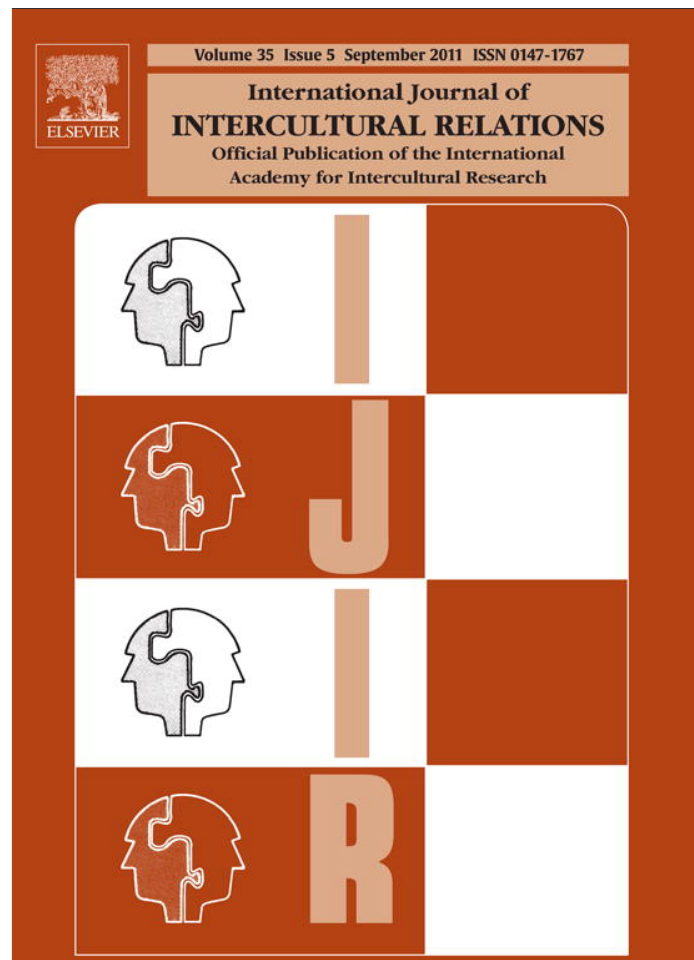


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journal homepage: www.elsevier.com/locate/ijintrelCooperation and competition in intercultural interactions[☆]David Matsumoto^{a,b,*}, Hyi Sung Hwang^{a,b}^a San Francisco State University, United States^b Humintell, LLC, United States

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ABSTRACT

Previous research has demonstrated that intercultural interactions produce less positive outcomes in cooperative behaviors in game play than intracultural interactions, yet no study to date has empirically linked these behavioral outcomes to cultural differences between the players. In this study stranger dyads played a modified version of Prisoner's Dilemma either with a partner from the same country or not. Intercultural dyads were less cooperative and more competitive, replicating previous findings. The behavioral outcomes for the intercultural dyads were reliably associated with differences in the dyad's home country scores on Hofstede's (2001) cultural dimension Power Distance, linking cultural differences between players and behavioral outcomes in intercultural game play.

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1. Introduction

The use of games such as Prisoner's Dilemma, Ultimatum, or the Trust Game has allowed researchers to study cooperation, competition, punishment, trust, and trustworthiness, and much knowledge has been generated in this area using these types of games. Within this literature, a large number of studies have demonstrated country, ethnic, or racial differences in game behavior (Henrich et al., 2001, 2006; Osterbeek, Sloof, & van de Kuilen, 2004), demonstrating that people of different cultures play these games differently.

Much less is known, however, about what happens in intercultural interactions. The cross-cultural literature does not necessarily inform us about what happens in intercultural situations because cross-cultural differences do not necessarily translate to behavioral differences in intercultural interactions. Individuals may adjust their behaviors according to the perceived similarity in cultural background with their partners, allowing for relatively more cooperative play. Or differences in cultural backgrounds may enhance differences in preferred modes of play, leading to less cooperation and more destructive play.

