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Research

The cultural contagion of conflict

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Anecdotal evidence abounds that conflicts between two individuals can spread across networks to involve a multitude of others. We advance a cultural transmission model of intergroup conflict where conflict contagion is seen as a consequence of universal human traits (ingroup preference, outgroup hostility; i.e. parochial altruism) which give their strongest expression in particular cultural contexts. Qualitative interviews conducted in the Middle East, USA and Canada suggest that parochial altruism processes vary across cultural groups and are most likely to occur in collectivistic cultural contexts that have high ingroup loyalty. Implications for future neuroscience and computational research needed to understand the emergence of intergroup conflict are discussed.

Keywords: intergroup conflict; collectivism; parochial altruism

1. INTRODUCTION

This research is motivated by a simple but challenging question: when does a conflict between two individuals spread to involve a multitude of others? It is a question with clear relevance in a world where interpersonal conflicts can become contagious and quickly escalate into intergroup conflicts, often with tragic consequences for the observers turned combatants, their communities and future generations born into the strife.

Examples of conflict contagion abound. Take for example, an incident in January 2010 wherein a 13 year old member of the Benkard Barrio Kings gang killed a 17 year old member of La Eme gang in New York. Thereafter, tensions between the two gangs were high and multiple related fights erupted. In March 2010, a fight started between two members

of the gangs. By the time authorities reached the scene, 50 or so teenagers were involved [1]. The contagion of conflict can also be seen in the highly publicized incident that occurred when the Danish daily newspaper *Jyllands-Posten* published an article entitled ‘Muhammeds ansigt’ (‘The face of Muhammad’) which led to hundreds of protests and an escalation of violence across the Muslim world. More than 100 people were killed; the Danish embassies in Damascus, Beirut and Tehran were set aflame; death threats were issued around the globe for the cartoonists; Danish, Dutch, Norwegian, French and German flags were burned across the Arab and Muslim world; and a consumer boycott was organized in the Middle East (ME) [2]. The rapid spread of conflict across groups is indeed responsible for some of the world’s most tragic events, such as that which transpired in Rwanda. After Rwandan President Juvenal Habyarimana’s aeroplane was shot down in 1994, presumably by the Tutsi ethnic minority, Hutu citizens who were originally uninvolved in the conflict were thereafter persuaded by soldiers and police officers to

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One contribution of 12 to a Theme Issue ‘The biology of cultural conflict’.

take part in the collective revenge. In just 100 days, 800 000 Rwandans were killed, approximately 20 per cent of the nation's population [3].

Despite the clear theoretical and practical importance of understanding the contagion of conflict across cultural groups, there is a dearth of research on this topic. The above-mentioned examples raise a number of important questions. How do the values and worldviews inherent in different cultures affect the contagion of conflict? What processes account for why uninvolved observers engage in outgroup revenge even generations after a conflict has occurred? Can the very same mechanisms that account for vicarious outgroup revenge translate into the contagion of forgiveness? What is the potential evolutionary basis for different rates of outgroup revenge in different cultural groups given its inherent costs?

The diverse examples mentioned above share a common thread: individuals in all of these situations became willing participants in a conflict upon witnessing their ingroup member harmed by exacting revenge on the outgroup perpetrator or any member of the outgroup. They occurred in cultures where people are largely interdependent and the group is the basic unit with which people identify. As a consequence, harm to anyone in the group affects all group members and motivates vicarious revenge [4,5]. In each of these cases, the contagion of conflict is grounded within the cultural psychology of *parochial altruism*, the intersection of 'altruism—benefiting fellow group members at a cost to oneself—and parochialism—hostility toward individuals not of one's own ethnic, racial, or other group' ([6], p. 636). There has been some research showing that third party ingroup observers are willing to engage in punishment against outgroups in small-scale societies [7,8], and that such processes emerged and proliferated in the Late Pleistocene and Early Holocene in contexts in which there was competition for resources [6]. In addition, more recent research suggests that third party punishment against outgroups is even more prevalent in larger, more complex societies that characterize much of the world's population today [9]. In this article, we expand on this work and explore cross-cultural variation in parochial altruism within complex modern states and its relationship to the spread of conflict.

In what follows, we first discuss the cultural basis of parochial altruism. We argue that while parochial altruism is a human universal—it can occur in any culture—it is much more prevalent among what we now commonly call collectivistic societies when compared with individualistic societies [10–13]. We detail the key structural and psychological differences between these societies and how they can afford or constrain different rates of conflict contagion. We review some supporting qualitative evidence from interviews we conducted in a number of countries in the ME, Pakistan and the USA which suggest that conflict contagion is much more likely in collectivistic than individualistic groups. We discuss the potential evolutionary basis of this phenomenon, and future neuroscience and computational research that can

further shed light on the cultural transmission of conflict.

2. CULTURE AND THE CONTAGION OF CONFLICT

A fundamental issue that all societies must confront is the nature of the relationship between the individual and the group, which has been referred to as *self-emphasis* and *collectivity* [14], *Gesellschaft* and *Gemeinschaft* [15], *individualism* and *collaterality* [16], *agency* and *community* [17], and *independence* and *interdependence* [11]. While there are subtle differences in meanings of these terms, they all relate to a theme that contrasts the extent to which people are embedded in their groups or are autonomous individuals [10,12,13].

