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Foundations of Morality in Iran

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Abstract

Most moral psychology research has been conducted in Western, Educated, Industrialized, Rich, and Democratic (WEIRD) societies. As such, moral judgment, as a psychological phenomenon, might be known to researchers only by its WEIRD manifestations. Here, we start with evaluating Moral Foundations Theory (MFT) using the Moral Foundations Questionnaire, and follow up by building a bottom-up model of moral values, in Iran, a non-WEIRD, Muslim-majority, understudied cultural setting. In six studies ($N = 1,945$) we examine the structural validity of the Persian translation of the Moral Foundations Questionnaire, compare moral foundations between Iran and the US, conduct qualitative interviews regarding moral values, expand the nomological network of “Qeirat” as a culture-specific set of moral values, and investigate the pragmatic validity of “Qeirat” in Iranian culture. Our findings suggest an additional moral foundation in Iran, above and beyond the five foundations identified by MFT. Specifically, qualitative studies highlighted the role of “Qeirat” values in Iranian culture, which are comprised of guarding and protectiveness of female kin, romantic partners, broader family, and country. Significant cultural differences in moral values are argued in this work to follow from the psychological systems that, when brought to interact with particular socio-ecological environments, produce different moral structures. This evolutionarily-informed, cross-cultural, mixed-methods research sheds light on moral concerns and their cultural, demographic, and individual-difference correlates in Iran.

Keywords: Morality, Moral Foundations Theory, Culture, non-WEIRD Morality, Iran.

Foundations of Morality in Iran

The study of morality in psychological science has been, in large part, limited to Western, Educated, Industrialized, Rich, and Democratic (WEIRD; Henrich, Heine, & Norenzayan, 2010) populations (see Skitka & Conway, 2019). Most existing studies examining moral values in non-WEIRD nations have typically failed to develop cultural models of moral cognition or to identify culture-specific values. Rather, they have conventionally used a WEIRD model of morality without adequate culturo-linguistic adaptation of such models. Graham et al. (2013) argued that “as Shweder (1990) says, each culture is expert in some aspects of human flourishing, but not all. Although we are working with researchers in other nations to explore the morality of other cultures, much more work needs to be done to move beyond WEIRD research samples.” Given the dearth of systematic morality research in non-WEIRD cultures, it is not yet known whether WEIRD people are “moral outliers” in terms of the structure and content of their moral domain. Iran, heir to an ancient civilization, is a particularly understudied cultural setting in moral psychology. Here, we investigate Moral Foundations Theory (MFT; Graham et al., 2013; Haidt & Joseph, 2004) as a widely-used, evolutionarily-informed, and cultural theory of morality (Study 1), compare moral foundations and their underlying network structures between Iran and the US (Study 2), conduct field interviews on beliefs about virtues and vices in Iran (Study 3), broaden the nomological network of a culture-specific moral system (“Qeirat”) in Iran (Study 4), and demonstrate the pragmatic validity of “Qeirat” values for answering scientific questions in morality in the Iranian context (Study 5).

Is Iran WEIRD?

A growing body of work indicates that populations around the world vary substantially along important psychological dimensions, and that people from WEIRD societies are particularly unusual (Gächter & Schulz, 2016; Henrich et al., 2010; Medin, Bennis, & Chandler, 2010; Rad, Martingano, & Ginges, 2018; Talhelm et al., 2015). For example, people from WEIRD populations tend to be, on average, more individualistic, analytically-minded, and impersonally prosocial while revealing less conformity, obedience, in-group loyalty, and nepotism (Kanagawa, Cross, & Markus, 2001; Kitayama, Park, Sevincer, Karasawa, & Uskul, 2009). Indeed, our species is fundamentally cultural, and thus these cultural differences are essentially psychological differences (Henrich, 2015). Some of these differences are now well documented; however, efforts to explain this variation from evolutionary and historical perspectives have just begun, with psychologists increasingly expressing more interest in non-WEIRD samples (see Apicella & Barrett, 2016).

In our research, we contribute to this growing literature by studying Iran's moral psychology. However, simply calling Iran non-WEIRD is overly simplistic; a psychological analysis of a non-WEIRD culture must include a nuanced, descriptive analysis of the studied population. By continuing to refer to this research domain as the divide between WEIRD and non-WEIRD, one could create a false dichotomy of populations (Muthukrishna et al., 2020), hiding valuable nuance that influence empirical measurements and theoretical interpretations (e.g., Doğruyol, Alper, & Yilmaz, 2019; Shaw, Cloos, Luong, Elbaz, & Flake, 2020). In this section, we overview a socio-psychological and demographic profile of Iran, in order to situate our studies and findings on the moral profile of the country. Given the aforementioned definition of WEIRD psychology, Iran remains a “weird” non-WEIRD culture. For instance, Iran is geographically and historically close to countries like Pakistan, Egypt, Yemen, Azerbaijan, or

Armenia, but is more educated and developed than these countries (United Nations Development Programme, 2018). Using Muthukrishna et al.'s WEIRD cultural distances, Iran's distance from the US is 0.15, comparable to Turkey and Armenia, and slightly higher than Japan's distance to the US (see Table 1). Moreover, analyses suggest that the people of Iran are more genetically similar to people in Turkey than Saudi Arabia; however, culturally it is less clear which one Iran is closer to (Bell, Richerson, & McElreath, 2009). In what follows, we provide a summary of Iran on the dimensions of WEIRDness. It is important to note that WEIRDness is used as a rhetorical tool to highlight that people from WEIRD populations are outliers on many measurable psychological phenomena; it is not a theoretical construct.

Many Iranians identify as "Asian" (since Iran is located in the continent of Asia) rather than "Middle Eastern" (which is a relatively vague term that originated not in the region itself, but in Europe; Koppes, 1976). With respect to ethnicity, Iran has multiple ethnicities (e.g., Fars, Kurd, Turk, Balooch), and Iranians living in the US typically (80%) consider themselves "White" in American census surveys (Parvini & Simani, 2019). In terms of education, at national level, 93% (close to typical WEIRD populations) of the population is literate (97% in young adults) according to official reports (ISNA, 2019). Access to higher education has dramatically increased over the last three decades and is currently highly accessible to people and is mostly free, with women getting more degrees in higher education than do men (Shams, 2016). In fact, Iran is among the world's leaders in the percentage of women graduating in Science, Technology, Engineering, and Mathematics (STEM) fields (see Richardson et al., 2020; Stoet & Geary, 2018).

In terms of industrialization and economy, the country's overall infrastructure, educational system, legal system, and modern industries were substantially improved from 1925 to 1941. During this time, Iran experienced a period of social change, economic development, and relative political stability (Katouzian, 1981). Between 1964 and 1978, Iran's gross national product grew with the oil, gas, and construction industries expanding by almost 500%. The number of women enrolling in higher education increased from 5,000 in 1967 to more than 74,000 in 1978. Before the Islamic Revolution in 1979, the country was considered a growing power in the region, however, after the revolution and concurrent with the US sanctions and the imposed Iran-Iraq war (1980-1988), the economy underwent substantial fluctuations (Gheissari, 2009). Yet, over the last three decades (1990-2020), Iran has been growing in terms of Gross Domestic Product (GDP) per capita, women's access to higher education, oil industry, clean energy, sustainable clean water, public health, and agricultural products (International Monetary Fund, 2019) (see Table 1).

There has been substantial debate over how "democratic" Iran is. Democracy is difficult to measure, particularly in non-WEIRD countries. By one metric, known as Polity IV¹, which relies on several indicators to rate countries (from -10 for full dictatorship to 10 for full democracy), Iran is rated as -7, the same as Cuba and China. Another ranking agency, known as V-Dem², ranks Iran as more democratic, with a score of 0.29 on a scale from 0 to 1, slightly less democratic than Ukraine or Tunisia. In sum, although Iran's population is highly educated and

¹ <http://www.systemicpeace.org/>

² <https://www.v-dem.net/en/>

industrialized, it is less Westernized, rich, and democratic than typical populations examined in psychology journals (Thalmayer, Toscanelli, & Arnett, 2020).

Moral Foundations Theory

Moral Foundations Theory was developed in order to fill the need of a systematic theory of morality, explaining its evolutionary origins, developmental aspects, and cultural variations. Haidt and Joseph (2004) examined the existing literature in evolutionary psychology and anthropology, looking for virtues and facets of moral regulation that were common across cultures. Relying on the above-mentioned sources, these authors suggest five candidates for being the basic, omnipresent psychological “foundations,” evolutionarily prepared psychological predispositions upon which cultures construct their moral judgments and systems. Thus, MFT can be viewed as a systematic attempt to specify the psychological mechanisms which allow for intuitive bases of moral judgments as well as moral reasoning. Care, Fairness, Loyalty, Authority, and Purity are theorized to have solved adaptive problems over humans’ evolutionary history (at both individual and group levels; e.g., Koleva, Selterman, Iyer, Ditto, & Graham, 2014; Van Leeuwen, Park, Koenig, & Graham, 2012). These foundations are hypothesized to be universally available, yet culturally variable (Haidt, 2007). Importantly, MFT theorists maintained that they “do not believe these are the only foundations of morality. These are just the five [they] began with—the five for which [they] think the current evidence is best” (Graham et al., 2013, p. 67).

The first two foundations (Care and Fairness) are often referred to as *individualizing* foundations while the other three (Loyalty, Authority, and Purity) are labeled *binding* foundations (Graham & Haidt, 2010). The individualizing foundations correspond to the

traditional focus of moral psychology on ethics of individual rights (Haidt, 2007); however, the binding foundations correspond to more collectivist virtues that were underrepresented in WEIRD studies of morality before MFT was theorized (e.g., Yilmaz, Harma, Bahçekapili, & Ceur, 2016). Therefore, MFT provides a unique opportunity for evolutionarily-informed, cross-cultural research on moral values (Atari, Lai, & Dehghani, 2019).

The Moral Foundations Questionnaire (MFQ; Graham et al., 2011) is the primary self-report measure of the degree to which individuals endorse each of the five dimensions introduced by MFT. This measure has fared well in terms of validity and reliability in WEIRD populations (Davies, Sibley, & Liu, 2014; Graham et al., 2011; Nilsson & Erlandsson, 2015; Métayer & Pahlaven, 2014; van Leeuwen & Park, 2009), but its validity is less clear in non-WEIRD cultures (e.g., Atari et al., 2019; Yilmaz et al., 2016). Recently, Doğruyol et al. (2019) provided evidence that the five-factor model of moral foundations, operationalized by the short version of the MFQ, is stable and invariant across WEIRD and non-WEIRD societies; however, these authors used the problematic dichotomy of WEIRD vs. non-WEIRD rather than treating societies on a continuum of WEIRDness (Muthukrishna et al., 2020). Research using the MFQ has provided valuable information regarding between-group differences in moral values. Graham et al. (2011) compared participants from Eastern cultures (South Asia, East Asia, and Southeast Asia) with participants from Western cultures (United States, United Kingdom, Canada, and Western Europe) and found small effect sizes with Easterners scoring higher on Loyalty and Purity, while Westerners scoring negligibly higher on Care, Fairness, and Authority. Another well-developed line of research has examined liberal-conservative differences in moral foundations. For example, conservatives (vs. liberals) rely more strongly on binding moral foundations (Graham, Haidt, & Nosek, 2009). In addition, MFQ factors have been found to be

correlated with normative personality traits, specifically the five-factor model of personality (i.e., Extraversion, Agreeableness, Conscientiousness, Neuroticism, and Openness to Experience; see McCrae & John, 1992). Specifically, higher scores on individualizing foundations have been found to be associated with higher scores in Agreeableness, Neuroticism, and Openness to Experience. Higher scores on the binding foundations, on the other hand, have been associated with higher Extraversion, higher Conscientiousness, and lower Openness to Experience (Lewis & Bates, 2011).