To date there have been only a handful of studies that have examined game behavior in intercultural interactions, and they provide important glimpses into the nature of cooperation in intercultural situations. To be sure differences in game rules and experimental procedures make direct comparisons very difficult and there is the potential that instructions are interpreted vastly differently in different cultures. With this caveat one can draw a tentative conclusion from the available literature: while a few studies have shown no differences between intra- and intercultural interactions (Johansson-Stenman, Mahmud, & Martinsson, 2009; Willinger, Keser, Lohmann, & Usunier, 2003), most

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* Corresponding author at: Department of Psychology, San Francisco State University, 1600 Holloway Avenue, San Francisco, CA 94132, United States. Tel.: +1 415 338 1114; fax: +1 510 217 9608.

E-mail address: dm@sfsu.edu (D. Matsumoto).

Table 1

Listing and description of studies examining game behavior in intercultural interactions.

Citation	Country A	Country B	Game	Findings
Bornhorst, Ichino, Schlag, and Eyal (2004)	Northern Europeans	Southern Europeans	Trust Game	Northern Europeans make smaller offers to Southern Europeans
Bornhorst et al. (2009)	Northern Europeans	Southern Europeans	Trust Game	Northern Europeans emerge with higher payoffs
Castro (2008)	UK	Italy	Standard Public Good Game (web based)	Ps in intercultural groups contributed less
Chuah, Hoffman, Jones, and Williams (2007)	Malaysian Chinese	UK	Ultimatum Game (face to face)	Ps in intercultural groups made lower offers
Cox et al. (1991)	Anglo Americans	Asian, Black, and Hispanic Americans	PD (face to face)	Members of all groups made more competitive than cooperative responses; minority groups had more cooperative orientations than the Anglos
Glaser, Laibson, Scheinkman, and Soutter (2000)	Students from Harvard intro econ class	Different race or nationality	Trust Game (face to face meeting and then separate rooms)	Ps paired with interracial or cross-national partner send back less money to their partner
Johansson-Stenman et al. (2009)	Muslims	Hindus	Trust game (envelope passing between households)	No differences in amounts offered or returned
Kuwabara et al. (2007)	Americans	Japanese	Web-based Trust Game	Japanese favor long-term commitment relations while Americans are more willing to explore new exchange opportunities
Takahashi et al. (2008)	Japan	China, Taiwan	Web-based Trust Game	Japanese less trusting and trustworthy, and less ingroup favoritism
Willinger et al. (2003)	France	Germany	Modified Trust game (web based)	No differences between intercultural and intracultural conditions
Yamagishi et al. (2005)	Japan	Australia	PD (web based)	Cooperative behavior was different in intercultural conditions, but was moderated by knowledge of the other's identity

studies have shown that intercultural interactions produce less cooperation and more competition than intracultural interactions (Table 1).

What is missing in the literature, however, is a demonstration that less cooperative and more destructive behaviors associated with intercultural interactions are empirically linked to *cultural* differences between the players. The source of differences between Brits and Italians (Castro, 2008), Japanese and Chinese (Takahashi et al., 2008), or Northern and Southern Europeans (Bornhorst, Ichino, Kirchamp, Schlag, & Winter, 2009) certainly appear to be cultural. But the findings have been demonstrated in quasi-experimental designs without the measurement of additional context variables that empirically link the observed differences to potential cultural sources. Without the measurement of such context variables, interpretations about the source of any observed differences to culture (or any other potential source) are empirically unjustified. Such interpretations commit the ecological or cultural attribution fallacy (Campbell, 1961; Matsumoto & Yoo, 2006).¹

What kinds of context variables may be appropriate to examine as indices of cultural differences between pairs of individuals from different cultures? Undoubtedly there are many possibilities involving the use of cultural dimensions, norms, values, beliefs, opinions, and the like. Data may be derived from the individual participants in the study or from external data sets that characterize the cultural backgrounds of the participants. At this point there really is no way of knowing which approach is better than another; thus we opted for a broad-based approach, creating indices of cultural differences in interacting dyads by examining the difference between the pair's individual country scores on Hofstede's (2001) well-known cultural dimensions (Individualism vs. Collectivism, Power Distance, Uncertainty Avoidance, Masculinity vs. Femininity, and Long vs. Short Term Orientation).² These data, therefore, originate externally to the individuals in the interaction and represent broad differences in value orientations in the cultures of which the individual participants were members. As these data did not originate in the individual participants in the study, they also avoid any possible conceptual or methodological overlap with personality differences. (And for good measure we included a personality scale to control for these individual-level effects.)