Research across the social sciences illustrates considerable variation in collectivism and individualism in large-scale modern nations. By far, collectivistic societies account for a much wider percentage of the world's population [18–20]. While diverse in their origins, they are found in many areas across the globe. In East Asia, collectivism has its historical roots in Confucius's moral–political philosophy as well as Buddhist teachings of sacrifice and the submerged self, whereas in the ME, collectivism has its historical roots in Islamic traditions and practices [21]. Collectivism can also be found in small-scale groups, such as gangs, tribes, organizations and lower socio-economic strata within societies [22]. By contrast, individualistic cultures constitute a much lower percentage of the world's population [18–20]. They are found most notably in the USA and western Europe, where individualism has its historical roots in the Enlightenment and Kantian notions of individual reason and free will [21]. Appendix A presents data across 61 societies in collectivism (towards one's ingroup) from the GLOBE research project and illustrates wide variation around the world in this cultural construct [23,24]. It is also important to note that people within societies can also vary on the degree to which they endorse individualistic or collectivistic worldviews [13], and regional or group differences can be found in many societies. For example, individualism tends to develop in the 'frontiers' of countries where separating from the group and being independent were adaptive behaviours [25].

Over the past two decades, research has documented important differences that exist between individualistic and collectivistic societies. Collectivistic societies tend to have low mobility (e.g. relationship, job and residential mobility) and thus it is very difficult to 'exit' the group and enter into other groups [26–30]. The lack of mobility and ability to exit the group has a number of important psychological implications. First, it creates very high levels of interdependence among members who need to depend on each other (e.g. strong sharing norms), particularly in contexts where there is a lack of formal and strong institutions to protect such individuals. Accordingly, there is a strong emphasis on values of conformity, meeting one's duties and obligations in one's social position, and collective responsibility [13,31–33]. Second, low mobility and inability to exit the group engenders a psychological

sense of self that is embedded in and attached to the social groups to which one belongs [11], and cultivates high levels of ingroup entitativity, or the sense that the group is bonded together in a coherent unit wherein members are thought to be substitutable or interchangeable [4,5,34,35]. Third, in contexts where there is low mobility and inability to exit the group, reputational concerns loom large; that is, maintaining one's own reputation and the reputation of the group is critical lest one lose significance in the eyes of others [32,33,36]. Altruistic behaviour (e.g. self-sacrifice) for the benefit of the group is particularly critical for maintaining one's reputation as a good group member [37]. Finally, the lack of ability to 'exit' the group easily also creates a very clear differentiation and high social distance between ingroups and outgroups, creating a greater sense of outgroup entitativity, or the belief that the outgroup is a unified whole, where individuals in the outgroup are also substitutable or interchangeable [4,5].

By contrast, individualism tends to develop in contexts that have much higher relationship, job and residential mobility, wherein individuals can exit and enter into new groups with much greater ease and frequency [26–30]. The high degree of mobility and ability to exit the group creates much lower interdependence among members who need not depend upon each other, particularly in contexts where there are strong formal institutions to protect such individuals. Rather than being defined by the group, the self is defined in terms of specific accomplishments, attitudes and abilities, and is largely perceived as detached from collectives [11]. Accordingly, in such cultural systems, the self is conceived to be a free agent (i.e. is entitled to do what it wishes) [36] and there is a strong emphasis on values of self-determination, freedom and individual responsibility [13,38]. Given high levels of mobility, people in individualistic cultures tend to be much less identified and attached to the group [26], and altruistic behaviour towards ingroup members is not as critical for maintaining one's reputation. The high degree of mobility in and out of groups also engenders lower perceptions of ingroup entitativity, and makes the psychological differentiation and distance between ingroups and outgroups much less pronounced when compared with collectivistic groups.

The above analysis has a number of important implications for the spread of conflict across cultures. It suggests that the psychological ingredients for parochial altruism are cultivated to a much greater extent in collectivistic than individualistic cultures, affording hostile behaviours against outgroups on behalf of one's ingroup when the right 'fuse' is ignited. We posit that in collectivistic groups, harm done to one member quickly becomes noticed and felt as if it were one's own [4,5]. That is, people in collectivistic cultures will be much more likely to notice ingroup harm and have much greater empathy for ingroup members' harm when compared with people in individualistic societies. Moreover, through substitutability, the harm committed against ingroup members becomes contagious and personally emotionally distressing (i.e. as if it happened to oneself). Accordingly, we expect that in

collectivistic societies, there is a much wider range of others' harm that is relevant to one's self. By contrast, in individualistic cultures, which emphasize individual responsibility and have low group entitativity, the harm done to others is less likely to be noticed and felt as one's own.

Furthermore, harm done to others should motivate altruistic third party punishment to a much greater extent among collectivists than individualists. Altruistic behaviour towards ingroup members is particularly critical for maintaining one's reputation as a good group member in collectivistic cultures. The punishing of outgroups on behalf of the group is also critical for maintaining the safety of ingroup members and warding off future attacks [7]. By contrast, in individualistic cultures, where the self is detached from others, where individuals are responsible for their own actions and not others, and where groups are seen as less entitative, harm to ingroup members will be less likely to engender altruistic revenge on the victims' behalf. Put simply, in individualistic cultures, altruistic behaviour towards others is not as critical for one's success given there is much less dependence on any particular group members. Moreover, given that hostility towards outgroups limits an individual's choice of partners in the long run [39], individualists should be less willing to engage in altruistic revenge behaviour given their high degree of mobility.