Graham and Haidt (2010) posit that religion binds individuals into moral communities. They claim that religion is intertwined with all five moral foundations, but most strongly promotes “binding” foundations. Consistently, Loyalty, Authority, and Purity (i.e., the binding foundations) are typically found to be associated with religiosity in different contexts. For example, Johnson and colleagues (2016) found the binding foundations to be correlated with different facets of religiosity (outreaching faith, religious commitment, authoritarian representation of God, and Biblical literalism) in a sample of Christian Americans. More recent correlational studies have successfully replicated this effect (see Yi & Tsang, 2020). Yalçındağ et al. (2019) replicated these associations between religiosity and bindings values in Turkey and also found a small negative association between religiosity and Fairness.

Unlike the US, moral psychology is only an emerging field in Iran, and the Persian translation of MFQ has only been used in one empirical study (Seifi-Ghozlu, Hamidi, Sharifi, & Khalili, 2015), to our knowledge. The existing morality research in Iran has focused attention on bioethics (e.g., Larijani & Zahedi, 2008), moral development in children (e.g., Hooshyari, Delavar, Minaee, & Eskandari, 2018), business ethics (e.g., Mujtaba, Tajaddini, & Chen, 2011),

“immoral” personality traits (e.g., Aghababaei, Mohammadtabar, & Saffarinia, 2014), sacred values (Dehghani et al., 2010), and moral dilemmas (e.g., Sachdeva, Iliev, Ekhtiari, & Dehghani, 2015). To date, Iranian researchers have not developed culture-specific models of moral values.

Iranians’ Beliefs about Right and Wrong

Although empirical research is lacking with regard to moral values in Iran, it is worthwhile to briefly review lay beliefs about right and wrong in Iranian culture. Especially as we take an evolutionary approach to the interpretation of culture-based differences in moral values, it is relevant that a region (or society) possesses a distinct moral history, and that current differences are not just a product of recent politics, but can be the result of cultural learning across generations (Schulz, Bahrami-Rad, Beauchamp, & Henrich, 2019). Historically, Iran is heir to two ancient moral codes: Zoroaster’s (~1000 BCE) tenet of *good thoughts, good words, good deeds* (see Jackson, 1896) and Cyrus’s (~539 BCE) cylinder considered the first human rights document (see Daryaei, 2009). Even in the current-day Muslim-majority Iran, these two moral precepts are highly respected. Both of these codes emphasize caring for other humans and justice in the society.

In recent history, Iranian scholars have attempted to identify moral values in the contemporary Muslim-majority Iran. Jamalzadeh (1966), over half a century ago and based on mere observation, argued that Iranian virtues are intellect, hospitability, compassion, and friendliness, whereas vices are believed to be lying, cheating, flattery, and greed. Delkhamosh (2004) surveyed university students and identified traditionalism, respect for religious authorities, and nationalist pride (“*Ergh-e-Melli*”) as important moral values in Iranians. Nejat, Bagherian, Hatami, and Shokri (2015) conducted a qualitative study in Tehran to identify mental

representations of moral concerns and identified kindness, honesty, humility, sacrifice, unity, social order, meritocracy, respectfulness, observing religious teachings, *Ta'asob* (a type of “honor” which is focused on protection of a deeply held belief), patience, Hijab, liberty, and free speech as virtues. Harassment, violence, lying, discrimination, infidelity, reneging, profanity, defamation, subversion, oppression, adultery, and sexual harassment were also identified as vices reported by Iranians. Religion scholars in Iran (e.g., Tabatabai, 1996), have identified five moral “traits” — based on teachings from the Quran and Hadith — that are highly virtuous and prophet-like: (1) “*Qeirat*”³ (a type of “honor” which is focused on caring for spouse, family members, and community), (2) forgiveness, (3) civility, (4) honesty, and (5) courage.

Qeirat is a complex culture-specific set of moral values and the word itself does not have a straight English translation, but the closest translation is *honor*. Literally, *Qeirat* means “protecting a loved/sacred thing or person against intrusion.” Tabatabai, a well-regarded Islamic scholar, considers *Qeirat* a motivating “instinct” that exists in all humans. Atari, Barbaro, Shackelford, and Chegeni (2017) adapted the concept of *Qeirat* as a moral psychological code which is conceptually very close to mate retention strategies — behaviors that decrease the likelihood of a temporary or permanent relationship defection by manipulating perceptions of alternative mates such that they perceive those options to be unattractive or unattainable (Buss, 1988). These authors examined *Qeirat* in a sample of Iranian men and women and reported strong positive correlations between mate retention behaviors and *Qeirat* in Iran. Thereafter, Atari (2018) argued that *Qeirat* is a culture-specific moral code and that there are (at least) ten nouns synonymous to it in the Persian language (the transliterations are *Keramat* [benevolence,

³ It can also be transliterated as “Gheirat” (e.g., Razavi et al., 2020; Srivastava, 2020)

greatness, courteousness], *Sharaf* [honor, prestige], *Sherafat* [honor, prestige], *Janam* [courage], *Ehteram* [respect], *Hormat* [sacredness, respectfulness], *Izzat* [group-based honor], *Aberoo* [one's reputation that should be retained at all costs], *Ta'asob* [honor, usually males showing it toward females], and *Heyssiat* [respectability, face]; Other relevant concepts include *Haya* [modesty, not engaging in promiscuous relations, humility], *Effat* [female honor, chastity], *Esmat* [innocence], and *Namoos* [female kin such as mother and sister, or one's romantic partner who are to be protected at all costs]). These words are used in slightly different contexts. For example, "Izzat" might be more relevant in group-level interactions (Aslani et al., 2016), "Namoos" refers to people (e.g., mate, family member) or entities (e.g., one's country or religion) which are connected to the self and should be protected against norm violations (Razavi, Shaban-Azad, & Srivastava, 2020), and finally "Qeirat" might be more closely associated with family values and mate retention strategies (Atari et al., 2017; Atari & Jamali, 2016).

Interestingly, psycho-lexical studies based on Persian (also known as Farsi) lexicon and literature have identified a mix of religiosity and Qeirat as a dimension of basic personality structure, while failing to find other personality dimensions typically found in Western languages such as Agreeableness or Openness to Experience (Farahani, Farzad, & Fotoohi, 2004; Herfehhdoust, Falsafinejad, Delavar, Sohrabi, & Tamimdari, 2015). Srivastava (2020) suggests that Qeirat has no direct translation in English and is "a distinctive set of thoughts, feelings, and actions associated with violations of Namooos, a set of people and entities one feels protective toward" and that any personality psychological examination of Iranians without consideration of Qeirat "might miss something important in [Iranian] context". This underscores

the pivotal role of these moral psychological words in Farsi in describing oneself and other people.

Overview of Present Studies

Iran is one of the largest Middle Eastern countries, with a population of approximately 85 million, the majority of whom (89%), according to official reports, identify as Shiite Muslims; however, there are many reasons to believe that this figure might be an overestimation (Tezcur, Azadarmaki, & Bahar, 2006). For example, results of the global Gallup Poll in 2009, which asked “Is religion important in your daily life?”, indicated that 73% of Iranians responded “yes” (and 26% responded “no”), very close to responses of Americans (69% responded “yes” and 31% responded “no”). Co-existence of various ethnicities, subcultures, and religions, as well as the eventful history of this country paired with currently practiced Shiite faith among the majority of people, render Iran an interesting cultural setting for moral psychological research. In addition, empirical research on Iranians’ moral values and their similarities and differences with those in WEIRD populations is currently lacking. The present research aimed to address the dearth of research in a series of inter-connected studies: We examine the structural validity of the MFT typology operationalized by the MFQ (Graham et al., 2011) in Iran (Study 1), compare moral foundations and their underlying network structure between Iran and the US (Study 2), conduct field interviews focusing on beliefs about virtues and vices in Iran (Study 3), conduct interviews about the concept and manifestations of Qeirat (Study 4a), broaden the nomological network of Qeirat values in a large sample (Study 4b), and examine how Qeirat can explain Islamic religiosity, political conservatism, and mate retention behaviors above and beyond Care, Fairness, Loyalty, Authority, Purity, and honor values (Study 5).

Study 1: Assessment of Moral Foundations in Iran

Study 1 was designed to provide a fluent translation for the MFQ in Persian and to examine the factor structure of this measure using both exploratory and confirmatory factor-analytic techniques. We collected a large data set from the general population in Tehran, Iran. We also examined how scores on moral foundations were related to religiosity, political attitudes, socio-economic status, and demographics. It is particularly important to examine the factor structure of WEIRD models and measures in less WEIRD countries since parent structures may not hold (see Laajaj et al., 2019). The present study aims to provide evidence for structural validity of the MFT typology, operationalized by MFQ.

Methods

Participants. The sample consisted of 544 individuals (52.6% male, 37.5% female, 9.9% preferred not to report). All participants were recruited from the general population from public places in Tehran, Iran. Participants ranged in age from 15 to 75 ($M = 32.5$, $SD = 9.8$ years). In terms of highest educational qualification, 31 participants (5.7%) reported some high school education, 104 participants (19.1%) reported having a high school diploma, 121 participants (22.2%) reported an associate's degree, 191 participants (35.1%) reported a bachelor's degree, 81 participants (14.9%) reported a postgraduate degree, and 8 participants (1.5%) reported a doctoral degree. Eight participants did not report their highest educational qualification.

Measures. All participants completed the following self-report measures.

Moral Foundations Questionnaire (MFQ). Participants completed the 30-item MFQ (Graham et al., 2011) which consists of two 15-item sections, namely Relevance and Judgments. The first section measures the relevance individuals ascribe to each of the

foundations. Items on the Relevance section are rated along a 6-point Likert-type scale ranging from 0 (*Not at all relevant*) to 5 (*Extremely relevant*). The Judgments section consists of contextualized items that can gauge actual moral judgments related to the five moral foundations. Items on the Judgments section are rated along a 6-point Likert-type scale ranging from 0 (*Strongly disagree*) to 5 (*Strongly agree*). See Procedure for our translation process.

