can be translated as "having integrity" or "not stealing." The term derives from *honra*, which corresponds roughly to honor and reputation. Thus, *honradez* conveys a kind of honesty related to integrity and having good character.

Characteristics were selected to represent both U.S. unique and Colombian unique traits identified in Study 4, as well as general moral traits that loaded on the moral values factor identified in Study 4.

After reading the descriptions, participants answered six questions about it using 7-point Likert scales (−3 = *not at all*, 3 = *extremely*; midpoint not labeled):

Loyal:	*How LOYAL is this person?*
Moral:	*How MORAL is this person?*
Cooperative:	*How COOPERATIVE is this person?*
Competent:	*How COMPETENT is this person?*
Agreeable:	*How AGREEABLE is this person?*
Open-minded:	*How OPEN-MINDED is this person?*

Questions were presented in random order for each description. Per our preregistered analysis plan, we considered only the responses to judgments of loyalty. The other items were intended to mask the study hypotheses from the participants.

Results

Effect of Uniqueness on Attribution

We fit a hierarchical linear model using the *lme4* package in R. Loyalty attributions were coded as the outcome variable, with feature type and country coded as predictors. The subset of data with culturally unique features was analyzed. Feature type corresponded to whether the characteristic was unique to either the United States or Colombia. Participants were coded as random effects to account for within-person variation. Estimated marginal means were computed using the *emmeans* package in R.

There was no evidence that Colombian participants attributed loyalty differently than U.S. participants when responding to culturally unique items from the United States, $M_{diff} = .18$, $t(194) = -1.40$, $p = .16$, $d = -0.21$, 95% CI [−0.50, 0.08]. However, Colombians attributed significantly more loyalty than participants from the United States when responding to culturally unique items from Colombia, $M_{diff} = .87$, $t(194) = 6.81$, $p < .001$, $d = 1.00$, 95% CI [0.71, 1.30].

The Relationship Between Loyalty and Morality

To further examine the relationship between loyalty representations and general moral characteristics, we examine the relationship between attributions of loyalty and morality across samples. The correlation between attributions of morality and loyalty was significantly stronger in Colombia ($r = .74$, 95% CI [.71, .76]) compared to the United States ($r = .60$, 95% CI [.56, .64]; $z = -6.01$, $p < .001$).

We fit hierarchical models to predict attributions of morality and loyalty by country and an additional model to predict attributions of morality from the interaction of loyalty and country. There was evidence of a small effect of country on attributions of morality, $M_{diff} = .33$, $t(135) = 2.95$, $p = .004$, $d = 0.37$, 95% CI [0.12, 0.62], and evidence for an effect of country on loyalty attributions, with Colombians attributing more loyalty, $M_{diff} = .43$, $t(135) = 3.73$, $p < .001$, $d = 0.46$, 95% CI [0.21, 0.70]. There was also evidence for an interaction between country and loyalty when predicting attributions of morality, $\beta = -0.16$, 95% CI [−0.22, −0.09], $t(2186) = -4.64$, $p < .001$; see Figure 3.

To further explore the link between morality and loyalty, we averaged over responses to the features taken from the moral values factor identified in Study 3 for each dependent variable. Colombian participants attributed more loyalty to people when presented with features from the moral values factor (e.g., ethical, humanistic, principled) compared to U.S. participants, $M_{diff} = .51$, $t(165) = 4.22$, $p < .001$, $d = 0.58$, 95% CI [0.31, 0.86]. This difference mostly held up when analyzing responses at the item level: Colombians attributed significantly more loyalty to individuals described as admirable, attentive, collegial, communicative, courageous, ethical, being a good listener, humanistic, intelligent, not lying, principled, and reasonable (Colombians attributed significantly more loyalty for these 12 traits, while attributions were statistically equivalent for *encouraging* and *selfless*, and U.S. participants attributed more loyalty for *devoted* and *being willing to sacrifice*; see additional online material S6 for significance testing details).

Discussion

Study 5 replicated the effect identified in Study 3 that Colombian and U.S. participants respond differently to culturally unique items. Colombian participants tend to think of culturally unique items from Colombia as more central to being a loyal person compared to people from the United States. Accordingly, Colombians attribute more loyalty to people described as having these unique features compared to people from the United States. However, there was no evidence that people from the United States think of culturally unique items from the United States as more central to loyalty than people from Colombia. Relatedly, there was no evidence that people from the United States attribute more loyalty than Colombians to people described as having these unique features.

In this study, we also found further evidence that representations of loyalty bear a different relationship to general moral characteristics for Colombians and people from the United States. In Studies 1 and 2, we found that loyalty is more strongly associated with morality for Colombians compared to people from the United States based on the association of loyalty with traits like being ethical and being principled. Some results of Study 5 corroborate these findings. There was a stronger relationship between morality and loyalty attributions in Colombia compared to the United States, and descriptions of people in prototypically loyal terms yielded greater attributions of morality for Colombians. Also, Colombians attributed more loyalty to individuals described in terms of features drawn from the moral values factor identified in Study 3. For the most part, people described as having general moral characteristics (principled, ethical, admirable, etc.) were considered more loyal by Colombians.