3. EMERGING EVIDENCE FROM THE FIELD

The above discussion suggests that harm is much more contagious in collectivistic when compared with individualistic societies. Here, we provide some initial evidence from the field that supports this notion. Collectivistic cultures are theorized to be more prone to conflict contagion because there is a stronger sense of entitativity within ingroups and out-groups. We examine this issue in the context of honour because in many cultures honour signifies a person's worth in the society that people strive to gain and protect [40–42]. There is a long tradition of research showing that having one's honour harmed or insulted can provoke psychological and behavioural reactions of retaliation against the transgressor [43]. In addition, anthropological work suggests that conflicts that stem from honour violations can spread to uninvolved individuals and across generations [44,45]. Psychological research also shows that honour threatening situations are likely to involve close others in certain cultures (e.g., Turkey as compared to USA) [46]. The importance of honour in many cultures and the anecdotal accounts of the contagion of honour-related conflicts make honour a highly suitable context for us to examine the psychological underpinning of conflict contagion across cultures.

Based on the theory discussed earlier, we expected that there would be a stronger interconnection between one's honour and the honour of others in the ME and Pakistan, which tend to be collectivistic societies, when compared with the USA, which is more individualistic ([10,24]; see Appendix A). Qualitative interviews across community samples in eight nations indeed suggest that the degree to which one's honour loss is interrelated to the loss of others' honour is much

stronger in the ME and Pakistan when compared with the USA, and that when the honour of one's ingroup member is harmed, people are much more affected by it and such effects spread through a much wider network of people in the ME and Pakistan than in the USA. After reviewing this qualitative evidence, we then turn to a discussion of potential evolutionary and neuroscientific underpinnings of conflict contagion in different cultural groups.

(a) *Qualitative interviews of harm*

(i) *Procedure and design*

We conducted qualitative interviews to examine whether there is evidence for greater contagion of harm in groups that are highly collectivistic when compared with those that are individualistic. Our research team developed protocols to examine whether and how one's honour loss affects others and how others' honour loss might affect them. Structured interviews were conducted across eight nations: Egypt, Iraq, Jordan, Lebanon, Pakistan, Turkey, United Arab Emirates (UAE) and USA. The interviews primarily took place in the following cities: Amman ($n = 23$), Beirut ($n = 23$), Baghdad ($n = 22$), Cairo ($n = 23$), Dubai ($n = 24$), Hyderabad ($n = 25$), Istanbul ($n = 19$) and Washington DC ($n = 23$).¹ In each city, data were gathered from community samples that varied in their age, gender, socio-economic status and rural–urban living experiences in each country.² A total of 182 participants were interviewed across all countries. All interviews, which took approximately one and a half to two hours, were conducted in the local language (Arabic, Turkish, Urdu and English) with locally trained researchers and were tape recorded for analysis. Interviews were then transcribed to text. A multicultural team of research assistants extracted responses verbatim in the local language and these responses were then translated into English for further analysis.

Our research methodology was based on Triandis's seminal study *The analysis of subjective culture* [47] and included word associations, antecedents and consequences of cultural constructs, and questions tapping into situational variation in constructs of interest. Most pertinent to this research, interviewees were asked to talk about the interrelationship between their honour and honour loss and others' honour and honour loss: we specifically asked: (i) Is your honour (sharaf) related to the honour (sharaf) of other people, and whom? How does something affecting your sharaf affect the sharaf of others? Can you give an example? (probe: how contagious is sharaf; how interrelated is sharaf and among whom?), (ii) Likewise, does the loss of honour of others affect your honour? (iii) Whose honour is most important to you? and (iv) How does it affect you? Can you give an example? The interviews were piloted extensively in each country prior to when they were implemented during the spring of 2009 and autumn of 2009.

(ii) *Analyses and results*

We conducted both qualitative and quantitative analyses of responses to these questions. For the latter, we used the linguistic inquiry and word count (LIWC) program developed by Pennebaker *et al.* [48] to examine the

extent to which people discussed a wide range of social entities that are involved in the contagion of honour loss. The LIWC program can process a large amount of text and provide information about percentages of words related to a number of linguistic properties (e.g. pronoun use, verbs and tense) and psychological processes (e.g. emotions, feeling, causality and tentativeness). The program is equipped with a word dictionary that will classify words from provided text into 30 categories but researchers can also create their own categories tailored to specific research questions [48].

We created an overall *social index dictionary* that included any relationships and group affiliations interviewees mentioned when individuals were probed about the relationship of their honour to others. To create this index, we first started with the existing LIWC categories for social entities (e.g. *family*, *friends*) and added social entities from other categories (e.g. co-workers, company and university from the *work* category; Islam and Christian from *religion* category). Because the LIWC dictionary was originally constructed using text generated in the USA, we expanded it to have cross-cultural applicability by adding social groups meaningful to interviewees (e.g. clan, Arab, names of all countries in the study). The resulting *social index* included family members, with both social entities in the nuclear family (e.g. spouse, parents, children and siblings) and social entities in the extended family (e.g. aunts, uncles, cousins, relatives and ancestors); non-family relationships such as friends, co-workers, classmates, neighbours and groups that compose an extended network of social ties (e.g. neighbourhood, village, tribe, company and university); and large-scale social identity groups, such as one's nationality, ethnicity, religion and abstracted groups, including civilization, society and culture. The *social index* dictionary is available from the first author.