Political Orientation. Participants rated their affiliation with the rightist political party in Iran (“*Osoolgara*”) as opposed to the leftist party (“*Eslah-talab*”) along a 7-point scale ranging from 1 (*Very Eslah-talab*) to 7 (*Very Osoolgara*). Another item asked participants to rate their political conservatism on a scale ranging from 1 (*Very liberal*) to 7 (*Very conservative*). We averaged these two items in order to achieve a political orientation score where higher scores indicate more conservative political orientation. Previous studies have used a similar method for assessment of political orientation (Jost & Thompson, 2000).

Self-Rating of Religiosity (SRR). The SRR is a single-item measure of intrinsic religiosity (Abdel-Khalek, 2007). Participants responded to the question, “What is your level of religiosity in general?” — as translated and validated by Afhami et al. (2017) — on an 11-point scale ranging from 0 (indicating no religiosity) to 10 (indicating high level of religiosity). Although single-item measures are limiting in terms of breadth, single-item measures of religiosity have demonstrated desirable psychometric properties in various samples and have been reliably used in Iran (Afhami et al., 2017).

Procedure. All MFQ items were translated into Persian using the standard back-translation technique (Brislin, 1970). Specifically, the first author translated the items into Persian from the original English version, then two independent translators unaffiliated with this study translated the items back into English. Small differences that emerged during the

translation process were resolved between the translators, resulting in the final Persian version of the scale that was administered on the current sample. Research assistants approached potential participants and invited them to take part in a psychological research about “values and beliefs.” The order of presentation of all scales in the study was pre-randomized. All participants completed a set of paper-and-pencil measures after giving oral informed consent to take part in the study. Participants were not compensated, but were provided with debriefing information upon completion of the questionnaire.

Data Analysis. Following the recommendations regarding sample size in factor analytic studies (Tabachnick & Fidell, 2013), we aimed to recruit 300 participants for exploratory factor analysis (participant to item ratio = 10). First, we randomly split the data into training ($n = 300$) and test ($n = 244$) data sets for exploratory and confirmatory factor analyses. To examine the factor structure of the MFQ, we computed principal-axis exploratory factor analysis (EFA) using Kaiser normalization and Promax rotation on the training data using the *Psych* package (Revelle, 2017) in *R* (version 3.6.1). EFA is the appropriate method of data reduction when the aim is to explore the possible underlying structure of a variable in the absence of a predetermined model. We used parallel analysis (Hayton, Allen, & Scarpello, 2004) to determine the number of factors to be retained in the EFA. Then, we fit several Confirmatory Factor Analyses (CFAs) models using the *lavaan* package (Rosseel, 2012) on the test data ($n = 244$) to compare alternative structures underlying the Persian MFQ. We fit the models with maximum likelihood estimation with robust (Huber-White) standard errors. We assessed model fit using the robust chi-square index (χ^2), robust normed chi-square (χ^2/df), robust root mean square error of approximation (RMSEA), robust comparative fit index (CFI), robust Tucker-Lewis index (TLI), Akaike information criterion (AIC), and sample-size adjusted Bayes information index (BIC). Normed

chi-square (χ^2/df) values of < 3.00 indicate good fit (Hu & Bentler, 1999). The RMSEA index and its 90% confidence interval (90%CI) provide a correction for model complexity where values lower than .06 indicate very good fit and values between .06 and .10 indicate mediocre fit (Hu & Bentler, 1999). The CFI and TLI values of .90 and higher indicate good fit for the model. AIC and sample-size-adjusted BIC are usually used when comparing multiple models and lower values represent better fit.

Results

Exploratory Factor Analysis. We conducted EFA on the training sample, $n = 300$, which satisfies the commonly recommended participant-to-item ratio of 10:1 (Tabachnick & Fidell, 2013). Bartlett's test of sphericity, $\chi^2(435) = 5121.676$, $p < .001$, and the Kaiser-Meyer-Olkin measure of sampling adequacy, $\text{KMO} = .90$, exceeded minimum criteria that should be met before EFA can be conducted. The scree plot and results of parallel analysis suggested that five factors should be extracted. These five factors explained 54% of the total variance. As can be seen in Table 2, the extracted factors are not readily interpretable. For example, the fifth factor includes items that originally belong to Fairness, Care, and Loyalty, thus any aggregate score of this factor cannot be meaningfully interpreted.

Confirmatory Factor Analysis. We conducted five distinct CFAs on the test data. We specifically tested the following models: (1) the 1-factor model with a single latent variable, (2) the 2-factor model which integrates Care and Fairness as the first factor while integrating the Loyalty, Authority, and Purity factors as the second factor, (3) the 3-factor model which consists of a Care-Fairness factor, a Loyalty-Authority factor, and a Purity factor, (4) the 5-factor model originally proposed by Graham et al. (2011), (5) the model derived from our EFA in this study. All fit indices are presented in Table 3. Comparing alternative structures suggests that MFQ

items are best reduced to five factors as found in the EFA. Of note, the original five-factor model of Graham et al. (2011) shows the best fit indices of the first four models (see Table 3). We did not apply modification to these models based on the modification indices available through co-varying error terms in the structural model. Although the EFA-based model provided better fit indices in CFAs, we chose to continue our analyses using the original five-factor model proposed by Graham et al. (2011) as the EFA-based model seems difficult to interpret.

Concurrent Validity. The Spearman partial correlation coefficients between moral foundations and political conservatism, religiosity, educational qualification, socio-economic status, and age are summarized in Table 4. As can be seen, after controlling for all other variables, Care was negatively correlated with political conservatism (partial $\rho = -.11, p = .021$). Authority was positively correlated with political conservatism (partial $\rho = .11, p = .019$). Religiosity was positively associated with higher Purity concerns (partial $\rho = .09, p = .042$). More educated individuals reported slightly higher levels of Loyalty (partial $\rho = .10, p = .027$). Notably, SES was not related to any moral foundations. In terms of differences between women and men, sex differences were non-significant for Care ($t = 1.76$, Welch-corrected $df = 425.04, p = .079$, Cohen's $d = 0.16$), Fairness ($t = 1.93$, Welch-corrected $df = 416.59, p = .055$, Cohen's $d = 0.18$), Loyalty ($t = 1.71$, Welch-corrected $df = 437.35, p = .088$, Cohen's $d = 0.16$), Authority ($t = 0.06$, Welch-corrected $df = 457.55, p = .950$, Cohen's $d = 0.01$), and Purity ($t = 1.06$, Welch-corrected $df = 439.19, p = .289$, Cohen's $d = 0.10$).

Internal Consistency. The internal consistency coefficients for the five foundations were: Care: .78, 95%CI [.75, .81]; Fairness: .73, 95%CI [.69, .76]; Loyalty: .76, 95%CI [.73, .79]; Authority: .74, 95%CI [.70, .77]; Purity: .78, 95%CI [.75, .81]. All internal consistency coefficients fell within the widely recommended threshold of .70 (Tavakol & Dennick, 2011).

Discussion

In this study, we provided a new translation of the MFQ in Persian. We found in our exploratory factor analysis, that the Persian MFQ's structure is different from the original five-factor model found by Graham et al. (2011). Confirmatory factor analyses suggested that neither of the models reached satisfactory fit indices recommended in the literature, so the above-mentioned findings indicate that the factor structure of the Persian MFQ is problematic and fails to replicate the structures typically found in WEIRD populations (Davies, Sibley, & Liu, 2014; Graham et al., 2011; Nilsson & Erlandsson, 2015; Métayer & Pahlaven, 2014; van Leeuwen & Park, 2009). Of note, a recent study using another Persian translation of the MFQ (Nejat & Hatami, 2019) showed that the factor structure of the Persian MFQ was not consistent with the original five-factor model.

The associations between MFQ subscales and related constructs were mixed, but in large part the Persian MFQ does not fully replicate the previously established relationships between political ideology, religiosity and moral foundations (Graham et al., 2009), further suggesting that Persian MFQ should be used with great caution until more suitable models of moral values or alternative measures of MFT are developed. Notably, reasonable foundation-level internal consistency coefficients provide some evidence that foundation-level scores are not just noise; there is some meaningful association between theoretically related items, however, their sum scores should be treated with caution.

Study 2: Moral Foundations in Iran and the U.S.

Development of the MFQ was originally based on factor analytic approaches (Graham et al., 2011), and network psychometric methods have not been used in this literature. It has been

recently suggested that the traditional reliance on latent variable models (as in Study 1) may be inadequate, because the bulk of the structural covariation in psychometric scales can be a consequence of interactions between the items in psychometric tests (Costantini et al., 2015). Here, we compared moral values – defined by the MFT – between two samples from Iran and the US, and compare the psychometric network of the moral domain, as measured by the MFQ, in these cultures. In Study 2, we compared the structure and content of moral foundations between Iran and the US, a highly WEIRD society. We went beyond classical test theory and factor analytic approaches, used in Study 1, by examining the network of items and foundations, and how they influence each other. In other words, we ask which moral foundations are “central” in moral domain networks in Iran vs. the US. We investigate which specific moral values are most central by modeling the moral domain as a network of interconnected foundations.

Methods

Participants. We recruited 247 participants (127 women, 120 men) in public places in Tehran. Participants completed a set of paper-and-pencil questionnaires including MFQ (internal consistency coefficients: Care: .60; Fairness: .54; Loyalty: .65; Authority: .70; Purity: .79). We also recruited 300 participants (152 women, 148 men) who completed the MFQ on a crowd-sourcing website in the US (yourmorals.org) (internal consistency coefficients: Care: .69; Fairness: .63; Loyalty: .69; Authority: .76; Purity: .86). Both data sets (overall $N = 547$) were collected in 2017. Iranian participants were not compensated. American participants were given feedback about their moral values and political ideology.

Measures. All respondents in the Iranian sample completed the Persian translation of the 30-item MFQ developed in Study 1. The Iranian participants completed other individual

difference measures reported elsewhere. The American sample completed the English version of the 30-item MFQ, along with other individual difference measures reported elsewhere. All items in both samples are rated along a 6-point Likert-type scale coded from 0 to 5.

Procedure. To recruit Iranian participants, research assistants approached potential participants in public areas and invited them to take part in psychological survey research. The order of presentation of all measures was randomized. All participants completed a set of paper-and-pencil measures after giving oral consent to participate in the study. All Iranian participants were provided with debriefing information upon completion of the measures. American participants were recruited through a crowd-sourcing website and completed several measures related to moral and political psychology. All participants provided consent that their data would be used for research purposes.