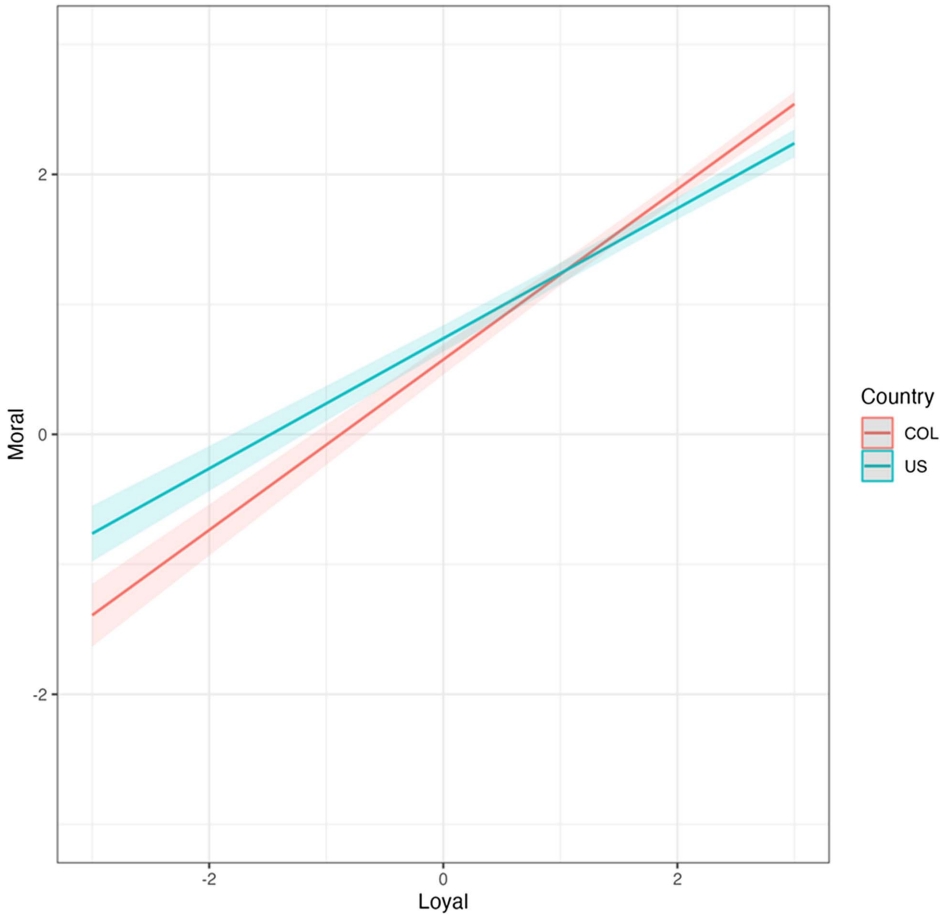
These results further support the claim that representations of loyalty are more integrated with representations of general moral qualities among Colombians compared to participants from the United States.

Study 6: Categorizing Features Related to Loyalty

Prototypes function partly to inform categorization (Minda & Smith, 2011). When making decisions about whether a target object is

Figure 3

Relationship Between Attributions of Morality and Loyalty by Country



Note. Error bars represent 95% confidence intervals. U.S. = United States; COL = Colombia. See the online article for the color version of this figure.

a member of some category that exhibits prototypical structure, people compare the similarity of prototype features with object features. Categorization evidence scales with similarity to central features (Horowitz & Turan, 2008). That is, possessing central features provides better evidence for category membership compared to more peripheral features (Morgan et al., 2014). Thus, to corroborate the proposed prototypical structure of loyalty, we ran a categorization task using features of loyalty identified in previous studies. We expected participants to categorize prototypical features faster relative to central and peripheral features (and to categorize central relative to peripheral features faster). Additionally, we assessed the degree to which representations of loyalty are more integrated with representations of general moral qualities by comparing the likelihood of categorizing general moral qualities as loyalty-related.

Method

Participants

We preregistered collecting 160 participants for the study. This was not based on a power analysis, though we wanted to preregister a set number to clarify our stopping rule. We recruited 82 individuals from Providence College and 97 individuals from the Universidad de los Andes, all of whom received monetary compensation for their participation. Per our preregistered exclusion criteria, nine participants from the United States were excluded for failing to respond to 50% of prompts correctly (N = 170).[4]

Materials

We selected eight prototypical loyalty features shared across both samples (items that were strongly central and highly accessible), four central (nonprototypical) features shared across both samples, and eight peripheral features shared across both samples. Additionally, we chose 12 central (nonprototypical) items that were unique to either Colombia or the United States (six each) and four peripheral items that were unique to either Colombia or the

[4] Age and gender information were not collected due to a coding error. However, all participants were university students enrolled either at Universidad de los Andes (Bogotá) or Providence College (United States).

United States (two each; 36 total, full item list available in additional online material S7).

We also included moral values identified in an earlier study of moral prototypes (Walker & Pitts, 1998) across four categories: principled, caring, fair, and confident (27 items total; no items were included from the loyal or integrity categories, as these items were redundant with features of the loyalty prototypes identified in our previous studies). These items consisted of words or short phrases: highly developed conscience (principled), has clear values (principled), virtuous (caring), fair (fair), self-assured (confident), and so forth. We also included six items that were obviously unrelated to morality and loyalty (e.g., frying food).

The nonmoral items were included as attention checks. Items related to other moral (nonloyal) prototypes were included to reduce the number of loyalty-related targets. Additionally, including features of other moral prototypes enabled us to test the degree of integration between loyalty prototypes and other moral characteristics. If Colombian loyalty prototypes are more integrated with representations of general moral characteristics compared to U.S. loyalty prototypes, then we expect that Colombian participants will be more likely to categorize nonloyal moral characteristics as related to being loyal.

Procedure

Participants were asked to classify a series of personal traits. Each word was presented on screen until participants made a response. When words were presented onscreen, participants were asked to press the "U" key if the feature was related to loyalty and the "R" key if the feature was not related to loyalty with their right-side index finger. In an instruction phase, participants were told that being related to loyalty concerns whether someone's having the feature provides evidence for their being a loyal person (adapted from instructions in Study 5). There was a 500-ms gap between when participants made a response and when the next word appeared on screen. All participants completed 10 practice trials on whether some word was related to farming to ensure familiarity with the response options.

E-Prime software was used to measure response times (Version 2 for U.S. participants and Version 3 for Colombian participants). Participants were seated at an 18.5 in. × 10.5 in. monitor with a standard keyboard. All words were displayed in bolded Courier New font at size 18. Response time for the decision task was recorded as the time between when the word appeared on the screen and when the participant pressed either the U or R key. The entire experiment lasted approximately 5 min.

Results

Effect of Centrality on Response Times

Per our preregistered analysis plan, all response times faster than 300 ms and slower than 3,000 ms were recoded to 300 and 3,000 ms, respectively, to minimize the impact of outliers (Greenwald et al., 2003). For this analysis, responses to loyalty items were isolated. We removed incorrect responses (14.3% of U.S. responses; 43% of COL responses). We also isolated features that were either shared or unique to the cultural sample. For example, loyalty features that were unique to Colombia were not analyzed for U.S. participants. We fit two hierarchical linear models for each sample to predict response time from centrality with random intercepts and slopes for participants by stimuli. However, this model failed to converge, so we removed the random slopes. Pairwise comparisons were performed on model-estimated means using the *emmeans* package in R (Lenth, 2022).