In order to reliably infer psychological constructs underlying interviewees' responses, we set a minimal word requirement of 15 words. After excluding respondents who did not meet this criterion, we retained data from 150 respondents for analysis. The demographics for this final sample are listed in table 1. The LIWC program counted the frequency of each interviewee's use of the words in each social entity category and calculated the frequency as a percentage of the total word count of the interviewee's responses to all honour contagion questions. The word frequency percentages were then entered into SPSS for analysis. Table 2 shows the country means for the percentages for each social entity category. As an example, as table 2 shows, 11.17 per cent of the words discussed by Jordanian respondents in response to all honour contagion questions involved family members (e.g. parents and relatives), whereas by comparison, only 2.84 per cent of the words discussed by US respondents involved family members.

Both qualitative and quantitative analyses reveal a clear and re-occurring theme of the interchangeability of honour and contagious effect of honour harm across the ME and Pakistan when compared with the USA. A one-way analysis of variance on the social index (which includes overall family, extended family and social identity categories) across the two regions examined whether the Middle Eastern participants as a group mentioned more social entities than did Americans. This

Table 1. Demographics of interviewees by country.

country	mean age	gender	marital status	education	SES level	religion
Egypt (<i>n</i> = 18)	42.11 (10.82)	56% female, 44% male	11% single, 67% married, 17% other, 6% did not specify	6% below college, 50% college graduate, 22% trade school, 11% professional degree, 11% did not specify	6% low, 28% low middle, 11% middle, 39% upper middle, 0% upper, 17% did not specify	11% Christian, 78% Muslim, 11% did not specify
Iraq (<i>n</i> = 15)	46.53 (11.77)	53% female, 47% male	7% single, 80% married, 13% other	33% below college, 27% college graduate, 13% trade school, 13% professional degree, 13% did not specify	33% low, 0% low middle, 27% middle, 0% upper middle, 20% upper, 20% did not specify	0% Christian, 87% Muslim, 13% did not specify
Jordan (<i>n</i> = 16)	43.75 (11.62)	69% female, 31% male	19% single, 75% married, 6% other	44% below college, 56% college graduate, 0% trade school, 0% professional degree	6% low, 0% low middle, 56% middle, 38% upper middle, 0% upper	0% Christian, 94% Muslim, 6% did not specify
Lebanon (<i>n</i> = 17)	39.18 (11.18)	59% female, 41% male	41% single, 59% married, 0% other	65% below college, 18% college graduate, 6% trade school, 12% professional degree	29% low, 29% low middle, 18% middle, 12% upper middle, 12% upper	41% Christian, 53% Muslim, 6% other
Pakistan (<i>n</i> = 24)	34.33 (12.26)	48% female, 52% male	20% single, 76% married, 4% other	40% below college, 16% college graduate, 0% trade school, 40% professional degree, 4% did not specify	32% low, 12% low middle, 28% middle, 16% upper middle, 12% upper	4% Christian, 92% Muslim, 4% other
Turkey ^a (<i>n</i> = 17)	44.53 (13.02)	65% female, 35% male		41% below college, 29% college graduate, 0% trade school, 24% professional degree, 6% did not specify	0% low, 24% low middle, 47% middle, 24% upper middle, 6% upper	
UAE (<i>n</i> = 25)	38.48 (11.54)	50% female, 50% male	33% single, 54% married, 4% other, 8% did not specify	46% below college, 38% college graduate, 0% trade school, 13% professional degree, 4% did not specify	8% low, 0% low middle, 25% middle, 21% upper middle, 25% upper, 21% did not specify	0% Christian, 100% Muslim, 0% other
USA (<i>n</i> = 18)	36.50 (9.89)	56% female, 44% male	39% single, 44% married, 11% other, 6% did not specify	39% below college, 39% college graduate, 0% trade school, 17% professional degree, 6% did not specify	0% low, 17% low middle, 28% middle, 22% upper middle, 28% upper, 6% did not specify	78% Christian, 0% Muslim, 11% other, 11% did not specify

^aInterviewees in Turkey were not asked about their marital status and religious affiliation.

Table 2. Social index by country. Immediate family and extended family make up the overall family category. The social index is composed of the overall family, extended network and social identity categories. Social index is rounded to the nearest two decimal places. Standard deviations are listed in parentheses.

country	overall family	immediate family	extended family	extended network	social identity	social index
Egypt	7.08 (4.74)	5.84 (3.10)	1.24 (2.98)	0.85 (1.22)	0.32 (0.75)	8.25 (5.21)
Iraq	6.03 (5.67)	4.31 (3.88)	1.72 (2.82)	2.65 (3.71)	1.46 (1.72)	10.14 (6.48)
Jordan	11.16 (8.56)	9.79 (8.64)	1.37 (1.98)	0.43 (1.73)	0.07 (0.26)	11.67 (8.67)
Lebanon	5.44 (5.26)	5.20 (4.86)	0.24 (0.70)	0.06 (0.25)	0.67 (1.35)	6.17 (5.30)
Pakistan	6.47 (4.26)	5.60 (3.92)	0.87 (1.20)	0.87 (1.21)	0.30 (1.23)	7.64 (4.14)
Turkey	2.86 (2.46)	1.91 (2.48)	0.95 (1.37)	1.07 (1.20)	0.38 (1.16)	4.31 (3.13)
UAE	4.56 (2.17)	3.89 (2.09)	0.67 (0.65)	0.46 (0.51)	0.69 (1.34)	5.71 (2.70)
USA	2.84 (2.08)	2.80 (2.11)	0.04 (0.16)	0.34 (0.63)	0.17 (0.36)	3.34 (1.94)