¹ One study actually included measures of cultural values on the individual level in order to attempt to link the cultural measure with performance outcomes (Cox, Lobel, & McLeod, 1991). Unfortunately none of the predicted group differences on the cultural values measure was significant and thus the empirical linkage could not be demonstrated.

² To be sure, Hofstede's (2001) dimensions have not been without considerable discussion, criticism, elaboration, and debate, and interested readers are referred elsewhere for these discussions (Ailon, 2008; Allik & Realo, 2004; Hofstede, 2009).

The purpose of this study was to examine whether differences in cooperative game behavior produced in an intercultural interaction are indeed linked to cultural differences between the players involved. US-born Americans played a modified Prisoner's Dilemma game in same-sex dyads in one of three conditions: with another American (Control Condition), with an international student (Intercultural Condition), or with another American but under stressful conditions (Stress Condition). Cultural difference scores for the dyads in the Intercultural Condition were created. We hypothesized that the Intercultural Condition would produce less cooperation and less positive behavioral outcomes than the Control Condition (Hypothesis 1), and that these behavioral differences would be linked to cultural differences in the dyad (Hypothesis 2).

2. Method

2.1. Participants

Players participated in a same-sex stranger dyad in one of three between-subjects conditions. The Control condition included 120 US-born-and-raised Americans (40 males, 80 females, mean age = 23.22). The Intercultural Condition included 41 US-born-and-raised Americans (20 males, 21 females, mean age = 23.23) and 41 Non-US-born-and-raised international students (20 males, 21 females, mean age = 25.27). The international students were all born and raised in another country (Argentina $N=1$, Brazil $N=1$, Bulgaria $N=1$, China $N=7$, Egypt $N=1$, Ethiopia $N=1$, Greece $N=1$, Hong Kong $N=2$, India $N=3$, Iran $N=1$, Japan $N=2$, Kenya $N=1$, Malaysia $N=3$, Mexico $N=1$, Nepal $N=1$, Nicaragua $N=2$, Peru $N=2$, Philippines $N=2$, Russia $N=3$, South Korea $N=3$, Spain $N=1$, and Taiwan $N=1$) and spoke a non-English language as their first and primary language. The Stress Condition included 90 US-born-and-raised Americans (44 males, 46 females, mean age = 22.26).

2.2. Game and conditions

2.2.1. Description

Participants played a modified Prisoner's Dilemma (PD) game. During the consenting procedures, they were instructed that they will be playing a game with a partner in which they will both be trying to increase their participation fee but that there was also the possibility that their participation fee decreased, that is, the final amounts they ended up with depended on their play. In reality this was a ruse and all participants were given a standard participation fee. Participant debriefing indicated that all participants believed the ruse.

Participants were told that they will be seated opposite each other at a table, that they could not talk with each other during the experiment, and that an Experimenter will be seated on one side of the table. Each participant was given 20 \$1 coins and a yellow and blue card. They were told that they had to decide whether to play the blue or yellow card within the time allotted for each play, that there would be a divider on the table that prevented the players from seeing the other side of the table, and that the following payoffs would occur at the end of each round according to the following schedule:

Player 1	Player 2	Player 1 Payoff	Player 2 Payoff
Blue	Blue	−\$4	−\$4
Blue	Yellow	+\$2	−\$2
Yellow	Blue	−\$2	+\$2
Yellow	Yellow	+\$1	+\$1

Detailed instructions and procedures differed across the conditions. Participants in the Control and Intercultural Conditions were both instructed to increase their original payoffs and that they would receive as their participation fee whatever they ended up with at the completion of play; each round lasted for 20 s. Participants in the Stress Condition were instructed that one participant had to win over the other and that the winner at the end would get all the coins from the loser while the losing participant would get nothing; each round lasted for 4 s. The pattern of results for the self-reported emotions and behavioral outcomes reported below suggest that the Stress condition worked as intended. A member of the research team delivered these instructions to the dyad in a consenting room. All participants acknowledged their understanding of the instructions and payoffs prior to being led to a separate experimental room, where they met an experimenter who was blind to the nature of the participant conditions.

Play began once the players and Experimenter were settled. The Experimenter placed the divider and announced the start of the round and pressed a stopwatch. At the end of each round the Experimenter announced “stop,” lowered the divider, and announced the payoffs. Players who lost money handed it to the Experimenter; players who gained money received it from the Experimenter. Once payoffs were completed, the Experimenter raised the divider and began the next round in the same manner. Play continued for 20 rounds, or until one of the players had lost all their money.