For the U.S. sample, there was evidence that central items (M = 1,365 ms) were categorized faster than peripheral items (M = 1,551 ms), $t(33) = 3.017$, $p = .01$, $d = 0.41$, 95% CI [0.14, 0.69], and that prototypical items (M = 1,074 ms) were categorized faster than central items, $t(33) = 4.174$, $p = .001$, $d = 0.65$, 95% CI [0.33, 0.96]. This pattern remained even when using a logarithmic transformation of response times to account for the effect of outliers ($p = .01$ and $p < .001$, respectively). For the Colombian sample, there was no evidence that central items (M = 1,344 ms) were categorized more or less quickly than peripheral items (M = 1,312 ms), $t(47.9) = -0.39$, $p = .92$, or that prototypical items (M = 1,298 ms) were categorized more quickly than central items, $t(47.9) = 0.54$, $p = .85$.

Effect of Uniqueness on Response Time

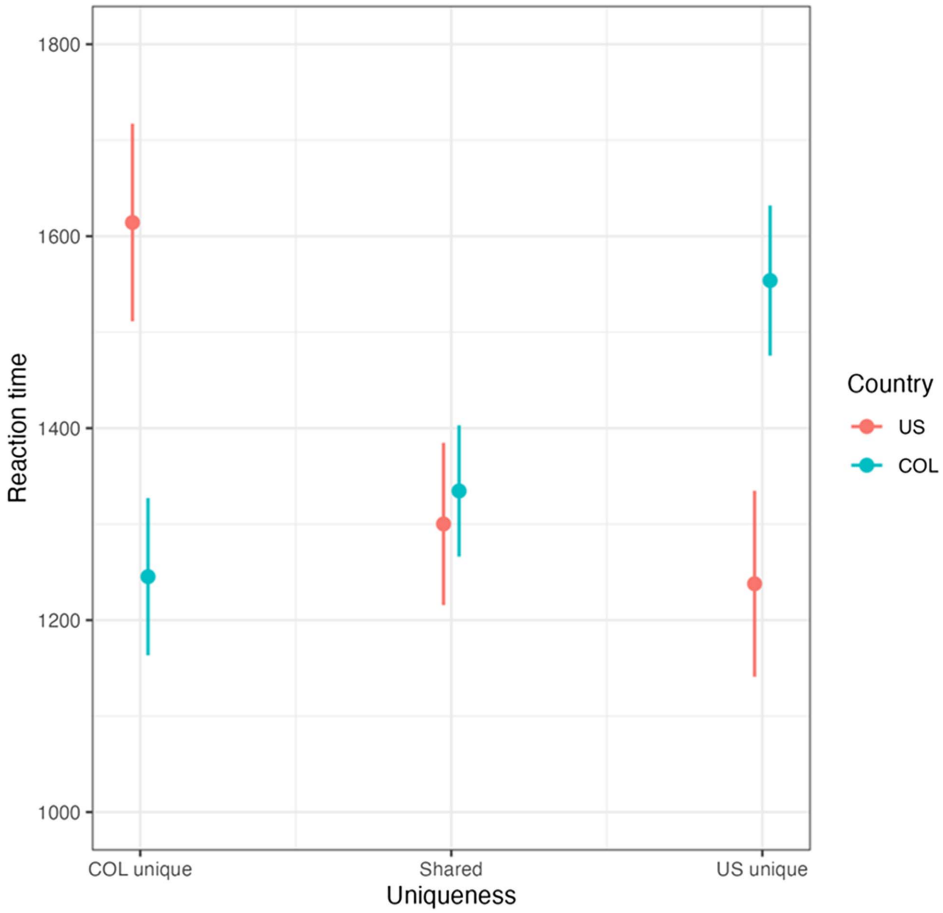
We analyzed whether culturally unique features were processed differently across our sample. We combined correct responses to loyalty items for both Colombian and U.S. participants and fit a hierarchical linear model to predict response times from the uniqueness of the stimuli (Colombia unique, U.S. unique, or shared). The model included an interaction term with country and random intercepts for participants.

There was evidence that Colombians categorized unique Colombian items more quickly (M = 1,245 ms) than U.S. participants (M = 1,614 ms), $t(411) = 5.5$, $p < .001$, $d = 0.53$, 95% CI [0.34, 0.72], and that U.S. participants categorized unique U.S. items more quickly (M = 1,238 ms) than Colombian participants (M = 1,554), $t(332) = -4.97$, $p < .001$, $d = -0.46$, 95% CI [−0.64, −0.28]. There was no evidence that Colombians categorized shared items more or less quickly (M = 1,335) than U.S. participants (M = 1,300 ms), $t(194) = -0.62$, $p = .54$, $d = -0.05$, 95% CI [−0.21, 0.11] (see Figure 4).

Likelihood of Classifying Nonloyal Characteristics as Loyalty-Related

The last analysis examined differences in the likelihood of classifying nonloyal moral characteristics as loyalty-related. Responses from both U.S. and Colombian participants were combined. The outcome variable for the regression was based on responses to the items taken from Walker and Pitts' (1998) study of moral prototypes. We excluded items that were identified as features of loyalty prototypes in previous studies (exemplary, good, sincere, caring, thoughtful, helpful, and strong). We also removed responses to loyalty items and the nonloyalty items that were clearly nonmoral. Whenever a participant marked one of the remaining items as "loyalty-related," we assigned that response a value of 1. All other responses were assigned 0. We then fit a hierarchical generalized linear model to predict changes in the likelihood of classifying a nonloyal characteristic as loyalty-related across countries. Participants were coded as random effects. There was a significant effect of country on the likelihood of classifying a nonloyal characteristic as loyalty-related ($\beta_{log} = 1.31$, $SE = 0.27$, $p < .001$). Colombian participants were nearly four times more likely to classify nonloyal characteristics as loyalty-related ($OR = 3.70$, 95% CI [2.20, 6.22]).

Figure 4
Reaction Times by Stimuli Uniqueness and Country



Note. Error bars represent 95% confidence intervals. U.S. = United States; COL = Colombia. See the online article for the color version of this figure.

Discussion

Study 6 partly replicated the loyalty prototype identified in previous studies. As predicted, there was an effect of feature centrality on classification decision time for U.S. participants. However, we failed to find evidence of a similar effect in Colombian participants. One possible explanation for this null result is that Colombians represent loyalty in a way that is less differentiated than people in the United States, which is consistent with findings reported in Studies 3 and 5.

We found differences in how quickly U.S. and Colombian participants categorized features as loyalty-related. There was no evidence for a difference across groups when classifying culturally shared features. However, culturally unique samples from the other group were processed more slowly relative to the other group. This indicates that there are some cognitively relevant differences in loyalty prototypes across U.S. and Colombian participants.