ANOVA was highly significant, $F_{1,148} = 10.02$, $p < 0.01$, showing that the 'web' of people to whom one's honour is related is much wider in the collectivistic countries ($M = 7.53$, $s.d. = 5.55$) compared with the USA ($M = 3.34$, $s.d. = 1.94$). Examining the one-way analysis of variance on social index across the eight countries also revealed an overall main effect of country, $F_{7,142} = 5.63$, $p < 0.001$. As expected, respondents in the ME and Pakistan mentioned more people and social entities compared with the American respondents ($M = 3.34$, $s.d. = 1.94$), with interviewees from Jordan ($M = 11.67$, $s.d. = 8.67$) and Iraq ($M = 10.14$, $s.d. = 6.48$) being the highest, followed by respondents from Egypt ($M = 8.25$, $s.d. = 5.21$), Pakistan ($M = 7.64$, $s.d. = 4.14$), Lebanon ($M = 6.17$, $s.d. = 5.30$), the UAE ($M = 5.71$, $s.d. = 2.70$) and Turkey ($M = 4.31$, $s.d. = 3.13$).

A qualitative examination of the interviewees' responses corroborates the results from LIWC analyses. A number of interviewees from the ME and Pakistan described how one's honour is closely connected or interchangeable among members of one's ingroup, particularly among family members. In response to the question 'Is your honour (sharaf) related to the honour (sharaf) of other people, and whom', UAE interviewee (UAEM4C, Q1) explained, '[Yes], members of my family, my extended family, my people...their honour is related to mine because they are members of my family. What touches me touches them and what touches them touches me' (age 46, male, high socioeconomic status; SES). An interviewee from Egypt (EGY09, Q1) similarly commented on the interchangeability of honour between family members: 'Of course my honour is my husband's honour, my children's honour. All of us are one, the honour of any one of us is the honour of the other' (age 50, female, unspecified SES). Lebanon interviewee (LEBB9, Q1) likewise explained that 'The word honour in and of itself carries a non-individualist meaning...its effects are interchangeable among family members in what is related to honour' (age 51, male, low SES). UAE interviewee (UAEF3C, Q1) echoed these sentiments, saying 'If my honour is threatened it will affect all of my family, we will all be affected; my welfare is their welfare, what happens to me happens to them' (age 56, female, middle SES). Turkish interviewee (e202, Q1) put it simply 'I see theirs the same way that I see mine' (age 47, male, low to middle SES). Strong statements about the entitativity of honour were seldom found in the USA sample. Instead, they tended to differentiate

between one person's honour from another's. American respondent (MUS35, Q1) stated: 'Mmm. Well, it really shouldn't I guess, but if I were suddenly accused of some serious crime, people might look at my wife, a little less friendly. But yet, they shouldn't really, I mean, if it's my issue, not her's' (age 49, male, high SES). Another American (MUS48, Q2) interviewee explained 'The fact that I know them? Um it shouldn't. I would hope it wouldn't... I believe honour is each person, you gotta look at each person individually' (age 34, male, middle SES).

The interviews suggested that honour loss is much more 'contagious' in the ME and Pakistan beyond the immediate family, with ripple effects on the extended family, friends and social circles, the community, neighbourhood, tribe and organizations. In response to questions about how something affecting his honour would also affect the honour of others, Pakistan interviewee (PAK27, Q1) noted that 'if someone accuses me of wrongdoing, bribery, or dishonesty or something like that then that disgrace is not just mine because I am recognized through my family and my friends so I think that my disgrace will affect them as well. If I am treated with honour then they are treated with honour' (age 35, male, high SES). Likewise, Iraqi interviewee (IRQ12, Q1) stated, 'More than anything is his close relatives, brothers and cousins, and tribe those who relate to his honour then people who live nearby, for example the district where he resides, neighbours, his honour, and his reputation' (age 55, male, middle SES). Egyptian interviewee (EGY23, Q1) noted that 'Naturally, when my reputation is affected then all of their reputations are corrupted. If someone tries to say something about me even if it is wrong this is a terrible thing and this can harm me greatly in regards to my family, my work, and those who know me, my friends. It will affect many things greatly' (age 60, female, upper middle SES). Likewise, in Iraq, one interviewee (IRQ03, Q1) explained 'Of course it will affect on all of his clan not only his family because we live in a tribal society with values and traditions' (age 58, female, low SES). Commenting on the range of people's honour that is related to one's own, Pakistan interviewee (PAK14, Q1) stated 'Yes [that my honour is related to the honour of other people], the biggest thing is the extended family, our family, people at home, friends, and organization' (age 29, female, middle SES). In the USA, when a person's honour is related to another's,

it was generally restricted to very close others. An American interviewee (FUS11, Q1) revealed the small circle of people to whom her honour is related: 'My values and honour was probably established by my upbringing with my parents. My mom um, but it's not related to anybody else' (age 34, female, upper middle SES). American participants rarely discussed the honour being contagious beyond the immediate family.