2.2.2. Dependent variables

A number of behaviorally based outcome variables were extracted from the plays and summed across both players to produce a score for each dyad:

- Total Yellow card plays. Playing the yellow card was indicative of cooperation, trust, and vulnerability. This was the sum of the yellow card plays for both players.

- Total Blue card plays. Playing the blue card was indicative of competitiveness, defection, or betrayal. This was the sum of the blue card plays for both players.
- Total # of Trials. Although twenty was the maximum number of trials allowed, a number of dyads finished earlier because one of the players ran out of money.
- Total Dollar Payoffs for the dyad. This was the sum of the final payoffs for both players.

In addition, we created the following ten individual play characterizations and summed them across both players to produce a score for each dyad:

- Cooperation (number of times a participant played Yellow after Yellow was played by both).
- Betrayal (number of times a participant played Blue after Yellow was played by both).
- Forgiveness (number of times a participant played Yellow after having played Yellow but Blue was played by the partner).
- Retaliation (number of times a participant played Blue after playing Yellow but Blue was played by the partner).
- Reparation (number of times a participant played Yellow after playing Blue but Yellow was played by the partner).
- Defection (number of times a participant played Blue after playing Blue but Yellow was played by the partner).
- Reconciliation (number of times a participant played Yellow after Blue was played by both).
- Stalemate (number of times a participant played Blue after Blue was played by both).
- Prosocial Acts (Sum of Cooperation, Forgiveness, Reparation, and Reconciliation).
- Antisocial Acts (Sum of Betrayal, Retaliation, Defection, and Stalemate).

2.3. Personality

All participants completed the Neo-Five Factor Inventory (NEOFFI; Costa & McCrae, 1989, 1992), a 60-item version of form S of the NEO-PI-R that provides a measure of the five factor model: Neuroticism, Extraversion, Openness to Experience, Agreeableness, and Conscientiousness. Convergent and discriminant validity is excellent. All α s were within the acceptable ranges for all scales were $>.70$ for all groups of participants.

2.4. Self-reported emotions

Participants self-reported their emotional states using 9-point scales anchored 0, not experiencing the emotion at all to 8, the most intense feeling of this emotion that a person could ever feel. The emotions rated included anger, contempt, disgust, fear, happiness, sadness, surprise, pride, shame, embarrassment, guilt, interest, and other (with participant completion). These scales were completed twice, once at the end of the consent procedures prior to going to the experimental room and a second time immediately after the completion of the experiment and the beginning of the debrief.

2.5. Geographic and Cultural Distance scores

For the Intercultural Condition only we computed Cultural Distance scores for each dyad by computing the absolute difference between the two players' native country scores on each of Hofstede's (2001) five cultural dimensions: Individualism vs. Collectivism, Power Distance, Uncertainty Avoidance, Masculinity vs. Femininity, and Long vs. Short Term Orientation. We also computed Geographical Distance scores by computing as the crow flies difference scores between San Francisco (the site of the data collection) and the capital city of each of the International Students' home countries.

3. Results

3.1. Differences in Behavioral Outcomes as a function of condition

The design of the study involved a nested independent variable (Condition) in which dyads were assigned to conditions and both members of the dyad had the same characteristics (i.e., both were same sex strangers in the same condition). Because of the potential for intercorrelations among the dependent variables between players within dyads, we analyzed data for the hypotheses using group as the unit of analysis, according to the recommendations by Kenny, Kashy, and Bolger (1998). We computed one-way ANOVAs on each of the dependent variables using Condition as the independent variable, and conducted post hoc comparisons using Scheffe tests. The Control Condition had a greater number of Total Yellow Plays, Total # of Trials, Total Dollar Payoffs, Total Cooperation, and Prosocial Acts than the Intercultural and Stress conditions, while there were no differences between the latter conditions. The Intercultural and Stress Conditions had a greater number of Total Blue Plays, Defection, and Antisocial Acts than the Control Condition (Table 2). The same trend was observed for Retaliation, which was significant in the one-way ANOVA but not significant in the Scheffe tests. Essentially the Intercultural Condition looked like the Stress Condition, producing worse behavioral outcomes than the Control Condition despite the Intercultural Condition having the same instructions and procedures as the Control Condition. Hypothesis 1 was supported.