Finally, consistent with our other findings that loyalty prototypes in Colombia are more integrated with representations of general moral qualities compared to loyalty prototypes in the United States, we found that Colombian participants were significantly more likely to categorize nonloyal values as loyalty-related. This supports the claim that representations of loyalty are more tightly integrated with other moral domains in Colombia and implies that a wider range of values provide evidence about the underlying loyalty of an individual for Colombians relative to people in the United States.

Study 7: The Role of Loyalty in Moral Judgment

Do the prototypical features of loyalty inform judgments about loyalty and moral judgments of loyalty-related behaviors? We conducted a further study to see whether judgments of loyalty-related behaviors vary as a function of differences associated with the centrality of different loyalty-related features identified in Studies 1 and 2.

Method

Participants

We recruited 205 participants. U.S. participants were recruited through Academic Prolific, and Colombian participants were recruited through Netquest. To determine sample size, we conducted a power analysis using the *WebPower* package in R (Z. Zhang & Yuan, 2018). We evaluated power based on different values of

observing a misclassification of loyalty-related behaviors (a false alarm) at 5%, 10%, 20%, and 35% and different probabilities of observing a correct classification at 70%, 80%, and 90%. For each model, 100 participants were sufficient to achieve 99% power to detect statistically significant differences across factor levels. We recruited five extra participants in Colombia to account for attrition based on previous studies. No participants were excluded based on preregistered criteria from the U.S. sample ($N_{U.S.} = 100$, $M_{age} = 38.6$, $SD_{age} = 13.8$, 47% female) or the Colombian sample ($N_{COL} = 105$, $M_{age} = 39.1$, $SD_{age} = 13.8$, 46% female).

Materials and Procedure

After providing consent, participants completed two tasks. The first task required rating how well different features indicated personal loyalty: "To what extent are the following features good or bad indicators of whether someone is loyal?" Participants registered judgments using a 7-point Likert scale (1 = *not at all*, 4 = *unsure*, 7 = *very good*). The attribute list for U.S. participants contained 27 items. Ten features were taken from the interpersonal commitment factor identified in Study 2 (having your back, sticking up for you, not talking behind your back, not betraying you, willing to defend you, not cheating on you, willing to keep secrets, unconditional support, not lying to you, keeping promises). For the Colombian sample, the attribute list consisted of 27 items. We took 10 items with the highest centrality rating from Study 2 to represent loyalty; eight came from the moral values factor: *fidelidad* (faithfulness), *confiabilidad* (trustworthiness), *honestidad* (honesty), *sinceridad* (sincerity), *respeto* (being respectful), *ética* (ethical), *compromiso* (commitment), and *promesas* (keeps promises), and the other two from the truthfulness factor: *principios* (being principled) and *no hablar mal a espaldas de los demás* (not speaking behind one's back). In both samples, the remaining 17 items were primarily related to different moral foundations (being admirable, cleanliness, being merciful, etc.). Items were presented in random order.

The second task involved participants rating the wrongness of different norm-violating events and classifying why these events were wrong. Participants were shown 35 short descriptions of norm-violating events. Participants saw 10 descriptions related to loyalty and five descriptions each for the other moral foundations (care, fairness, authority, liberty, sanctity). One description was displayed at a time. Vignettes were adapted from the MFV (Clifford et al., 2015). The 10 loyalty vignettes in each sample were created based on the 10 most central attributes of each country:

United States.

- You see someone abandoning their friend when they need help.
- You hear about someone having an affair while their partner is out of town.
- You see someone refuse to speak up for an old friend being falsely accused.
- You see a person spreading rumors about someone who trusted them.
- You see someone betraying their friend to a rival.
- You see someone refuse to help their parents when they need assistance.
- You see someone lying to their friend to help themselves.
- You see someone relaying private information about their spouse to others at a party.
- You see someone disparaging a friend to gain favor with their boss.
- You see someone breaking a promise they made to a friend at work.

Colombia.

- Usted oye que una persona le es infiel a su pareja.

  You hear that a person is unfaithful to their partner.
- Usted ve a una persona traicionando la confianza de su amigo.

  You see a person betraying the trust of their friend.
- Usted ve a una persona siendo deshonesta con un pariente cercano.

  You see a person being dishonest with a close relative.
- Usted ve a una persona no siendo sincera con su mejor amiga.

  You see a person being insincere with their best friend.
- Usted ve a una persona faltándole al respeto a un amigo cercano.

  You see a person disrespecting a close friend.
- Usted ve a una persona actuando de forma poco ética con sus hermanos.

  You see a person acting unethically toward their siblings.
- Usted ve a una persona que muestra falta de compromiso con su amiga.

  You see a person showing a lack of commitment to their friend.
- Usted ve a una persona hablando mal de su amigo con otras personas que lo conocen.

  You see a person speaking ill about their friend with others who know them.
- Usted ve a una persona incumpliéndole una promesa a su pareja.

  You see a person breaking a promise to their partner.
- Usted ve a una persona que se porta sin principios con un pariente cercano.

  You see a person behaving in an unprincipled manner toward a close relative.

After reading each description, participants registered judgments of wrongness using a 7-point sliding scale: "To what extent is this behavior morally wrong?" (1 = *definitely is not morally wrong*,

4 = *unsure*, 7 = *definitely is morally wrong*; anchored at midpoint). After this, participants were asked to state why the action is morally wrong. They were given seven options: It violates norms of harm or care, it violates norms of fairness or justice, it violates norms of loyalty, it violates norms of respecting authority, it violates norms of purity, it violates norms of freedom, and it is not morally wrong and does not apply to any of the provided choices. Examples were provided for each choice to help participants understand the categories. Participants were not given any feedback on the correctness of their responses during the task. The task order was randomized across participants.

Results

Descriptive results are summarized in Tables 7 and 8. Centrality ratings for all features in both samples were well above the midpoint, validating centrality ratings from Study 2.

Most loyalty violations were classified as such in both samples, with some exceptions. In the U.S. sample, all violations except one were classified by 55% or more of the participants as a loyalty violation (the item "You see someone refuse to help their parents when they need assistance" was classified as an authority violation). Colombian participants classified the vignettes predominantly as loyalty violations, but three of these had classification rates under 50% (vignettes using the terms *ética*, *respeto*, and *principios*). These features come from the "moral values" factor, except for *principios*, which came from the "truthfulness" factor identified in the previous study. Thus, misclassifications of these vignettes might reflect perceived similarities between loyalty violations and violations in other moral domains.