Many in the ME and Pakistan also discussed that the contagion of honour loss can extend to the society, and to members of other social identity groups, including one's religion, gender, other generations, among other groups. For example, a Jordanian interviewee (JOR18, Q2) commented on the different spheres of honour loss: 'Firstly his personal honour, then his children's honour and his country's honour' (age 61, female, upper middle SES). Likewise, Pakistani interviewee (PAK09, Q1) explained, 'Here the issue of honour is such that when one Muslim's honour is harmed then it becomes an issue of all Muslims' honour. There are many incidents like this in history because all Muslims are one, so an issue faced by one is faced by all (age 56, male, middle SES)'. Turkish interviewee (n202, Q1) likewise stated that his honour extended beyond the closest circle to 'the society in which I belong' (age 59, male, upper middle SES). Lebanon interviewee (LEBB13, Q2) explained 'honour is connected in a big way to the family...and will affect you within the society' (age 26, female, lower middle SES). UAE interviewee (UAEM4U2, Q1) summed it up, 'We all live in one boat and one society; therefore a drowning person will affect the whole of social ties' (age 39, male, high SES).

The data suggest that group members are seen as entitative and interchangeable with each other, particularly in the ME and Pakistan. The close association between related others' honour suggests that when a person is harmed, other individuals in the group are harmed. Responses from the ME region and Pakistan indeed frequently alluded to the ripple effect of harm to other group members. Commenting on the contagion of insults, a Pakistani respondent (PAK04, Q1) explained, 'Now, if I take you somewhere with me and someone there insults me then you too will be insulted...you will also feel that you went there with me and along with me you too got insulted' (age 38, female, low SES). An interviewee from Lebanon (LEBB14, Q1) likewise noted that 'Honour is of course connected to the closest family members...if [the honour attack] is not confronted it spreads like an infection and I become ashamed' (age 32, female, middle SES). The theme of the contagion of harm was articulated by Egyptian interviewee (EGY20, Q1): 'I am a Qadwa, from my parents, their name would be shaken, my husband's name as well if something causes my honour to be insulted' (age 40, female, upper middle SES). Pakistani interviewee (PAK24, Q2) similarly noted that 'If someone's daughters are harmed then we will feel very sad about it that she has been disgraced, it's like we have been disgraced' (age 52, female, low SES). A Jordanian respondent (JOR10, Q2) described the long duration of honour loss saying that 'Honour is never forgotten and if it is harmed it can never be erased

(age 33, female, upper middle SES)'. American respondents discussed being less impacted personally by other's honour loss. As one interviewee (MUS48, Q4) noted, '[I would] probably feel bad for them, I would be upset, but I wouldn't lose my mind over that' (age 34, male, middle SES). Others likewise stated that while it would be distressing it wouldn't affect them personally. MUS38 (Q4) explained that 'it would affect me...but it wouldn't affect my honour, no' (age 40, male, middle SES). Interviewee FUS33 likewise explained that another's honour loss would 'not affect her personally' even if it would be upsetting to see (age 26, female, upper middle SES). Others noted that they would want to help others in honour loss situations (e.g. FUS37, Q4 'If they go through a hard time where they don't have honour at school anymore, I'm going to try and fix it'; age 39, female, high SES); yet honour loss of others appeared to be much less contagious to one's own sense of honour among American interviewees.

In summary, the data suggest that different individuals' honour are more intertwined in collectivistic groups when compared with individualistic groups. The data also suggest that harming a person creates a contagion effect that involves a large web of people in collectivistic groups. In sum, honour is interchangeable, especially among one's family and extended networks; and it is contagious, one person's honour harm is capable of harming others throughout the broader society.

4. GENERAL DISCUSSION

In this article, we have provided initial evidence for cultural variation in the contagion of conflict. To be sure, all research methods are flawed, and the data gathered have important limitations. Although our research is suggestive of greater importance of the contagion of harm in collectivistic cultures, it does not allow for confident conclusions regarding the causality of cultural world views. In the future, it is important to undertake experimental research that can provide greater confidence in the causal role of cultural worldviews within the process of intergroup conflict transmission. In addition, this study did not examine whether people with collectivistic world views will actually be more likely to engage in third party punishment on behalf of their ingroups. Research in our laboratory has begun to show preliminary evidence for this. For example, people who endorsed collectivistic world views, particularly those that emphasize duty and loyalty to the ingroup (i.e. commonly referred to as vertical collectivism; [37]) were more likely to report wanting to take revenge on behalf of a group member who was made to feel humiliated, and experimental data we collected suggest that people who endorse collectivistic world views are more likely to actually punish third party dictators who are unfair to their ingroup members. Future social science, computational and neuroscientific methods will be useful to corroborate and extend these findings.

Future research would benefit, for example, for examining why third party punishment would persist over generations. In other words, what adaptive value might it have for individuals and groups that are