Because the Intercultural Condition looked like the Stress Condition, we considered whether the American or international student participants played more or less cooperatively by computing one-way ANOVAs on each of the same dependent

Table 2
Differences in the Behavioral Outcomes as a function of condition.

Behavioral Outcome	Control	Intercultural	Stress	$F(2, 143)$	p	Scheffe results
Total Yellow Plays						
<i>M</i>	28.05	20.24	18.80	11.28	.000	Control > Intercultural = Stress
<i>SD</i>	10.64	11.85	10.10			
Total # of Trials						
<i>M</i>	18.55	16.24	16.40	5.47	.005	Control > Intercultural = Stress
<i>SD</i>	2.87	4.81	4.41			
Total Dyad Payoff						
<i>M</i>	48.10	32.78	23.98	11.01	.000	Control > Intercultural = Stress
<i>SD</i>	29.19	25.63	23.67			
Total Cooperation						
<i>M</i>	18.38	9.88	7.69	11.20	.000	Control > Intercultural = Stress
<i>SD</i>	14.09	12.01	9.76			
Total Prosocial Acts						
<i>M</i>	26.35	18.83	17.44	11.01	.000	Control > Intercultural = Stress
<i>SD</i>	10.45	11.47	9.73			
Total Blue Plays						
<i>M</i>	9.05	12.24	14.00	9.06	.000	Intercultural = Stress > Control
<i>SD</i>	7.02	5.35	5.20			
Total Defection						
<i>M</i>	1.48	2.68	2.89	8.06	.000	Intercultural = Stress > Control
<i>SD</i>	1.87	2.11	1.90			
Total Antisocial Acts						
<i>M</i>	8.75	11.66	13.27	7.99	.001	Intercultural = Stress > Control
<i>SD</i>	6.86	5.14	5.03			
Total Retaliation						
<i>M</i>	2.45	3.49	3.10	3.36	.037	
<i>SD</i>	2.52	2.43	2.56			
Total Betrayal						
<i>M</i>	3.02	2.66	3.53	1.37	Ns	
<i>SD</i>	2.57	2.47	2.34			
Total Forgiveness						
<i>M</i>	2.77	3.24	3.13	.611	Ns	
<i>SD</i>	2.27	2.66	1.96			
Total Reparation						
<i>M</i>	3.73	4.05	3.82	0.13	Ns	
<i>SD</i>	3.27	3.39	2.66			
Total Stalemate						
<i>M</i>	1.80	2.83	3.24	4.47	.013	Stress > Control = Intercultural
<i>SD</i>	2.57	2.55	2.56			
Total Reconciliation						
<i>M</i>	1.47	1.66	2.80	8.77	.000	Stress > Control = Intercultural
<i>SD</i>	1.72	1.26	1.96			

variables, using nationality (US vs. International) as the independent variable using the Intercultural Condition only. (These analyses used individuals as the units of analysis.) None of the tests was significant. Neither group played more or less cooperatively than the other.

We also considered whether plays started out cooperatively (or not) and then changed across the trials for the Intercultural Condition. We cross-tabulated nationality with Yellow or Blue card play, separately for each trial. (These analyses also used individuals as the units of analysis.) Of the 20 trials, only two produced statistically significant effects. Neither group changed across the trials either.

3.2. Relationships between Geographic and Cultural Distance with Behavioral Outcomes

We computed dyad-level correlations between the Geographic and Cultural Distance scores with each of the behavioral outcomes in the Intercultural Condition. Interestingly greater cultural distances on Power Distance were negatively associated with Total Yellow Plays, Total Dollar Payoffs, Total Cooperation, and Total Prosocial Acts, and positively associated with Total Blue plays, Total Defection, Total Reconciliation, and Total Antisocial Acts. Thus greater cultural distance on Power Distance was reliably associated with less positive behavioral outcomes. Geographic Distance was not significantly correlated with any behavioral outcome (Table 3). Hypothesis 2 was supported.

3.3. Controlling for the possible contribution of personality traits

We computed one-way ANOVAs on the five personality trait scores using Condition as the independent variable. (These analyses were conducted using individuals as units of analysis.) Only Openness produced a significant difference among

Table 3

Correlations between Cultural Distance, Geographic Distance, Difference in Openness and Behavioral Outcomes, Intercultural Condition only.