Data Analysis. Since missing data should be handled prior to psychometric network analysis, we first conducted multiple imputation using the *mice* package (Buuren & Groothuis-Oudshoorn, 2010) in *R* version 3.4.2 (R Core Team, 2017). We used the predictive mean matching (PMM) algorithm and 50 iterations for managing missing values in both Iranian (1.5%) and American (0.5%) data sets. After managing missing values in both data sets, they were subjected to network analysis which treats the MFQ as a network of mutually interacting items. Here, items correspond to nodes and their interrelation serves as edges using a Gaussian Graphical Model (GGM) estimation. In the estimated networks, an edge indicates a nonzero partial correlation between two nodes, while controlling for all other nodes in the network. In other words, two connected items show a level of covariation that cannot be explained by their relations to other items. In order to control for spurious connections that may arise due to multiple testing, and to control for the computational size of the problem, we applied the

adaptive LASSO algorithm which assigns different penalty weights for different coefficients with cross-validation (Zou, 2006).

We used *parcor* (Krämer, Schäfer, & Boulesteix, 2009) and *qgraph* (Epskamp, Cramer, Waldorp, Schmittmann, & Borsboom, 2012) *R* packages to estimate matrix of partial correlations based on LASSO regularization and to analyze and visualize weighted networks, respectively. Notably, the adaptive LASSO yields a more parsimonious graph as it pushes a large number of weighted edges to be exactly zero, so only the most important relations are shown in the final network. In network models, each node also plays a different role and has different characteristics. To analyze the place and function of items within the network, we used the *strength* centrality index. A highly central node in a given network is one from which it is easy to travel to other nodes in the network. In addition, centrality in networks identifies the most important nodes in a network. Such items in a psychometric scale may correspond to characteristics that have a particularly important function related to the construct being measured. For example, the MFQ item “chastity is an important and valuable virtue” may be related to different moral phenomena in Iran vs. the US.

Two independent networks were built using data from Iran and the US. We checked for differences in these network structures by performing a permutation test using the *NetworkComparisonTestR* package (van Borkulo, Epskamp, & Millner, 2016). *Difference* has been defined as the deviation in absolute weighted sum scores of the connections. We randomly regrouped participants from the Iranian sample and the American sample repeatedly (1000 times) and calculated the differences between these subsamples (van Borkulo et al., 2016). The resulting distribution is used to test the observed difference of the original subsamples. Both weighted networks (i.e., using edges’ weights) and unweighted network structures (i.e., the

presence of an edge between two nodes) were tested. Notably, the latter is tested to examine if the basic structure of the samples are similar, whereas the first investigates whether the strength of individual connections in the network structures are similar.

Results

Cross-Cultural Differences. We ran a measurement invariance analysis to examine whether respondents from Iran and the US interpret the MFQ items in a conceptually similar way. We used multi-group CFA with maximum likelihood estimation using robust (Huber-White) standard errors and a scaled test statistic that is (asymptotically) equal to the Yuan-Bentler test statistic. As can be seen in Table 5, Iranians and Americans do not interpret MFQ items in nearly similar ways, and all fit indices are substantially lower than recommended thresholds for invariance testing (Chen, 2008). Therefore, raw scale means cannot be meaningfully compared. In particular, item intercepts are substantially different across these cultures, causing the scalar model to fare much worse than the metric model in Table 5. Distributions of moral foundations in both cultures is visualized in Figure 1. After setting both loadings and intercepts to be equal across these groups, the scalar model estimated factor scores for both countries. The Iranian sample's estimates of Fairness ($B = 0.35$, $SE = 0.09$, $Z = 2.70$, $p = .007$), Loyalty ($B = 1.42$, $SE = 0.09$, $Z = 15.69$, $p < .001$), Authority ($B = 0.79$, $SE = 0.09$, $Z = 8.75$, $p < .001$), and Purity ($B = 1.35$, $SE = 0.09$, $Z = 15.78$, $p < .001$) were higher than those of their American counterpart; however, estimated factor score of Care ($B = 0.18$, $SE = 0.25$, $Z = 0.71$, $p = .476$) was not significantly different across groups.

Item Network Analysis. Figures 2 and 3 graphically present networks of the MFQ items for the Iranian and American samples, respectively. As mentioned, edges in these networks represent partial correlations between items while statistically controlling for all other items.

Positive correlations are represented as green edges and negative correlations are shown in red. The width of the edges corresponds to the magnitude of the partial correlation in the network matrix. Out of 435 possible edges, the Iranian network had 74 non-zero edges (17.0%) with 66 positive edges and 8 negative ones. The American network had 93 nonzero edges (21.4%) with 81 positive edges and 12 negative edges. In both networks, items that belong to the same foundation (the same color in the Figures) tend to be more closely connected; however, there are some strong edges between items from different foundations (e.g., the “loyalty” item to the “unfairly” item in the Iranian network). In contrast, some items are theoretically related, but are not linked in these networks because their relationship can be explained by their relations to other items. For example, the items “team” and “history” are both included in the Loyalty foundation, but are not linked in the American nor the Iranian network. This highlights how network analysis can advance our understanding of how morally relevant phenomena are situated within the moral domain network while controlling for all other measured phenomena.

The item-level networks from the two samples were compared based on 1000 iterations to create a reference distribution. We assessed the difference (*Diff*) between two networks based on several invariance measures (i.e., network structure invariance, global strength invariance, edge invariance). Network structures were estimated with l1-regularized partial correlations for weighted networks. The structure of the observed networks was statistically significantly different ($Diff = 0.406, p < .001$). The global strength of the Iranian item-level network (Global Strength = 12.52) and that of the American network (Global Strength = 12.24) were not different ($Diff = 0.286, p = .772$).

Foundation Network Analysis. Figures 4 and 5 visualize the foundation-level networks for the Iranian and American samples. There are five nodes in these networks and the maximum

number of edges is 10 in both. The Iranian network had 7 edges (70.0%; 7 positive and 0 negative). The American network had 4 edges (40.0%; 4 positive and 0 negative). In both networks, Care and Fairness are closely linked, while Loyalty, Authority, and Purity are linked together. Interestingly, the network of moral foundations in Iran is more intertwined between individualizing and binding foundation, whereas that of the American sample is two discrete subgraphs including one individualizing and one binding. This shows that individualizing and binding values are more closely intertwined with one another in Iran compared to the American culture where individualizing and binding values are relatively independent networks of moral values. Loyalty in particular, seems to be the most central moral foundation in Iran which might be indicative of the value of close family ties, in-group coalitions, and love of the country. In the US, on the other hand, authority is the most central moral foundation.

We also compared the foundation-level network structures between Iran and the US using 1000 iterations. Comparing weighted networks, the network structures were significantly different ($Diff = 0.27$, $p = .003$). In terms of global strength, the Iranian network's global strength (2.23) was significantly higher than that of the American sample (1.69), $p < .001$. Therefore, based on foundation level of analysis, the structure and strength of moral networks are different in Iran and the US.

Discussion

Study 2 provided evidence for a new approach for modeling moral foundations using a cross-cultural sample from two sites. We modeled the Persian MFQ and the English MFQ networks at item- and foundation-levels. In all networks, emerging edges that survive the Lasso penalization are likely to have causal relations (Borsboom & Cramer, 2013). One of the MFT-consistent

findings of our network analyses is that Iran's network showed a more densely interconnected network. It may be concluded that endorsing different foundations are more closely intertwined in Iran, with Loyalty being the most central foundation possibly due to stronger social ties, larger kin networks, higher ingroup values in Iran. In the US, in contrast, individualizing and binding values are completely segregated as shown in our network analysis, a finding that has been concealed in correlational research in the literature. Findings of Study 2 help explain why previous research on WEIRD samples found a relatively clean two-factor solution in exploratory factor analysis, while we did not find this in the Iranian sample in Study 1. These findings further call for contextualized studies of moral values in Iran using an engaged and diverse set of methodologies, rather than top-down examination of the moral domain using WEIRD models of moral cognition, presumably developed by WEIRD researchers (see Medin, 2017).

Study 3: Iranians' Beliefs about Virtues and Vices

Studies 1 and 2 pointed to the fact that MFQ might not adequately capture the moral domain in Iran, and that more nuanced exploration of moral values in Iran is warranted. Here, in Study 3, we conduct an interview-based qualitative study, asking a sample of Iranians what virtues and vices matter to them most and who their "moral heroes" are. Studies 1 and 2 used MFT as a theoretical framework for studying moral concerns in Iran and comparing these moral concerns to those of a US sample. While important, these results are bound to theoretical assumptions of MFT (see Graham et al., 2013), and are unable to identify culture-specific (or language-specific) emergent moral values, or how frequently particular moral concerns are implicated in Iran. In fact, MFT predicts and encourages cultural studies of moral values, which may not have been operationalized in the MFQ (Graham et al, 2013; Iyer, Koleva, Graham,

Ditto, & Haidt, 2012). Study 3 aims to close this gap and potentially uncover culture-specific moral values in Iran.

Methods

We interviewed 43 individuals (15 women, 27 men, 1 non-binary) in Tehran and asked them about their beliefs about moral virtues and vices. The mean age of the sample was 35.10 years (min = 23, max = 60, $SD = 12.03$). Participants were approached in public places (public libraries, universities, mosques, and shopping malls) and were asked whether they would be interested in taking part in a study about moral values. After agreeing to participate, a researcher asked five questions and wrote down participants' answers. No recording device was used. These questions were: (1) what do you believe to be the most important moral virtues?; (2) what do you believe to be the most important moral vices?; (3) name two of your "moral heroes"; (4) try to think of "moral" acts you personally did and explain what they were generally about; (5) try to think of "immoral" acts you personally did and explain what they were generally about. In cases where the questions were not fully comprehended by participants, the researcher elucidated the question, making sure that the question was fully understood. The interviews were not timed, but they typically took about 10 to 20 minutes to complete. Participants were assured about the confidentiality and anonymity of their data and that their responses would only be used for research purposes. No compensation was made to participants.

Results

We content-analyzed the moral and immoral acts and broke them into themes (Teddle & Tashakkori, 2009). For example, "giving money to somebody who really needed some money" was categorized as "prosociality/helping" and "cheated on my boyfriend" was categorized as

“infidelity/cheating.” These themes were then combined with the virtues and vices extracted in questions 1 and 2. The first ten moral acts/virtues and immoral acts/vices are presented in Table 6. Participants’ answers to the “moral hero” question were sparsely distributed. Eighteen participants (40.9%) regarded one of their friends as their moral hero, followed by their mothers (29.5%), colleagues (20.5%), teachers (15.9%), and fathers (13.6%).