Table 7
Means (and Standard Deviations) of Centrality Ratings for Loyalty Features in the United States and Colombia

Country	Feature	Centrality (*SD*)
United States	Not cheating on you	6.57 (0.8)
	Having your back	6.49 (1.0)
	Keeping promises	6.46 (0.7)
	Sticking up for you	6.43 (0.9)
	Willing to defend you	6.41 (1.3)
	Not talking behind your back	6.39 (1.0)
	Unconditional support	6.24 (1.2)
	Keeping promises	6.46 (0.7)
	Keeping secrets	6.15 (1.1)
	Not betraying you	6.15 (1.1)
Colombia	Confiabilidad	6.31 (1.2)
	Trustworthiness	
	No habla mal espaldas	6.24 (1.3)
	Not talking behind one's back	
	Principios	6.13 (1.2)
	Principled	
	Fidelidad	6.09 (1.5)
	Faithful	
	Honestidad	6.02 (1.5)
	Honest	
	Ética	6.00 (1.5)
	Ethical	
	Respeto	5.97 (1.3)
	Being respectful	
	Cumplimiento de promesas	5.57 (1.6)
	Keeping promises	
	Sinceridad	5.52 (1.6)
	Being sincere	
	Compromiso	5.01 (1.7)
	Commitment	

Note. Features sorted by centrality by country.

Exploratory factor analysis was conducted to identify the latent structure of centrality ratings. Most factor retention criteria indicated three latent factors for U.S. data and two latent factors for Colombian data. For U.S. data, all and only loyalty items loaded on a single factor. Only "not lying" and "keeping promises" loaded onto two factors greater than .3, which suggests that the latent factor corresponds to features associated with loyalty. For Colombian data, all loyalty items loaded onto a single factor, and some general moral traits (*justiciar* [just], *responsabilidad* [accountability], and *veracidad* [truthfulness]) also loaded onto the same factor. This is consistent with findings from Studies 1–3 and 5 that suggested Colombians represent loyalty in more general moral terms compared to people in the United States.

Because loyalty items loaded onto the same factor for each cultural group, we calculated a global average of loyalty items for each participant. To see whether centrality is related to moral judgment, we fitted two simple linear models for predicting the accuracy of classifications and judgments of wrongness based on the centrality of loyalty features (see Figure 5). We also included an interaction term for country. Accuracy scores were scaled prior to fitting the models to account for nonnormal distributions (Ho & Yu, 2015). The model for accuracy predicted 9% of total variance, $F(3, 201) = 6.65$, $R^2 = .09$, $p < .001$. Centrality of loyalty features had significant partial effects in the model ($\beta = 0.43$, 95% CI [0.13, 0.72], $p = .006$). There was no evidence for an effect of country ($\beta = 0.91$, 95% CI [−1.48, 3.30], $p = .45$) and no evidence for an interaction ($\beta = -0.20$, 95% CI [−0.57, 0.18], $p = .30$). The model for wrongness predicted 11% of total variance, $F(3, 197) = 7.79$, $R^2 = .11$, $p < .001$. Centrality of loyalty features had significant partial effects in the model ($\beta = 0.49$, 95% CI [0.22, 0.76], $p < .001$). There was no evidence for an effect of country ($\beta = 1.06$, 95% CI [−1.09, 3.20], $p = .33$) and no evidence for an interaction ($\beta = -0.17$, 95% CI [−0.50, 0.17], $p = .23$).

Discussion

Study 7 provided further support for the structure of loyalty prototypes identified in previous studies and evidence of how such structure influences moral judgments. Participants who saw relevant features as more central to loyalty were also inclined to judge relevant norm-violating events as loyalty violations. People perceived norm-violating events as related to loyalty the more closely their individual template of loyalty matched the prototype of loyalty identified in previous studies. Moreover, judgments of wrongness for loyalty violations were more severe as participants saw relevant features as more central to being a loyal person. This suggests some cross-cultural similarity in how representations of loyalty are deployed in making moral judgments about loyalty violations.

We also found some evidence for cross-cultural differences in the structure of those representations. Exploratory factor analyses identified different latent structures associated with representations of loyalty. Consistent with the results of Studies 2–5, representations of loyalty in Colombia contained both general moral qualities along with qualities related to interpersonal commitment. Thus, while representations of loyalty seem to play similar roles in moral

Table 8
Accuracy of Vignette Classification With Means and Standard Deviations for Judgments of Wrongness Across the United States and Colombia

	Foundation							
Vignette	Care (%)	Fairness (%)	Loyalty (%)	Authority (%)	Purity (%)	Freedom (%)	Not wrong (%)	Wrong (*SD*)
United States								
Abandon friend	33	1	**64**	0	1	0	1	6.12 (*1.0*)
Affair	14	1	**72**	2	7	1	3	6.41 (*1.2*)
Betrayal	6	3	**86**	0	2	2	1	6.16 (*1.0*)
Break promise	12	5	**73**	1	2	0	7	5.28 (*1.3*)
Disparaging	14	15	**64**	3	0	2	2	6.01 (*1.1*)
Lying	8	10	**76**	0	1	0	5	5.96 (*1.1*)
Private info	15	0	**75**	1	5	0	4	5.92 (*1.2*)
Refuse help	30	0	20	**37**	0	1	12	5.42 (*1.3*)
Rumors	24	2	**70**	0	1	3	0	6.22 (*1.0*)
Speak up	15	25	**55**	1	0	1	3	5.81 (*1.2*)
Colombia								
Fidelidad	20	1	**67**	1	4	1	7	6.09 (*1.5*)
Confiabilidad	11	4	**79**	1	2	1	3	6.31 (*1.2*)
Honestidad	7	16	**59**	6	2	1	10	6.02 (*1.5*)
Sinceridad	5	2	**69**	4	2	0	19	5.52 (*1.6*)
Respeto	**33**	1	**33**	17	3	3	10	5.97 (*1.3*)
Ética	21	17	**37**	6	3	8	9	6.00 (*1.5*)
Compromiso	10	3	**50**	5	1	0	32	5.01 (*1.7*)
No espalda mal hablas	8	3	**76**	3	2	2	7	6.24 (*1.3*)
Promesas	8	7	**62**	3	4	1	16	5.57 (*1.6*)
Principios	16	8	**31**	22	7	7	10	6.13 (*1.2*)

Note. Italics correspond to standard deviations. Bold items represent the category with the highest classification rate.

judgment between our U.S. and Colombian samples, we again found evidence that these representations differ in their structure.