highly collectivistic? Third party punishment is a puzzling phenomenon given its inherent costs. There are a number of potential mechanisms that could explain why this persists more in collectivistic than individualistic groups. As noted above, collectivistic groups have lower mobility and are much more closed to membership when compared with individualistic groups. Accordingly, people in collectivistic groups are likely to benefit much more from demonstrating altruistic revenge behaviour on behalf of their ingroup members in terms of their reputation for being loyal to the group when compared with people in individualistic groups. That is, costly punishment of outgroup members who harm ingroup members is expected to be materially and psychologically rewarded by ingroup members (social acceptance, respect, greater status in group and positions of power) more in collectivistic groups. Put differently, individuals attain reputation and status in their group [49] to the extent they defend ingroup members from outgroup harm that in turn gives them a selective advantage. However, in individualistic contexts where individual mobility is high, such reputational advantages may not be long lasting. Second, reciprocity could also be a related but distinct mechanism [50]. If an individual stands up for ingroup members, ingroup members will reciprocate when they are in need, which is particularly important in collectivistic groups that have low mobility. In essence, individuals can expect reciprocal protection of their interests from their group to the extent they harm outgroup members. Finally, costly punishment of outgroup members who harm ingroup members might be evolutionarily rewarding to the extent that it maintains group cohesion, group coordination and performance and thus group survival [51]. Greater group performance directly benefits the individual as the individual can only pass on their genes if his or her group is functional. Note that the individual does not have to intuit this process to benefit from the result. It is possible that individuals who defend ingroup members from outgroup harm occupy better performing groups which in turn may endow them with a selective advantage. Notably, these arguments also imply that the practice of third party revenge would be more beneficial to the individual in culturally collectivistic contexts where individual mobility is low and the fate of each individual is deeply intertwined with the experiences and actions of their group.

The above arguments pertain to individual-level selection mechanisms that might explain why costly revenge against outgroups is more likely in collectivistic groups. However, one could also argue that a group-level selection mechanism could be relevant as well [52]. According to this perspective, costly punishment of outgroup members who harm ingroup members could be evolutionarily rewarding for the ingroup gene pool, where the ingroup is able to enhance group-level fitness to the extent that many of its members self-sacrifice themselves for the good of the group. In this view, there need not be direct fitness benefits for the revenging individual in question for costly revenge behaviour; rather the benefits of such behaviours are distributed across the ingroup such that the ingroup gene pool and not the individual is the greatest

beneficiary. In essence, groups who have a high percentage of self-sacrificial individuals get to pass on their genes, thus giving their groups a selective advantage.

One means by which group-level selection of psychological traits related to intergroup conflict may occur is through the process of culture–gene coevolution. According to culture–gene coevolutionary theory, cultural traits, such as individualism and collectivism, have an adaptive benefit, either to the individual or group, and will be selected for via genetic selection whereby genes that facilitate the generation and transmission of these cultural traits will become more prevalent within a given group [53,54]. One tractable hypothesis is that costly punishment against outgroups may have evolved more in collectivistic compared with individualistic cultures owing to the adaptive nature of this cultural trait and may arise from genes that have been selected for within these cultural contexts to foster associated behavioural phenotypes, such as exerting pain on or withholding rewards from outgroup members, even at the expense to one's self.

Recent behavioural genetics studies have identified specific genes, such as the oxytocin receptor polymorphism (*OXTR*) and the catechol-*O*-methyltransferase (*COMT*), with behavioural phenotypes related to intergroup conflict contagion, such as empathy and altruistic behaviour [55–58]. Population allelic frequency variation is apparent in a number of genetic functional polymorphisms important to social behaviour [54,59]. For instance, in a typical Western population, the G allele of the *OXTR* and the VAL allele of the *COMT* [57] are typically associated with empathy and prosociality, respectively. Remarkably, a recent study by De Dreu *et al.* [60] found that participants who were given self-administered oxytocin showed increased ingroup bias or favouritism, demonstrating for the first time a causal biological mechanism between the neuropeptide oxytocin and ingroup favouritism, a precursor to intergroup conflict. Notably, variation in allelic frequency of the serotonin transporter gene (*5-HTTLPR*) has recently been associated with cultural traits of individualism and collectivism [54]. By extension, allelic frequency for both the G/A alleles of the *OXTR* gene and the VAL/MET alleles of the *COMT* gene are known to vary between Western and East Asian populations [61,62].

Hence, population variation in allelic frequency may similarly be associated with cultural traits, such as intergroup conflict contagion, although the functional significance of this population allelic frequency variation is not yet well understood and may arise owing to neutral as well as natural selection forces [54,59,63]. More specifically, increased costly punishment within collectivistic societies may arise from culture–gene coevolution, whereby population frequency variation of both the *OXTR* and *COMT* functional polymorphisms, which differ between collectivistic and individualistic nations, lead to differential selection or favourability of the cultural trait of costly punishment across cultures. Future cross-cultural behavioural genetics research is needed to better understand the mutual contributions of cultural and genetic factors underlying intergroup conflict.

Once cultural traits, such as ingroup favouritism or costly punishment towards outgroup members,

become adaptive within a given cultural context, culture–gene coevolutionary theory posits that mechanisms within the mind and brain are differentially shaped as a function of cultural and genetic selection [53,64]. Multiple genes are known to regulate brain regions typically associated with social cognition. Specifically, the *5-HTTLPR*, *OXTR* and *COMT* functional polymorphisms have previously been implicated in the regulation of neural transmission within brain regions associated with emotional empathy and prosociality, such as the amygdala and hypothalamus [65–68]. Recent imaging genetics studies have found increased amygdala response in S compared with L allele carriers of the *5-HTTLPR* [65], MET compared to VAL allele carriers of the *COMT* [66], as well as amygdala and amygdala–hypothalamic connectivity during the perceptual processing of faces in G compared with A allele carriers of the *OXTR* [67]. Interestingly, brain regions such as the amygdala have also previously been associated with ingroup favouritism, whereby people show increased amygdala response to fearful faces of their own cultural group member [69] and even to neutral faces of a group to which they have been randomly assigned [70]. Hence, cultural variation in intergroup conflict contagion may arise, at least initially, from cultural variation in neural response within brain regions previously associated with ingroup favouritism, such as the amygdala, whose function is regulated by processes of culture–gene coevolution [71]. Future cultural neuroscience research will enable us to better understand how cultural and genetic factors interact to shape psychological and brain function [71].