Discussion

Haidt and Joseph (2008) suggested that “the first step in mapping the moral domain of any culture, [...] should therefore be to list and count the norms that get the most attention.” Study 3 was motivated by this suggestion and follows up Studies 1 and 2 where we found evidence that the MFQ did not capture moral values well in Iranian culture. Study 3’s qualitative approach can give us insights on what norms and values Iranians care about in a bottom-up fashion. Although some of these values exist in the MFT typology, some are missing. Moral values such as “honesty” and “politeness” have been identified in the literature (e.g., Landy & Bartels, 2018), but we also found novel values that are specific to the Iranian culture. Specifically, “*Aberoo*” and related terms (e.g., “*Haya*”) about the noxiousness of promiscuity — all under the tent of *Qeirat* — refer to honor, dignity, and reputation. Some of these values can be considered more masculine (e.g., “*Ta’asob*”), some can be considered more feminine (e.g., “*Haya*”), and finally some of them are less gendered (e.g., “*Aberoo*”). However, since previous work has not examined these constructs in Iranian culture (or in other Persian-speaking nations such as Afghanistan), their linguistic features and psychological implications are not well understood (for an exception see Razavi et al., 2020). Atari (2018) collectively referred to these values as “*Qeirat*” values, highly preferred in mate selection preferences in Iran, and strongly correlated with benefit-provisioning and cost-inflicting mate retention strategies. Razavi and colleagues

(2020) examined the emotional aspects of Qeirat and found that violations of Qeirat values (e.g., *Namoos*) will evoke strong emotional reactions in Iranian culture. Still, the structure and utility of Qeirat values remains unclear.

It is evident that participants in the present sample mostly reported people in their close social circles as their moral hero. Moral heroes have a strong moral character, which includes compelling moral reasoning, personal development, and a heart-warming life story (Frimer, 2018; McAdams & Guo, 2015). When asked to name moral heroes, Americans usually list Martin Luther King, Jr., Nelson Mandela, Mahatma Gandhi, and John F. Kennedy (Frimer & Sinclair, 2016), but Iranians in the present sample mostly listed people they closely knew (e.g., friends, family members) with few people listing figures like Mahatma Gandhi. It is worth noting that one of the limitations of Study 3 is lack of parallel studies in WEIRD societies (see Graham, Meindl, Koleva, Iyer, & Johnson, 2015). Hence, while we can rely on previous work on moral heroes in the US and other nations (e.g., Frimer & Sinclair, 2016), no direct comparison can be made.

Study 4: Extending the Nomological Network of Qeirat Values

As found in Study 3, Qeirat (and its related concepts) seems to be a salient cultural-moral system in Iran which has not been widely researched in the past. In Study 4a, we conducted qualitative interviews to identify this concept's definition, distinctiveness, and manifestations in Iranian culture. In Study 4b, we developed a valid and reliable measure of Qeirat values, and expanded the nomological network of this concept in an Iranian sample. Specifically, we factor analyzed the 24 Qeirat values indicators found in Study 4a, and then examined how moral foundations, the Big Five personality dimensions, religiosity, and happiness are related to scores

on this newly developed scale. Our main goal in Study 4b was to extend the nomological network (series of connected theoretical concepts and observable properties that give the constructs particular meaning) of this newly-uncovered culture-specific moral system.

Methods

Participants. In Study 4a, a community sample of 205 participants (54.1% women) was selected from Tehran. Potential participants were approached by a researcher in public places in Tehran and were invited to complete a set of questionnaires (some reported elsewhere; Chegeni, Pirkalani, & Dehshiri, 2018), including an open-ended question about the concept of Qeirat. Participants ranged in age from 19 to 61 ($M = 31.9$, $SD = 7.9$).

In Study 4b, following the recommendations regarding sample size in factor analytic studies, we aimed to recruit around 500 participants for exploratory and confirmatory factor analysis (Tabachnick & Fidell, 2013). Participants were 519 individuals recruited in university settings in Tehran. Eighteen participants left at least one of the target measures blank and were thus excluded. Therefore, the final sample consisted of 501 participants (54.7% women). The participants ranged in age from 18 to 45 ($M = 25.3$, $SD = 5.0$). Around half of the sample (46.7%) were undergraduate students and the remainder were master's (45.1%) and doctoral students (6.8%). Seven participants (1.4%) chose not to disclose their educational qualification.

Measures. All participants completed the following self-report measures.

Qeirat Values Scale (QVS). We content-analyzed the open-ended questions in Study 4a and re-phrased responses into declarative sentences appropriate for survey studies. Overall, we identified 24 sentences, shown in Table 7. In Study 4b, participants completed the 24-item Qeirat Values Scale (QVS) developed based on responses in Study 4a. Items were rated along a 7-point

Likert-type scale ranging from 1 (*Strongly disagree*) to 7 (*Strongly agree*). The factor structure and internal consistency coefficients of the scale are presented in Results.

Moral Foundations Questionnaire (MFQ). Participants completed the Persian version of the 30-item MFQ (Graham et al., 2011) reported in Study 1. The internal consistency coefficients were .65, .69, .68, .74, and .81 for Care, Fairness, Loyalty, Authority, and Purity, respectively.

Political Orientation. Participants rated their political affiliation as in Study 1. The internal consistency coefficient of this two-item measure was relatively high in the current sample (Cronbach's $\alpha = .68$).

Self-Rating of Happiness. We used a single-item measure of happiness (i.e., *Do you feel happy in general?*), developed by Abdel-Khalek (2006), rated on an 11-point scale ranging from 0 to 10. The Persian versions of single-item measures of happiness have previously been used in Iran (Farzianpour et al., 2011).

Iranian National Religiosity Scale (INRS). Participants completed a 36-item measure of Islamic religiosity developed and validated by Khodayarifard et al. (2010). These authors developed a larger item pool based on Quranic teachings and Hadith, and reduced the number of items using factor analysis in national samples from Iran. This measure is the only locally developed measure of Islamic religiosity in Iran. The developers of the scale have suggested that a single score be computed by averaging all 36 items (Khodayarifard et al., 2018). Cronbach's α in the present sample was .96.

Ten-Item Personality Inventory (TIPI). The TIPI (Gosling, Rentfrow, & Swann Jr, 2003) is an ultra-short measure of the Big Five dimensions of personality. Each of the Big Five dimensions (i.e., Extraversion, Agreeableness, Conscientiousness, Emotional Stability, and

Openness to Experience) are measured with two items. All items are rated along a 7-point Likert type scale ranging from 1 (*Strongly disagree*) to 7 (*Strongly agree*). The Persian version of the TIPI has been translated and used by Atari, Barbaro, Sela, Shackelford, and Chegeni (2017).

Procedure. Potential participants were invited to take part in a psychological study in university settings. Participation was on a voluntary basis and participants were not compensated. All participants who agreed to take part were provided with a set of paper-and-pencil measures right after they provided oral consent. All instruments were presented in a pre-randomized order. All participants were verbally debriefed once all questionnaires had been returned.

Data Analysis. Our analytic method in this study resembled that of Study 1. We partitioned Study 4b's data into training and test data sets for EFA and CFA, respectively. We used Pearson correlations to examine the associations between study variables. Finally, we ran five linear regression models to predict Qeirat values overall scores as well as the QVS subscales.

Results

Study 4a. As mentioned in our Methods, we content-analyzed the open-ended questions and organized responses into declarative sentences in order to be used in Study 4b. Our qualitative method resembled that of Study 3. After merging similar responses into themes, we identified 24 distinguishable sentences. These items can be seen in Table 7.

Study 4b: Factor Analysis of Qeirat Values. Similar to our analytic procedure in Study 1, we ran an EFA on a subsample of $n = 300$ and a CFA on the remaining data ($n = 201$). Results

of the EFA are presented in Table 7 (Bartlett's $\chi^2(276) = 5353.39, p < .001, KMO = .94$). We labeled the four factors as "Commitment to Family", "Protecting Namoos", "Love of Country", and "Supporting Family/Mate." Results of the CFA on the test subsample suggested that the four-factor model ($\chi^2_{Robust} = 543.82, \chi^2/df = 2.21, CFI_{Robust} = .852, TLI_{Robust} = .834, AIC = 13731.05, BIC_{Corrected} = 13735.62, RMSEA_{Robust} = .093, 90\%CI = [.083, .104]$) fit the data substantially better than the uni-dimensional model ($\chi^2_{Robust} = 894.70, \chi^2/df = 3.55, CFI_{Robust} = .656, TLI_{Robust} = .623, AIC = 14296.63, BIC_{Corrected} = 14300.69, RMSEA_{Robust} = .140, 90\%CI = [.131, .151]$), supporting the multidimensionality of this scale. The correlation coefficients between these four factors are presented in Table 8.

Study 4b: Demographic Correlates of Qeirat Values. We examined sex differences in QVS subscales as well as the overall scores. After correcting for multiple comparisons, there was no sex difference in "Commitment to Family" ($t = 1.28$, Welch-corrected $df = 476.35, p = .202$, Cohen's $d = 0.12$), "Love of Country" ($t = 2.19$, Welch-corrected $df = 430.25, p = .029$, Cohen's $d = 0.20$), "Supporting Family/Mate" ($t = -0.57$, Welch-corrected $df = 476.24, p = .566$, Cohen's $d = -0.05$), or the overall Qeirat values ($t = -0.37$, Welch-corrected $df = 460.92, p = .713$, Cohen's $d = -0.03$), but men scored significantly higher than women on "Protecting Namoos" ($t = -3.66$, Welch-corrected $df = 481.11, p < .001$, Cohen's $d = -0.33$). Age, education, and socio-economic status were not significantly related to Qeirat values ($ps > .127$).

Study 4b: Individual Difference Correlates of Qeirat Values. The correlation coefficients between Qeirat values, moral foundations, Big Five personality traits, Islamic religiosity, political conservatism, and happiness are presented in Table 8. We also ran five linear regression models to predict the four factors of Qeirat values and the overall Qeirat values score

with moral foundations, Big Five traits, Islamic religiosity, political conservatism, and happiness as independent variables (see Table 9). As can be seen, overall Qeirat values scores were predicted by Loyalty ($B = 0.42$, $SE = 0.06$, $t = 7.00$, $p < .001$), Purity ($B = 0.22$, $SE = 0.06$, $t = 3.86$, $p < .001$), Islamic religiosity ($B = 0.15$, $SE = 0.04$, $t = 3.55$, $p < .001$), and political conservatism ($B = 0.05$, $SE = 0.02$, $t = 2.29$, $p = .023$). Thus, Loyalty and Purity play an important role in Qeirat values along with Islamic religiosity and political conservatism.

Discussion

Study 4 used a mixed-methods methodology to combine interview-based qualitative study of Qeirat values (Study 4a) and quantitative analyses of its relationship with related constructs (Study 4b) including moral foundations, religiosity, political conservatism, personality dimensions, and subjective happiness. Based on our qualitative analysis, we developed and validated a 24-item self-report measure of Qeirat values, which demonstrated a 4-factor structure (Commitment to Family, Protecting Namoos, Love of Country, and Supporting Family/Mate). Importantly, these results demystified a few lay conceptions of the concept of Qeirat in Iranian culture. For example, Qeirat values are believed to be more masculine and valued by men; however, we only found a male-favoring sex difference in one facet of Qeirat values, not others. This facet was “Protecting Namoos” which consists of (over)protection of female kin in different domains, but mostly in terms of sexual activities (see Tizro, 2013). In addition, the overall Qeirat values scores were not significantly different between women and men. In terms of the relationship between moral foundations and Qeirat values, Loyalty and Purity were shown to be reliable predictors of Qeirat values, even after controlling for other moral foundations, personality dimensions, political ideology, and subjective happiness. At the broadest level, these

findings provide preliminary evidence for the nomological network of Qeirat values, and demonstrate the multidimensional nature of Qeirat values in Iran. The current findings also highlight that while Qeirat is comparable with honor values and “culture of honor” researched in the US (Cohen, Nisbett, Bowdle, & Schwarz, 1996), it consists of culturally relevant practices (e.g., protecting Namoos) that are not conceptualized to be a part of honor cultures. We examine the relationship between honor and Qeirat in Study 5.