General Discussion

Summary of Findings

This research aimed to make progress on three questions related to the cross-cultural differences and similarities of loyalty representations between Colombian and U.S. participants:

1. Does the associative meaning of loyalty differ between the United States and Colombia?
2. Are different features of loyalty considered more central between Colombia and the United States?
3. Do representations of loyalty inform moral judgments in a similar way between Colombian and U.S. participants?

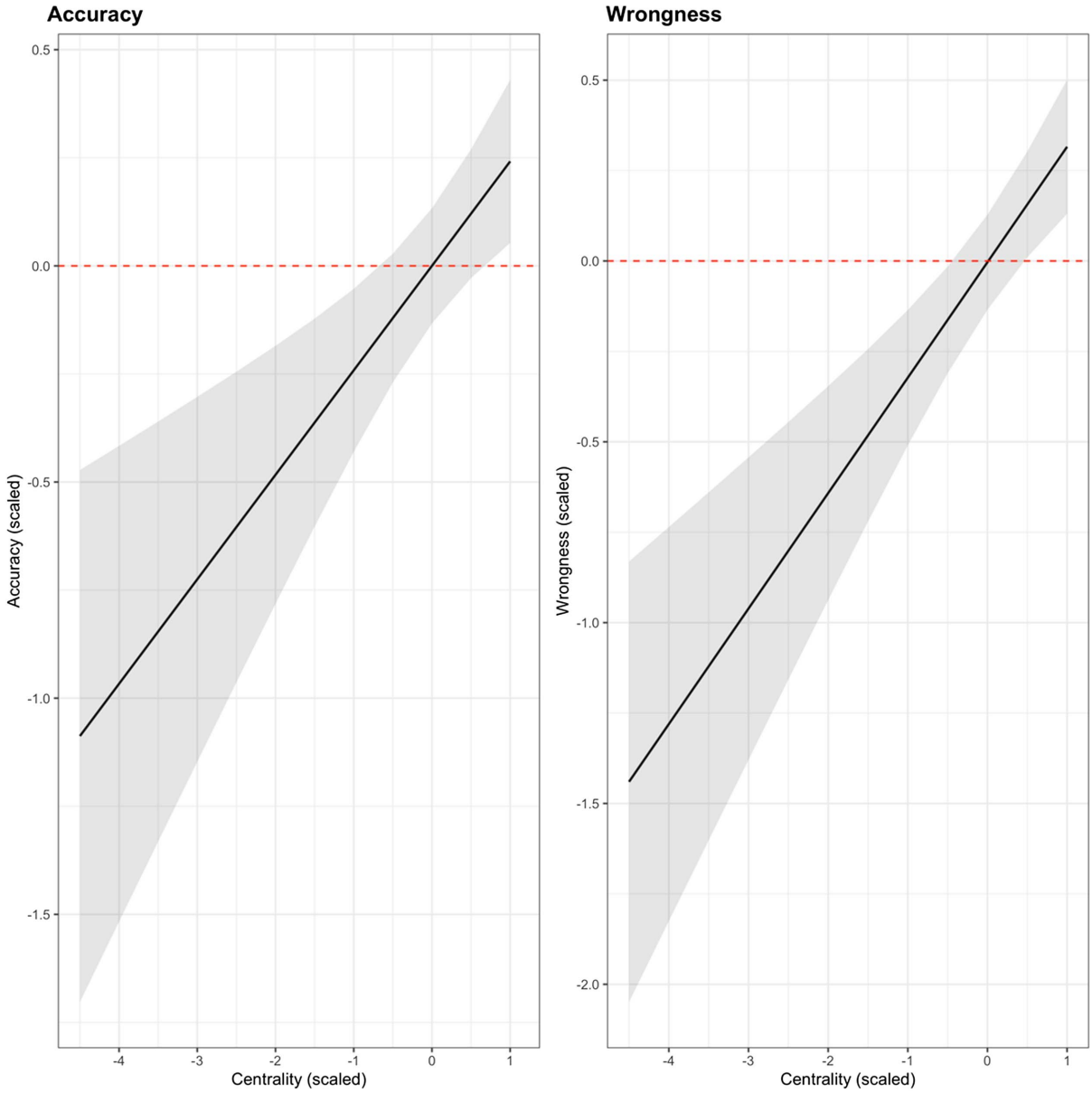
Across seven studies, we found evidence relevant to each of these questions. We found that the associative meaning of loyalty was highly similar for both samples (*Research Question 1*). However, we also found that different features are regarded as central and that some features of loyalty that were central for one group were not associated with the concept at all in the other group (*Research Question 2*). Relatedly, some features considered prototypical of loyalty—that is, features that were both highly accessible and rated as highly central—for Colombian participants were not associated with the concept at all for participants in the United States. Different latent dimensions of loyalty were identified across samples. Colombians associated a wider range of general moral characteristics with being loyal, while people from the United States did not consider these general characteristics as central to being a loyal person. In Study 4, we found that being an honest person is associated with general moral characteristics (e.g., *being ethical*) for both Colombians and people from the United States, which suggests that the integration of loyalty representations with general moral characteristics reflects a distinctive way of thinking about *loyalty* rather than *morality* more generally.

The general moral characteristics that characterize Colombian representations of loyalty are associated with differences in several cognitive tasks, including attribution (Study 5), categorization (Study 6), and moral judgment (Study 7). Colombians more strongly associated being a moral person and being a loyal person and more readily inferred being moral from the possession of highly central loyalty characteristics. This indicates that loyalty is more strongly associated with morality in Colombia compared to the United States. There was also evidence that morality is more strongly associated with loyalty in Colombia, as well, as Colombians were more likely to categorize generic moral characteristics as being loyalty-related compared to people from the United States. Finally, differences in the conceptual structure of loyalty predict how severely people judge loyalty violations, so that centrality ratings are systematically associated with moral wrongness.

Notably, despite these structural differences in how loyalty is represented, there were similar patterns in moral judgments of loyalty violations (*Research Question 3*). Prototypical features of loyalty that were considered more central generated more accurate classifications of moral violations as loyalty violations. Violations featuring these characteristics were judged more harshly. This suggests that representations of loyalty might play similar functions in different cultural contexts even when the structure of these representations differ.