Future neuroscience research is needed to shed light on the evolutionary basis of collectivism and conflict contagion. Chiao *et al.* [72] discussed the importance of empathy in altruistic behaviour and, in particular, how culture affects discrete neuroanatomical circuits in prosociality towards one's ingroup member. Prosociality towards one's ingroup, in the current theory, also explains why people from certain cultural groups will engage in altruistic revenge on behalf of their ingroups. Accordingly, witnessing harm to one's ingroup might activate some of the same emotional empathy (anterior insula, anterior cingulate cortex) and cognitive empathy (medial prefrontal cortex) neural processes that are recruited when witnessing the pain of ingroup members, and these processes mediate the culture–altruistic revenge link. This suggests that we might find that the same processes which account for highly prosocial behaviour towards ingroups are also invoked in highly antisocial behaviour against outgroups. Likewise, mapping the neural processes that are activated when people actually choose to punish on an ingroup's behalf will further shed light on culture and conflict contagion. For example, collectivists who are punishing outgroups will have greater activity in the orbitofrontal context and ventral striatum, indicating that reward circuits are activated when punishing on behalf of one's ingroup. This work will not only contribute to the developing field of neuroeconomics which has yet to examine culture and altruistic punishment processes, but also contribute to the developing field of cultural selection.

We have focused exclusively on the contagion of conflict, yet it will be equally important in future research to examine the mechanisms through which *forgiveness*

spreads across networks and time. For example, the model outlined earlier raises the distinct possibility that the very processes that account for conflict contagion may also promote the spread of forgiveness. That is, based on ingroup and outgroup entitativity, there might be a greater willingness to accept apologies that are given by outgroup perpetrators and bystanders who are contemporaneous and distal to the conflict in collectivistic when compared with individualistic groups. As well, there may be a greater willingness to apologize on behalf of ingroup members (e.g. ingroup entitativity) to outgroup victims and outgroup bystanders (e.g. outgroup entitativity) in collectivistic groups when one's ingroup member has offended the outgroup. In individualistic cultures, lower ingroup and outgroup entitativity will render apologies to be much less contagious, just as in the case of conflict. The efficacy of collective and vicarious apologies in alleviating conflict in different cultural groups warrants future research attention.

In closing, this work advances work in the field of culture and conflict by identifying some mechanisms of the cultural transmission of conflict. Future work on cultural and conflict contagion will aid in understanding existing or historical conflict, and predicting conflict and its contagion in constructed, hypothetical, or existing scenarios. Ultimately, this area has the potential to provide the basis for predictive tools that might give insights on the development of cultural-based conflicts around the world.

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ENDNOTES

¹American participants were mainly from the northern USA and thus, the results may not apply to the south, midwest or west.

²In each country, we implemented a sampling plan where we gathered data from males as well as females from older and younger groups who also varied on high versus low socioeconomic status.

APPENDIX A

Table 3. Global variation in collectivism from the global leadership and organizational behaviour effectiveness research project [23].

country	collectivism ^a	cluster ^b
Philippines	6.36	A
Georgia	6.19	A
Iran	6.03	A
India	5.92	A
Turkey	5.88	A
Morocco	5.87	A
Zambia	5.84	A
Ecuador	5.81	A
China	5.80	A
Kuwait	5.80	A
Albania	5.74	A
Colombia	5.73	A
Mexico	5.71	A
Thailand	5.70	A
Indonesia	5.68	A

(Continued.)

Table 3. (Continued.)

country	collectivism ^a	cluster ^b
Egypt	5.64	A
Singapore	5.64	A
Guatemala	5.63	A
Russia	5.63	A
Taiwan	5.59	A
Zimbabwe	5.57	A
Nigeria	5.55	A
South Korea	5.54	A
Venezuela	5.53	A
Poland	5.52	A
Malaysia	5.51	A
Portugal	5.51	A
Argentina	5.51	A
Bolivia	5.47	A
Spain	5.45	A
Slovenia	5.43	A
El Salvador	5.35	A
Costa Rica	5.32	B
Hong Kong	5.32	B
Greece	5.27	B
Kazakhstan	5.26	B
Hungary	5.25	B
Brazil	5.18	B
Ireland	5.14	B
South Africa (Black sample)	5.09	B
Italy	4.94	B
Austria	4.85	B
Qatar	4.71	B
Israel	4.70	B
Japan	4.63	B
Namibia	4.52	B
Germany (former German Democratic Republic (GDR)-East)	4.52	B
South Africa (White sample)	4.50	B
France	4.37	B
Canada (English-speaking)	4.26	C
USA	4.25	C
Australia	4.17	C
England	4.08	C
Finland	4.07	C
Germany (former Federal Republic of Germany (FRG)-West)	4.02	C
Switzerland	3.97	C
French Switzerland	3.85	C
Netherlands	3.70	C
New Zealand	3.67	C
Sweden	3.66	C
Denmark	3.53	C

^aHigher scores indicate more collectivism (GLOBE ingroup collectivism, practice scale). Countries are ranked according to mean scores.

^bClusters are calculated according to the formula $2 \times \text{SED}$ (standard error of difference), where SED is a function of the reliability of the scale of interest (see House *et al.* [24] for more information).

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