Study 5: Pragmatic validity of Qeirat as a novel moral foundation

Qeirat values, according to our theoretical delineation in Study 4, are conceptually proximate to, but not identical with, the concept of honor. Western conceptualizations of honor cultures based on anthropological and cross-cultural research suggest that honor values include maintenance of good reputation through good family standing, social interdependence, and maintenance of gender-specific codes of behavior (Oyserman, 2017; Peristiany, 1965) which have been linked to violence and homicide (Grosjean, 2014). In Study 5, we have three principal predictions to demonstrate the pragmatic validity of Qeirat as a potential moral foundation: (1) Qeirat values are related to, but distinct from honor values; (2) Qeirat values explain additional variance in outcomes after accounting for other moral foundations and honor values; (3) Qeirat values are linked to mate guarding behaviors in the Iranian culture.

Methods

Participants. We aimed to recruit 100 Iranian participants using advertisements on social media. A post-hoc power analysis suggested that this sample size can detect a correlation coefficient of 0.3, at $p = 0.05$, with 87% power. Accordingly, any correlation below 0.3 should be treated with caution in this sample. Our final sample included 105 participants (63% female).

The average age was 33.9 years ($SD = 9.9$ years) and most participants had at least some college education (88.6%). About half of the participants were in marital relationships (46.7%).

Participants reported their subjective socio-economic status on a five-point Likert-type scale, where most participants identified as middle class (60%).

Measures. All participants completed the following self-report measures.

Qeirat Values Scale (QVS). All participants completed the 24-item QVS developed and validated in Study 4. Items were rated along a 7-point Likert-type scale ranging from 1 (*Strongly disagree*) to 7 (*Strongly agree*). Internal consistency coefficients for Commitment to Family ($\alpha = .88$), Protecting Namoos ($\alpha = .89$), Love of Country ($\alpha = .91$), and Supporting Family/Mate ($\alpha = .78$) were satisfactory. The overall Qeirat values score was also internally consistent ($\alpha = .94$).

Moral Foundations Questionnaire (MFQ). Participants completed the Persian version of the 30-item MFQ (Graham et al., 2011) validated in Study 1. The internal consistency coefficients were .43, .47, .63, .79, and .83 for Care, Fairness, Loyalty, Authority, and Purity, respectively.

Political Orientation. Participants rated their political affiliation as using a single item ranging from 1 (*Politically liberal*) to 7 (*Politically conservative*). The average rating was 3.35 ($Md = 4$, $SD = 1.32$).

Iranian National Religiosity Scale (INRS). Participants completed the 36-item INRS (Khodayarifard et al., 2010). All items were rated on a 6-point Likert-type scale ranging from 1 (*Never*) to 6 (*Always*). The INRS scores were highly internally consistent in the current sample (Cronbach's $\alpha = .96$).

Mate Retention Inventory-Short Form (MRI-SF). All participants completed the MRI-SF (Buss, Shackelford, & McKibbin, 2008) which consists of 38 items assessing 19 mate retention

tactics. Items were rated in terms of frequency on a 4-point Likert-type scale ranging from 1 (*Never*) to 4 (*Often*) how often they performed each behavior within the past year. Atari et al. (2017) translated the instrument into Persian and reported satisfactory psychometric properties of the Persian translation of the MRI-SF in a sample of Iranian adults. These authors found two superordinate components underlying mate retention behaviors in Iran: benefit-provisioning (behaviors that reduce the likelihood of partner infidelity by increasing relationship satisfaction) and cost-inflicting (behaviors that reduce the likelihood of partner infidelity by lowering the partner's self-esteem). Composite scores of benefit-provisioning (Cronbach's $\alpha = 0.92$) and cost-inflicting (Cronbach's $\alpha = 0.88$) components were calculated by averaging the relevant items.

Honor Values Scale (HVS). Participants completed the 18-item Honor Values Scale (HVS; Novin & Oyserman, 2016) which has been developed based on expansion of IJzerman, van Dijk and Gallucci (2007). Items were rated on a scale from 1 (*Strongly disagree*) to 7 (*Strongly agree*). Since this scale has not been validated in Iran, we translated the measure into Persian using the standard back-translation technique (Brislin, 1970). Items were averaged and total scores were shown to be internally consistent (Cronbach's $\alpha = 0.84$).

Procedure. Potential adult participants who were in a committed relationship were invited to take part in a psychological study on social media. Participation was on a voluntary basis and participants were not compensated. All participants who agreed to take part were provided with all the measures and were debriefed and thanked once they finished the survey.

Data Analysis. We used Pearson correlation to examine the association between Qeirat values and honor values where perfect or very high correlations ($> .85$) indicate that the two constructs are redundant (see Campbell & Fiske, 1959). Linear regressions were used to investigate whether Qeirat values predict outcomes (Islamic religiosity, political conservatism,

benefit-provisioning mate retention, and cost-inflicting mate retention) after accounting for Care, Fairness, Loyalty, Authority, Purity, and honor values. All data analyses were conducted using the *Psych* package (Revelle, 2017) in *R* (version 3.6.1).

Results

Qeirat values are distinct from honor values. The correlation between overall Qeirat values and honor values was .46, 95%CI [.29, .60], $p < .001$. This moderate correlation (shared variance = 21%) suggests that the two constructs are not redundant and are capturing distinguishable constructs. Subscale-level correlations between facets of Qeirat showed moderate correlations ($.27 < r < .43$) as well (Table 10), indicating that none of these subscales are capturing the same construct as honor values.

Qeirat values predict outcomes beyond moral foundations. We ran two regression models to predict Islamic religiosity and political conservatism using demographic variables, moral foundations, honor values, and Qeirat values. As can be seen in Table 11, Qeirat values significantly predicted Islamic religiosity ($B = 0.33$, $SE = 0.10$, $p = .001$) and political conservatism ($B = 0.49$, $SE = 0.18$, $p = .006$) after accounting for all other variables. Honor values, on the other hand, were not found to significantly predict Islamic religiosity ($B = 0.20$, $SE = 0.16$, $p = .220$) or political conservatism ($B = -0.27$, $SE = 0.28$, $p = .336$).

Qeirat values are linked to mate guarding. We ran two regression models to predict benefit-provisioning and cost-inflicting mate retention behaviors using demographic variables, moral foundations, honor values, and Qeirat values (see Table 11). Qeirat values significantly predicted benefit-provisioning ($B = 0.21$, $SE = 0.09$, $p = .024$) and cost-inflicting ($B = 0.13$, $SE = 0.07$, $p = .048$) mate retention behaviors after controlling for demographic variables, moral foundations, and honor values.

Discussion

Study 5 had three specific aims to further examine the pragmatic validity of Qeirat as a potential moral foundation (at least in Iran), that is, to show that Qeirat is a scientifically useful construct for both answering existing questions about morally relevant phenomena and allowing researchers to formulate new questions (see Graham et al., 2011). First, we demonstrated that Qeirat is a distinguishable construct from honor as conceptualized and measured in the literature. However, it is possible that Qeirat and honor have similar evolutionary architectures which are universally available, serving to protect family members, land, and reputation especially in the absence of powerful central authorities, but are triggered by different socio-ecological needs. For example, mate retention aspects of Qeirat/honor may be more manifest in male-biased sex ratios or in contexts where mate poaching is prevalent. Second, we show that Qeirat values are useful as they predict important outcomes (here, religiosity and conservatism) above and beyond existing moral foundations and even honor values. It is worth noting that individualizing foundations of Care and Fairness had particularly low reliabilities in this sample, which may explain why the MFQ had low predictive power in this study. These low reliability coefficients in the present sample further suggest that the MFQ does not perform well in Iranian samples. Third, drawing upon Atari et al. (2017), we postulated that Qeirat values are linked to mate retention behaviors. Hence, Qeirat values facilitate a broad menu of behaviors ranging from acts of kindness and resource provisioning, to vigilance, manipulation, and violence to retain and protect committed exclusive relationships in Iranian culture. This is preliminary evidence that Qeirat (and honor) may have evolved to solve the evolutionarily recurrent problem of mate guarding (see Shackelford, 2005).

General Discussion

Psychological theories, whether empirically-constrained or driven by folk conceptions, are generalizable across human populations only when their supporting data come from diverse human populations. Morality is a universal human phenomenon, present in our literature, history, society, relationships, and identity. But it is apparent, from the present studies and prior work on cross-cultural differences in moral values, that the moral domain's content and structure may substantially differ from one culture to another. MFT's operationalization, while a useful framework for understanding ubiquitous moral phenomena across cultural contexts, is nevertheless presently unable to assess the moral domain comprehensively in some cultures, particularly non-WEIRD ones (see Purzycki et al., 2018). This does not undermine the theory itself (see Graham et al., 2013); rather, it points to an important direction in psychology, the holistic and contextualized translation of theories and measures — in terms of both culture and language — for truly cross-cultural evolutionary psychology of morality (Apicella & Barrett, 2016). MFT theorists have explicitly welcomed new foundations to be added to their framework as methods and theory co-evolve in moral psychology. Specifically, with regard to addition of new “foundations”, Graham et al. (2013, p.58) laid out a number of foundationhood criteria and rhetorically posited that they “do not know how many moral foundations there really are. There may be 74, or perhaps 122, or 27, or maybe only 5, but certainly more than one.”

In the broadest sense, the current program of research provides two insights: First, the MFQ, as the most used operationalization of MFT, does not fare well in Iran. This finding does not undermine the theory itself as future research can aim to develop measures that capture the constructs introduced by MFT using culturally fluent items. However, even if future research does so and succeeds in capturing the five moral foundations, there might still be culturally

important moral systems overlooked. Second, we used a descriptive set of studies to uncover a new system of moral meanings called Qeirat. While we found similarities between the concept of Qeirat and the culture of honor in the US, they seem to be tapping into different constructs. Discovering Qeirat as a new moral system that cannot be mapped onto existing moral foundations and that is linked to evolutionary mechanisms not identified before can motivate research to further explore the foundationhood of Qeirat.