Figure 5

Regression Plots for Centrality of Loyalty-Related Features Predicting Accuracy of Classifications and Judgments of Wrongness



Note. Because there was no evidence for an effect of country or an interaction, we did not fit separate models for each country. See the online article for the color version of this figure.

Thus, representations of loyalty exhibit similarities along some dimensions, such as the role of interpersonal commitment and personal trust implicated in being a loyal person. However, there were differences in the specific characteristics associated with these larger categories, suggesting some interesting differences in specific conceptualizations of loyalty. For example, *truthfulness*, *honesty*, and *sincerity* loaded on a separate factor for U.S. participants, whereas these items loaded on the same factor as other features related to personal trust for Colombians (*not betraying you*, *being there for you*, *not cheating*, etc.). This suggests that trust and interpersonal commitment are differentially related when represented in terms of loyalty for Colombians and people from the United States. Similarly, features related to defensiveness formed a separate factor for people in Colombia, whereas in the United States, these features loaded on the same factor as other features related to interpersonal commitment. Finally, religiosity was associated with loyalty for Colombian participants but not for U.S. participants, although Colombians did not consider religiosity a strong indicator of being a loyal person. Thus, it is unclear how to interpret the difference in association.

Identifying Cultural Differences

Between the United States and Colombia, there were similarities in the associative meaning of loyalty. Important differences emerged in the central tendencies of some features associated with loyalty, which were related to differences in the prototypical structure of loyalty across samples. We found that the differences in centrality are systematically related to differences in other decision-making tasks that reveal deep cultural differences in how people think about loyalty and use the concept of loyalty.

This reveals something important about identifying cultural differences and similarities in moral judgment. Different levels of analysis can yield different views of the degree to which two cultures differ in their thinking about morality. Thus, subsequent research on cultural differences in the conceptualization of morality should consider linking multiple levels of analysis and identifying a wide range of social decision-making processes that could be tested to provide a better estimate of cultural differences in moral cognition.

The Structure of Loyalty

Research on loyalty typically conceptualizes it in terms of dispositions to enhance ingroup fitness as opposed to personal gain. In other words, the adaptive value of loyalty is to facilitate group identity by providing a mechanism to subordinate personal interests to the interests of one's group. Our results do not fit neatly with this model of loyalty. We found that people tend to represent loyalty in terms of interpersonal relationships and commitments (Beer & Watson, 2009). The prototypical items for both groups are most easily understood in terms of personal relationships (having your back, helpfulness, sticking up for you, etc.; see Baxter et al., 1997; Drigotas et al., 1995, 1999; Sinclair et al., 2005). This serves to contextualize a puzzling finding. People did not associate patriotism with loyalty and did not consider being patriotic a central characteristic of a loyal person. This is somewhat surprising, as MFT assumes patriotism is a key virtue related to loyalty (Graham et al., 2013). Other theories, such as morality-as-cooperation, propose that *group* loyalty is a central cultural–evolutionary solution to the problem of forming stable coalitions to promote welfare in the face of coordination problems (Curry et al., 2019). Accordingly, morality-as-cooperation posits patriotism as a "molecule" of morality related to loyalty (Curry et al., 2022). Our results suggest that considerations of patriotism do not inform how people think about loyalty in everyday life. For U.S. participants, this might be due to a perceived association between patriotism and far-right political ideologies (Frankovic, 2020). Moreover, Colombians might have different views about the possible objects of loyalty. That is, the country might not be a relevant reference group for loyalty due to marked geographical and regional identities, in addition to perceived institutional corruption at the national level.

One outstanding question that remains to be addressed is why these differences in the conceptualization of loyalty emerge. While historical pathogen prevalence and collectivism might be part of the story, these factors might not be sufficient to explain fine-grained differences in conceptualizations of loyalty. Our data are insufficient to infer the various mechanisms driving the observed differences in conceptualizations of loyalty, and future work should focus on identifying and testing various mechanistic explanations. We offer the following speculative hypothesis: Two potentially relevant differences between the United States and Colombia are corruption perception and degree of generalized social trust. Colombians perceive a greater degree of institutional corruption relative to people in the United States, and this difference has held going back to 2012 (Transparency International, 2023). Colombians also exhibit a low degree of generalized social trust in comparison to people in the United States, with very few Colombians agreeing that most people can in general be trusted. The degree of perceived corruption might undermine faith in institutions as reliable objects of loyalty, and the low degree of generalized trust might induce greater emphasis on family members and close others as objects of loyalty. This might explain why loyalty is more integrated with general conceptions of morality in Colombia, as loyalty is more valuable in communities with high perceived corruption and low generalized trust.

The close association between loyalty and interpersonal commitment reflects some philosophical accounts of loyalty as inherently partial (Baron, 1984; MacIntyre, 1984; McConnell, 1983). That is, loyalty is not expressed toward humanity as a whole or generic strangers but is instead expressed through interpersonal relationships. This suggests that people more readily think of owing loyalty to friends and families rather than political parties or nation-states. Recent work shows that those who fail to help kin are judged more harshly and considered less trustworthy compared to those who fail to help strangers (McManus et al., 2020). According to MFT, the moral concern for care emerges from adaptive pressures related to caring for family, particularly children (e.g., Haidt, 2012: pp. 153–154). As such, special obligations to kin might seem to fall under the concern for care. However, an alternative hypothesis is that special obligations to kin might arise from the concern for loyalty. Future work could test the degree to which the ethics of partiality is related to concerns for loyalty.

Our results also suggest that representations of moral categories might be less differentiated in other cultures. Colombians seem to associate traits characteristic of other moral foundations—such as justice, courage, or care—with being loyal. Nonloyal moral values (caring, courage, being just) provide good evidence for thinking of someone as loyal. Evidence for this is that nonloyal values are more likely to be seen as loyalty-related. Representations of loyalty seem more integrated with representations of other dimensions of morality for Colombians. The reason for this—and whether this lack of differentiation is the norm or the exception—requires further research.

One lesson to draw from this is that theoretical accounts of moral phenomena might diverge in important ways from their everyday conceptualizations. We do not raise this as a challenge to such theoretical accounts; instead, we propose that prototype analysis can usefully supplement top–down theorizing to provide insights about how to shape research methods in a way that balances theoretical considerations with everyday thinking.