Behavioral Outcome	Cultural Distance on						
	Individualism vs. Collectivism	Power Distance	Uncertainty Avoidance	Masculinity vs. Femininity	Long vs. Short Term Orientation	Geographic Distance	Difference in Openness
Total Yellow Plays	.030	-.291*	.182	.150	.232	-.176	-.378*
Total Blue Plays	.075	.337*	.107	.092	-.267	.036	.200
Total Trials	.078	-.167	.284*	.236	.147	-.196	-.352*
Total Dyad Payoff	.022	-.319*	.107	.083	.289	-.172	-.334*
Total Cooperation	-.054	-.343*	.088	.038	.291	-.111	-.316*
Total Betrayal	.106	.045	.030	.205	-.342*	-.017	-.182
Total Forgiveness	.218	.217	.109	.064	-.072	-.290	-.100
Total Retaliation	.011	.141	.261	.208	-.040	.119	.106
Total Reparation	.110	-.006	.213	.251	-.137	-.001	-.146
Total Defection	.112	.418**	.074	-.099	.147	-.226	.231
Total Reconciliation	-.005	.285*	.056	.181	-.156	.047	.167
Total Stalemate	-.029	.155	-.100	-.062	-.262	.148	.251
Total Prosocial Acts	.026	-.289*	.187	.147	.232	-.178	-.379*
Total Antisocial Acts	.088	.328*	.114	.112	-.259	.029	.183

* $p < .05$.

** $p < .01$.

Table 4

Results of multiple regressions: cultural differences on power distance predicting Behavioral Outcomes controlling for Differences in Openness, Intercultural Condition.

Behavioral Outcome	Final R	$\beta_{\text{Difference in Openness}}$	$\beta_{\text{Difference in PD}}$
Total Yellow Plays	.456*	-.355*	-.246*
Total Blue Plays	.382*	0.180	.314*
Total Trials	.456*	-.328*	-.278*
Total Dollar Payoffs	.373*	-0.125	-.336*
Total Prosocial Acts	.457*	-.356*	-.244*
Total Antisocial Acts	.367*	0.166	.307*

* $p < .10$.

* $p < .05$.

conditions, $F(2, 289) = 3.337, p < .05, \eta_p^2 = .02$, and post hoc LSD analyses indicated that the Intercultural Condition produced significantly lower Openness scores than the other two conditions ($ps < .05$). To examine this effect further we computed one-way ANOVAs on the personality traits in the Intercultural Condition only, between US-born-and-raised Americans and International Students. Again Openness was the only trait to produce a significant effect, $F(1, 80) = 18.51, p < .001, \eta_p^2 = .19$; Americans ($M = 33.76, SD = 6.13$) had significantly higher scores on Openness than did the International Students ($M = 28.10, SD = 5.78$). We thus computed a difference score on Openness between the players in the Intercultural Condition and correlated it with the same behavioral outcome variables used with the Cultural Distance scores. Interestingly differences in Openness were negatively correlated with Total Yellow Plays, Total Trials, Total Dyad Payoffs, Total Cooperation, and Total Prosocial Acts (Table 3).

To examine whether Cultural Distance was associated with the behavioral outcomes even when differences in personality were accounted for, we computed dyad-level, simultaneous multiple regressions on selected behavioral outcomes, using both Cultural Distance scores on Power Distance and Difference in Openness scores as predictors. Cultural Distance was still significantly associated with Total Blue Plays, Total Trials, Total Dollar Payoffs, and Total Antisocial Acts, and marginally significant with Total Yellow Plays and Total Prosocial Acts (Table 4).

3.4. Self-reported emotions

We computed a Condition (3) \times Time (Pre vs. Post) \times Emotion (12) ANOVA on the self-reported emotion scale ratings. (These analyses used individuals as the units of analysis.) The three-way interaction was significant, $F(22, 2893) = 1.70, p < .05, \eta_p^2 = .013$. Simple effects analyses of Time indicated that for the Control Condition, ratings of fear and interest decreased from pre to post while ratings of happiness, surprise, and pride increased. The Stress Condition indeed looked like a stress condition as ratings of fear and interest decreased while ratings of anger, contempt, disgust, sadness, surprise, and shame increased (serving as an important manipulation check). For the Intercultural Condition we examined the simple effects of time for each emotion scale separately for Americans and International Students. For both groups, fear decreased while surprise increased from pre to post. But the American students also increased in contempt; the International Students had increases in happiness and pride and decreases in guilt. Thus although the behavioral data were strikingly similar for the Stress and Intercultural conditions, their emotional profiles were different.