In our studies, we aimed to measure how well the operationalization of MFT fares in Iran. Our psychometric studies showed that the Persian translation of MFQ does not replicate its parent structure (Graham et al., 2011), nor are MFQ scores quite meaningfully comparable between Iran and the US. In addition, our network psychometric analyses revealed that the network of moral foundations is substantially different between Iran and the US, with the Iranian network showing a more intimate relationship between individualizing and binding moral foundations. These findings call for at least two future directions. First, it is invaluable to develop better operationalizations of MFT based on these findings and recent cross-cultural ethnographic work (Lang et al., 2019; Purzycki et al., 2018). Such theoretical revisions were both predicted and encouraged by MFT (Graham et al., 2013; Iyer et al., 2012). Second, these results show that mere translation of models based on WEIRD psychology is not sufficient to wholly understand human psychology, particularly the moral domain (see Medin, 2017). Our qualitative studies (in an “informed curiosity” manner; see Rozin, 2001) uncovered moral concepts which were previously incognito to (Western) psychologists (for another example, see Berniūnas, 2020). Future moral psychological work can enjoy truly cross-cultural exploratory research to uncover moral systems currently unknown to scholars of morality.

We have demonstrated, through a mixed-methods design, that Iranians possess a set of moral values that is different from the US (and possibly other WEIRD populations), which may not be explained by the MFT (but most closely related to the conception of Loyalty in MFT). But why do Iranians have a significantly different structure of moral values than Americans, other WEIRD populations, or even other non-WEIRD populations (see Doğruyol et al., 2019)? It is evident that Loyalty is an important, organizing concern in Iranian morality, and that Qeirat underlies the Iranian mind in many ways, not just morality (e.g., basic personality models, mating psychology). One explanation takes the evolutionary perspective in these differences: morality exists as a set of culturally transmitted information in the society, functioning for the preservation and promotion of the self and of group. When the ecology — specifically, threats to the self- and group-level thriving (e.g., pathogen prevalence, population density, biased sex ratio, resource scarcity) — changes, the network of moral concerns can thus adapt (see Haidt & Joseph, 2004; Oishi & Graham, 2010; Purzycki et al., 2018; Tomasello, 2018; van Leeuwen, Park, Koenig, & Graham, 2012). Here, we argue that Qeirat values are particularly adaptive in Iran's ecology due to historically high prevalence of pathogens, slightly male-biased sex ratio, and scarcity of environmental resources, especially in southern regions. Qeirat values maintain intensive kinship networks which can function to keep resources in the group. Ecological conditions that facilitate Qeirat values give rise to higher intrasexual rivalry for access to mates, sensitivity to sexual norm violation, and vigilance to guard current sexual partners, especially female partners (Kandrik, Jones, & DeBruine, 2015; Karimi-Malekabadi & Esmailinasab, 2019). Evolution of Qeirat values both supports and enables tight kinship networks and group coalitions in which the risk of contact with pathogens is minimized, mate poaching is heavily penalized, resources are retained within the group, and societal norms are maintained.

Iran is relatively higher in the historical prevalence of pathogens (Murray & Schaller, 2010) and is slightly more male-biased in terms of population sex ratio (e.g., Chao, Gerland, Cook, & Alkema, 2019). Historical presence of pathogens can induce higher ingroup loyalty (Van Leeuwen et al., 2012) and male-biased sex ratio is associated with family values and religiosity (Karimi-Malekabadi & Esmaeilinasab, 2019). Qeirat values are different from, but comparable with the Southern culture of honor in the US, where Southerners are believed to be readier to react (aggressively) to insults (Cohen et al., 1996). Importantly, Qeirat values are oriented toward one's mate, family, and country while the focus of Southern culture of honor is one's *own* dignity (e.g., Guerra, Giner-Sorolla, & Vasiljevic, 2013). The distinction between Qeirat and honor was evident in Study 5 in which we found moderate correlations between facets of Qeirat values and honor values. Yet, it is possible that Qeirat and honor have similar underlying evolutionary functions, but are differentially formed by different socio-ecological triggers (i.e., lack of resources, herding vs. farming) that are conducive to stronger family ties, pro-group behaviors, higher frequency of mate retention behaviors (Nowak, Gelfand, Borkowski, Cohen, & Hernandez, 2016; Shackelford, 2005).

Limitations of this project are worth noting. First, we did not collect data from different subcultures of Iran in terms of ethnicity (e.g., Kurd, Turk, Balooch). It is recommended for future research to examine moral foundations and Qeirat values across different regions, subcultures, religions, and languages in Iran. This is particularly important because there is substantial variance in socioecological factors across Iran's geographic regions. Additionally, it might be a good next step to examine Qeirat values in other, potentially WEIRD, populations. Second, we did not examine all criteria for foundationhood of Qeirat, such as emotional consequences of violation of Qeirat values (Razavi et al., 2020) or third-person normative judgments relevant to

Qeirat. Emotional reactions to moral foundations are well researched (Atari, Mostafazadeh Davani, & Dehghani, 2020), but emotional correlates of Qeirat values are yet to be investigated. Third, our findings are correlational and cross-sectional in nature. Future research is encouraged to use experimental and longitudinal designs to better uncover sources of Qeirat values and their development in the lifespan.

The first implication of this research is that true cultural and evolutionary research in moral psychology cannot merely gather data from non-WEIRD samples using WEIRD models. Rather, using models and measurement methods designed in WEIRD societies is itself a flawed practice, and requires a reinvention of the theoretical framework (and its operationalizations) for a new culture and/or language, potentially by researchers who can actively engage with the target culture and/or language (Medin, 2017; Medin, Ojalehto, Marin, & Bang, 2017). The second implication of the present project is that Qeirat values represent a measurable and psychologically meaningful culture-specific set of kinship-intensifying moral norms that function to bind individuals to their mates, families, and countries in ways previously unknown to Western psychologists. Future investigations on Qeirat contribute to the cumulative theoretical frameworks in understanding the role of culture and social norms in moral values (Razavi et al., 2020; see Muthukrishna & Henrich, 2019).

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Table 1

Iran's GDP per capita, human development, and cultural distance from the USA and China

Country	GDP per capita (2017)	Human Development Index (2018)	Cultural Distance from the USA [95% CI]	Cultural Distance from China [95% CI]
Iran	\$5,520.3	0.797 (world: 0.731)	0.150 [.145, .156]	.125 [.122, .128]

Table 2

Exploratory Factor Analysis of the MFQ Items (n = 300; Study 1)

Item (Original Factor)	PA1	PA2	PA3	PA4	PA5
justice (F)	0.80	-0.06	0.10	-0.14	0.03
animal (C)	0.78	-0.05	0.21	-0.02	-0.08
fairly (F)	0.76	0.05	-0.10	0.11	0.03
compassion (C)	0.62	0.12	-0.15	0.09	0.18
sexroles (A)	0.61	0.23	0.10	-0.09	-0.05
family (L)	0.60	0.17	0.08	0.02	-0.21
history (L)	0.60	0.13	-0.02	0.06	0.02
harmlessdg (P)	0.56	0.14	0.14	0.03	0.00
soldier (A)	0.07	0.68	-0.17	0.00	0.14
team (L)	0.24	0.64	-0.11	-0.09	0.24
chastity (P)	0.19	0.60	-0.06	0.01	0.06
unnatural (P)	0.19	0.57	0.14	-0.01	-0.21
rich (F)	0.07	0.53	-0.13	-0.04	0.00
traditions (A)	-0.35	0.48	0.40	0.03	0.04
kill (C)	0.31	0.47	0.08	-0.15	-0.04
kidrespect (A)	0.35	0.38	-0.06	0.20	-0.11
cruel (C)	0.12	-0.11	0.85	-0.02	-0.07
disgusting (P)	-0.05	0.02	0.73	0.15	-0.17
rights (F)	0.22	-0.17	0.72	-0.12	0.14
loyalty (L)	0.26	-0.19	0.52	-0.01	0.19
chaos (A)	0.08	-0.12	0.44	0.10	0.25
god (P)	-0.03	0.27	0.29	0.11	0.11
treated (F)	0.16	-0.13	-0.08	0.82	0.07
emotionally (C)	0.21	-0.16	-0.02	0.74	0.03
respect (A)	-0.19	0.12	0.02	0.73	-0.09
lovecountry (L)	-0.01	0.00	0.03	0.72	-0.01
decency (P)	-0.03	0.00	0.16	0.45	0.09
unfairly (F)	-0.05	0.03	-0.01	-0.02	0.91
weak (C)	-0.07	0.03	0.05	0.20	0.62
betray (L)	-0.01	0.17	0.27	-0.07	0.52

Note. Loadings corresponding to each factor are presented in bold. C = Care; F = Fairness; L = Loyalty; A = Authority; P = Purity.

Table 3

Goodness-of-Fit Indices of Structural Models Underlying MFQ (n = 244; Study 1)

Model	χ^2_{Robust}	χ^2/df	CFI _{Robust}	TLI _{Robust}	AIC	BIC _{Corrected}	RMSEA _{Robust}	90%CI
1-factor model	1173.61	2.90	.738	.718	19442.63	19453.91	.112	[.105, .120]
2-factor model	1167.87	2.89	.739	.719	19437.59	19449.06	.112	[.104, .119]
3-factor model	1166.79	2.90	.739	.718	19437.97	19449.81	.112	[.105, .120]
5-factor model	1101.20	2.79	.760	.736	19353.81	19366.96	.108	[.101, .116]
EFA model	744.04	1.88	.883	.871	18840.86	18854.01	.076	[.067, .084]

Note. CFI = comparative fit index; TLI = Tucker-Lewis index; AIC = Akaike information criterion; BIC = Bayes information criterion; RMSEA = root mean square error of approximation; CI = confidence interval.