Methodology

These studies are situated within a general trend toward expanding research in moral psychology beyond the boundaries of the Western, educated, industrialized, rich, democratic (Henrich et al., 2010; Muthukrishna et al., 2020). These efforts require developing instruments that can measure differences in moral motivations and attitudes as they are expressed in different cultural contexts (Hruschka, 2020). However, if moral domains are

conceptualized differently across cultures, then instruments that are valid for one cultural group might lose their sensitivity to detect cultural differences when validated for another group. In the context of research that typically utilizes vignettes to elicit judgments, our results suggest two ways in which instruments might fail to exhibit cross-cultural validity. First, moral violations might be represented in terms of actions that are not associated with a particular moral domain. We found that speaking badly about someone or being unreliable are two actions that tend to be represented as disloyal among Colombians, though neither of these actions are reflected in the standard MFV related to loyalty. Second, the objects of moral demands might make a difference to classification and judgments of norm violations. We found that people conceptualize loyalty in terms of interpersonal relationships. However, of the 15 MFV that depict loyalty violations, 13 concern an individual doing something against a formal institution (country, school, sports team, etc.). In different cultural contexts, people might not see these as entities toward which one can be disloyal. While the MFV exhibit face validity for U.S. samples, extensions of this instrument might require understanding lay conceptualizations of different moral domains. This is important for explaining the validation results that prompted the current studies. The Colombian sample might have "miscategorized" certain vignettes because the stimuli failed to align with the culturally mediated conception of loyalty. The results of Study 7 support this interpretation: When stimuli were constructed from the Colombian prototype for loyalty, classification accuracy was greatly improved. The more that individual representations of loyalty aligned with the cultural prototype, the more accurate people were at classifying such violations as loyalty violations. This suggests that differences in the conceptualization of loyalty incline people toward seeing different kinds of events as related to loyalty. Insofar as cultures might differ in these conceptualizations, different situations will evoke the concept.

We found that representations of loyalty structure categorizations of moral violations as loyalty-related and inform moral judgments of these violations. Thus, an important feature of explaining moral judgment is understanding the representations underlying these processes. Prototype analysis provides a tool for identifying accessible, central, and prototypical features of different moral concepts. By extension, these features are diagnostic of the kinds of situations that might be seen as exemplifying different moral characteristics. We suggest that prototype analysis is an essential tool for continuing to broaden the methodological repertoire of those interested in cross-cultural moral psychology.

Future work can expand on the methods employed here to study different values (or combinations of values) across different sites. Much more can be done to understand how people think about different dimensions of morality. Moreover, expanding the range of sites makes it possible to infer how variations in prototypes might be driven by objective cultural factors that are known to influence moral judgment and decision making. As mentioned in the introduction, there are reasons to expect differences in moral prototypes based on different sociocultural factors like historical pathogen prevalence or individualism. A wider sample would allow for testing hypotheses about precise ways in which variations in underlying factors drive differences in conceptualization. This is essential for developing mechanistic explanations of cross-cultural differences in everyday conceptualizations of moral phenomena. We think that the research methods outlined above provide a template for any such research to understand how people represent moral categories and how such representations are deployed in moral judgment.

Constraints on Generality

We did not collect robust demographic information on gender identity, race/ethnicity, socioeconomic status, or education. It is unclear to what extent differences in loyalty prototypes are attributable to underlying differences in these sample characteristics. Representative sampling in future studies would help to isolate specific cultural effects from underlying effects of age, gender, and so on.

Our sample was limited to Spanish-speaking Colombians and English-speaking people in the United States. We utilized linguistic tasks to study loyalty prototypes and their role in moral judgment. This leaves effects of culture confounded with potential effects of language. However, two results suggest that our results are not merely linguistic. In Study 3, we found that features that are central to loyalty for one cultural sample are not considered central for the other cultural sample. If the results were purely linguistic, then "unique" items would have been considered just as central when translated. Moreover, in Studies 5–7, participants completed cognitive tasks related to attribution, categorization, and moral judgment. Within these tasks, important cultural differences were identified. This suggests that the linguistic differences in how people from Colombia and the United States think about loyalty are associated with changes in other kinds of social decision making. Further work could generalize these results and better control for linguistic differences by expanding the range of linguistic communities sampled and utilizing nonlinguistic tasks to examine underlying prototypes.

Participants in the United States were recruited through Academic Prolific, while participants in Colombia were recruited through Netquest. Recent work has found that research on perceptions and attitudes conducted on Prolific is somewhat representative of the general U.S. population (Tang et al., 2022). Some research has also been conducted on the quality of the Netquest participant pool, finding that Netquest tends to collect better quality responses relative to other internet-based data collection services operating in Latin America (Revilla et al., 2021). However, our results are limited in terms of surveying individuals with access to the internet. Increased access to the Internet seems to drive Westernization among individual users in nonWestern cultures (Mushtaq et al., 2018; Paramashinta et al., 2021). Future research should compare how individuals with access to the internet conceptualize loyalty and other moral motives compared to those with limited or no access.

Conclusion

Loyalty is typically characterized as a binding value that is integral to forming and sustaining coalitions beyond kin networks. Across seven studies, we found that people in the United States and Colombia tend to represent loyalty in terms of characteristics related to interpersonal commitment and interactions with close others. Characteristics such as *being patriotic/patriotismo* were not associated with being a loyal person. When asked explicitly about these characteristics, people from both Colombia and the United States thought that patriotism was a poor indicator of loyalty. This departs from some predictions about loyalty made by MFT and morality-as-cooperation. People might represent loyalty and the

demands of loyalty in terms of interpersonal relationships rather than relationships to institutions.

Some interesting differences between Colombian and U.S. participants emerged in our studies. General moral characteristics (e.g., *being ethical/ética*) were prototypical of loyalty for Colombians but not for people from the United States. This suggests that morality is more closely related to loyalty for Colombians than for people from the United States (Studies 1–4). In support of this claim, we also found that Colombians attribute more morality to people described as having loyalty-related characteristics compared to people from the United States (Study 5). Colombians were also more likely to categorize moral features as loyalty-related compared to people in the United States (Study 6). In all, the representation of loyalty is less differentiated for Colombians compared to people from the United States, which raises the question of the extent to which the representation of morality is differentiated across cultures. Despite these differences, representations of loyalty seemed to play a similar function in moral judgments of loyalty-related norm violations (Study 7).

These studies show how bottom–up methodologies can reveal important differences in how people think about normative phenomena and morality. Bottom–up methods are useful for mitigating the impact of cultural biases on measurement tools and analytic strategies. While our results have important limitations, we think they also suggest new avenues for exploring cultural differences in moral attitudes and judgments.

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