Table 4

Partial Spearman Correlation Coefficients among Variables (Study 1)

	Care	Fairness	Loyalty	Authority	Purity
Conservatism	-0.11*	0.03	-0.07	0.11*	0.06
Religiosity	-0.07	-0.04	-0.01	0.04	0.09*
Education	-0.04	0.03	0.10*	-0.06	-0.01
SES	0.05	-0.01	-0.02	0.03	0.00
Age	0.03	-0.03	-0.03	0.03	0.06

Note. * $p < .05$

Table 5

Results of Measurement Invariance Models (Study 2)

Model	χ^2_{Robust}	df	Δdf	CFI	ΔCFI	RMSEA	$\Delta RMSEA$	p	BIC
1. Configural	2637.30	790	--	0.713	--	0.082	--	--	52221
2. Metric	2951.80	815	25	0.670	0.043	0.087	0.005	< .001	52378
3. Scalar	4252.20	840	25	0.441	0.229	0.111	0.024	< .001	53521

Table 6

Virtues and Vices Identified in Study 3

Virtues (Number of occurrences)	Vices (number of occurrences)
Honesty/Truthfulness (33)	Lying/Distrustfulness (33)
Prosociality/Helping (29)	Insincerity/Hypocrisy (23)
Affability/Kindness (13)	Cheating/Infidelity (18)
Loyalty/Fidelity (11)	Aggression/Violence (14)
Humility/Modesty (9)	Self-centeredness/Hubris (9)
Responsibility/Authority (9)	Theft/Unlawfulness (8)
Sanctity/'Aberoo' (8)	Impoliteness/Rudeness (8)
Respectfulness/Politeness (8)	Harm/Manipulation (6)
Fairness/Justice (8)	Degradation/Promiscuity (6)
Forgiveness/Compassion (8)	Greed/Avarice (4)

Table 7

Exploratory Factor Analysis of Qeirat Items (n = 300; Study 4b)

Variable	PA1	PA2	PA3	PA4
A man should love his family.	0.83	0.09	0.24	0.16
A man should feel committed toward his family.	0.82	0.10	0.30	0.15
A man should protect his family against any dangers.	0.76	0.23	0.16	0.23
A man should be committed to his romantic partner in every possible way.	0.69	0.18	0.16	0.28
A husband is responsible for protecting his wife.	0.60	0.09	0.38	0.36
A man should ensure the happiness and peace of his family.	0.59	0.33	0.23	0.36
A man should not let anything bad happen to his family.	0.57	0.37	0.15	0.32
A man should treat others' Namoos like his own.	0.43	0.30	0.35	0.18
A man should be vigilant about his romantic partner's social behavior.	0.09	0.82	0.15	0.14
A man should be vigilant about his romantic partner's interactions with other men.	0.08	0.77	0.13	0.10
A wife should dress in a way her husband approves.	0.10	0.64	0.15	0.05
A real man has Qeirat.	0.26	0.64	0.28	0.34
A man should guard against other men's interest in his romantic partner.	0.33	0.49	0.13	0.34
A woman should dress modestly.	0.14	0.46	0.36	0.10
A man should react if somebody shows sexual interest in his Namoos.	0.19	0.44	0.23	0.12
Everyone should love their own country.	0.21	0.30	0.82	0.17
People should do their best to make their country proud.	0.27	0.24	0.76	0.15
Everyone should defend their country, if called upon.	0.21	0.32	0.75	0.16
Everyone should be happy when a compatriot wins in an international competition.	0.31	0.19	0.58	0.37
Everyone should be happy when their country advances in science and technology.	0.35	0.15	0.56	0.40
A man should be responsive to his family's needs.	0.45	0.22	0.24	0.75
A real man always wants to make his romantic partner happy.	0.40	0.15	0.28	0.68
A man should be willing to endanger his own life to protect his family.	0.30	0.33	0.20	0.45
A man should be supportive of and loyal to his family.	0.29	0.26	0.28	0.40
Cronbach's α	0.90	0.85	0.91	0.80

Note. Loadings corresponding to each factor are presented in bold. These are translated items of the QVS from Persian.

Table 8

Zero-level Correlation Coefficients between Variables (Study 4b)

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. Qeirat: Commitment to Family	1																
2. Qeirat: Protecting Namoos	0.52	1															
3. Qeirat: Love of Country	0.64	0.57	1														
4. Qeirat: Supporting Family/Mate	0.72	0.56	0.65	1													
5. Overall Qeirat Values	0.83	0.82	0.86	0.85	1												
6. Islamic Religiosity	0.31	0.55	0.45	0.29	0.5	1											
7. Care	0.36	0.16	0.37	0.33	0.35	0.18	1										
8. Fairness	0.34	0.19	0.32	0.34	0.34	0.13	0.73	1									
9. Loyalty	0.51	0.43	0.61	0.52	0.62	0.39	0.58	0.57	1								
10. Authority	0.39	0.55	0.51	0.39	0.56	0.54	0.40	0.31	0.64	1							
11. Purity	0.49	0.60	0.56	0.46	0.64	0.61	0.49	0.48	0.68	0.74	1						
12. Political Conservatism	0.14	0.38	0.17	0.12	0.26	0.38	-0.08	-0.11	0.08	0.31	0.25	1					
13. Extraversion	-0.04	0.06	0.09	0.01	0.04	0.13	0.05	0.04	0.10	0.14	0.09	0.00	1				
14. Agreeableness	0.22	0.11	0.20	0.14	0.20	0.18	0.16	0.16	0.17	0.19	0.20	0.10	-0.22	1			
15. Conscientiousness	0.21	0.17	0.24	0.13	0.23	0.23	0.18	0.17	0.22	0.27	0.34	0.02	0.02	0.26	1		
16. Emotional Stability	-0.07	-0.05	0.00	-0.14	-0.07	0.07	-0.09	-0.10	-0.06	-0.05	-0.07	0.02	-0.05	0.07	0.08	1	
17. Openness to Experience	0.05	-0.22	0.00	0.06	-0.05	-0.13	0.20	0.22	0.06	-0.15	-0.08	-0.19	0.06	0.00	0.15	0.07	1
18. Happiness	0.03	0.00	0.14	-0.07	0.03	0.22	0.11	0.04	0.10	0.07	0.11	-0.02	0.29	0.01	0.14	0.27	0.11

Table 9

Linear Models Predicting Qeirat Values (Study 4b)

	<i>Dependent variable:</i>				
	Commitment to Family	Protecting Namoos	Love of Country	Supporting Family/Mate	Overall Qeirat Values
Care	.07 (.07)	-.24** (.09)	.07 (.08)	.01 (.07)	-.02 (.06)
Fairness	-.02 (.08)	.10 (.10)	-.12 (.09)	.02 (.08)	-.01 (.07)
Loyalty	.37*** (.07)	.19* (.09)	.68*** (.08)	.45*** (.07)	.42*** (.06)
Authority	-.07 (.06)	.16* (.08)	.03 (.08)	-.01 (.07)	.03 (.05)
Purity	.20** (.07)	.40*** (.08)	.13 (.08)	.16* (.07)	.22*** (.06)
Islamic Religiosity	.04 (.05)	.30*** (.06)	.20*** (.06)	.07 (.05)	.15*** (.04)
Political Conservatism	.04 (.02)	.12*** (.03)	.02 (.03)	.03 (.03)	.05* (.02)
Extraversion	-.04 (.02)	.01 (.03)	.01 (.03)	-.01 (.03)	-.01 (.02)
Agreeableness	.07* (.04)	-.04 (.05)	.07 (.04)	.04 (.04)	.04 (.03)
Conscientiousness	.03 (.03)	.002 (.04)	.05 (.04)	-.02 (.04)	.02 (.03)
Emotional Stability	-.03 (.02)	-.01 (.03)	.01 (.03)	-.05* (.03)	-.02 (.02)
Openness to Experience	.04 (.03)	-.11** (.04)	.004 (.04)	.07 (.03)	-.0005 (.03)
Happiness	-.01 (.02)	-.04* (.02)	.02 (.02)	-.05** (.02)	-.02 (.01)
Constant	3.73*** (.33)	2.39*** (.42)	1.53*** (.41)	3.77*** (.36)	2.86*** (.29)
R ²	.33	.48	.45	.33	.51
Adjusted R ²	.31	.47	.44	.31	.49

Note. * $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$

Table 10

The Correlation Coefficients between Study Variables (Study 5)

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Care	1													
2. Fairness	.37***	1												
3. Loyalty	.22*	.15	1											
4. Authority	.24*	.17	.68***	1										
5. Purity	.31**	.25**	.69***	.75***	1									
6. BPMR	-.10	-.06	.16	.16	.15	1								
7. CIMR	-.12	.06	.17	.18	.16	.53***	1							
8. honor values	.20*	.30**	.41***	.44***	.52***	.22*	.20*	1						
9. religiosity	.14	.15	.53***	.63***	.73***	.21*	.17	.48***	1					
10. conservatism	.18	.22*	.33***	.48***	.51***	.08	.02	.24*	.45***	1				
11. Qeirat: commitment to family	.20*	.23*	.47***	.56***	.64***	.20*	.21*	.43***	.54***	.40***	1			
12. Qeirat: Protecting Namoos	.07	.11	.59***	.66***	.69***	.35***	.39***	.41***	.68***	.48***	.67***	1		
13. Qeirat: Love of country	.13	.12	.68***	.64***	.67***	.21*	.14	.41***	.64***	.50***	.46***	.63***	1	
14. Qeirat: supporting family/mate	.09	.27**	.49***	.47***	.51***	.23*	.28**	.27**	.49***	.35***	.68***	.64***	.52***	1
15. Overall Qeirat	.14	.20*	.68***	.71***	.76***	.31**	.31**	.46***	.72***	.53***	.80***	.90***	.80***	.83***

Note. * $p < .05$ ** $p < .01$ *** $p < .001$. BPMR = benefit-provisioning mate retention; CIMR = cost-inflicting mate retention.

Table 11

Regression Results Predicting Religiosity, Conservatism, and Mate Retention Behaviors (Study 5)

Predictor	Dependent variable			
	Religiosity	Conservatism	BPMR	CIMR
Sex (0=m,1=f)	-0.09 (.14)	-0.03 (.24)	-0.36** (.13)	-0.18 (.09)
Age	0.00 (.01)	0.01 (.02)	-0.02** (.01)	-0.01 (.01)
Education	0.01 (.06)	-0.01 (.10)	0.12* (.05)	0.03 (.04)
SES	-0.02 (.10)	0.32 (.17)	0.09 (.09)	0.14* (.06)
Marital status	0.07 (.16)	0.18 (.28)	0.23 (.15)	0.08 (.11)
Care	-0.07 (.13)	0.14 (.22)	-0.02 (.12)	-0.07 (.09)
Fairness	-0.07 (.13)	0.26 (.23)	-0.06 (.12)	0.07 (.09)
Loyalty	-0.15 (.12)	-0.38 (.21)	-0.03 (.11)	-0.02 (.08)
Authority	0.10 (.10)	0.19 (.17)	-0.01 (.09)	-0.00 (.06)
Purity	0.35** (.11)	0.27 (.18)	-0.07 (.10)	-0.04 (.07)
Honor values	0.20 (.16)	-0.27 (.28)	0.35* (.15)	0.19 (.11)
Qeirat values	0.33** (.10)	0.49** (.18)	0.21* (.09)	0.13* (.07)
Constant	0.71 (.99)	-1.89 (1.71)	1.39 (.91)	0.43 (.65)
R ²	.62	.38	.29	.24
Adjusted R ²	.58	.30	.19	.14

Note. * $p < .05$ ** $p < .01$ *** $p < .001$. BPMR = benefit-provisioning mate retention; CIMR = cost-inflicting mate retention.

Fig. 1. Violin plots of cultural differences in moral foundations (Study 2).

Fig. 2. Item-level network of moral foundations in Iran (Study 2).

Note. Positive correlations are represented as green edges and negative correlations are shown in red.

Item-level MFQ network in Iran

Fig. 3. Item-level network of moral foundations in the US (Study 2).

Note. Positive correlations are represented as green edges and negative correlations are shown in red.

Item-level MFQ network in the U.S.

Fig. 4. Foundation-level network of moral foundations in Iran (Study 2).

Foundation-level MFQ network in Iran

Fig. 5. Foundation-level network of moral foundations in the US (Study 2)

Foundation-level MFQ network in the U.S.