4. Discussion

As predicted the Intercultural Condition produced less cooperation and more competition than the Control Condition, at comparable levels to the Stress Condition, even though the instructions and procedures were the same as the Control Condition. Within the Intercultural Condition there were no differences in the behaviors between the Americans and International Students or across the plays. Greater cultural differences, as defined by the difference in home country Hofstede scores on Power Distance, were associated with less cooperation and more competition, and these relationships existed above and beyond differences in personality traits between the players. Finally, there were interesting differences in self-reported emotions, with International Students experiencing more happiness and pride and less guilt than the Americans at the end of the play, while Americans experienced more contempt.

This study was not conducted without limitation, the first of which concerned the nature of the Cultural Distance scores computed. Difference scores of participants' home country scores on cultural dimensions are fairly abstract and diffuse and not strongly linked to the participants. On one hand they offer the advantage of not being tied to individual-level measurements that may be confounded by personality and to some extent offer an acceptable Type II error if non-findings exist. On the other hand it is not clear as to what the differences specifically refer to, rendering definitive conclusions problematic. Simply linking cultural data on the national level may be insufficient to assess the cultural attributes of group members (Bakir, Landis, & Noguchi, 2004). For example it is uncertain whether the differences refer to differences in attitudes, values, beliefs, norms, or even some implicitly held cognitions or behavioral patterns. Moreover the methodology did not allow for a separation of the relative standing of power distance and an examination of whether differences were consistent at different values of the dimension (e.g., did it matter whether both players were high or low on Power Distance?). Certainly other methods of creating cultural difference measures exist and should be explored in the future (interested readers are referred to Shenkar (2001), for a more fundamental critique of cultural distance measures).

A related issue concerns how the participants in the Intercultural Condition perceived the differences between each other. They might have seen some observable physical differences, but there is really no way to connect those physical differences with cultural differences (Bakir et al., 2004). Even if such differences are perceived early on in the experiment, it is not clear how those perceptions may have changed throughout the experiment. And it is not known whether those perceptions are automatic or the result of conscious, deliberate thought.

Another limitation of the study concerned potential explanatory variables that were not measured such as culturally-based, individual differences in economic expectations, the meaning of obtaining money from another person in a competitive environment, religiosity and religious differences, association with large-scale, market based economies, or background related to community size. Henrich et al. (2010) recently demonstrated that market integration and community size were associated with fairness and punishment across 15 diverse populations, suggesting a strong role for learned norms and social institutions that sustain fairness among strangers. Such variables may have been at play in our experiment and that possibility should be investigated in the future.

Another limitation had to do with the nature of the self-reported emotion variables. Self-reports can be unreliable and when obtained at the times they were, it is not exactly clear to what they refer. The pre to post changes in emotion, for example, may certainly reflect gross emotional changes due to the plays of the game; but they may also reflect emotional changes due to the fact that the game had ended or reactions to the other player or experimenter and not necessarily the game play. Also emotions assessed in the manner we did cannot reflect the transient, moment-to-moment emotional reactions that are likely to have occurred throughout game play. Thus although we know emotions changed, we do not know exactly why they changed, and the findings with regard to the self-reported emotional experience should be interpreted with this caveat.

Given these limitations it is interesting to speculate about the nature of the cultural differences that were associated with the behavioral outcomes associated. First, several of our findings ruled out some potential explanations of the results. For example it was possible that the Intercultural Condition was just perceived as stressful because of the need to interact with a stranger from a visibly different ethnocultural background. But the findings on the self-reported emotions indicated that participants in the Intercultural Condition did not appear to be stressed, or at least not in the same way as the participants in the Stress Condition, who were clearly stressed. The lack of cultural differences on the play characterizations and on the individual plays also argued against differential effects for one group in that condition, or for differences in strategies used between the two groups (although incorporating a condition of just international students playing with each other would be interesting).

It is surprising that differences on Individualism vs. Collectivism were *not* associated with the outcomes, given that individualism is often linked with competition and collectivism with cooperation (Triandis, 1995). Yet perhaps it makes sense that this dimension not be very salient in our experiment given that Individualism vs. Collectivism is primarily about the nature of self-ingroup relationships and all participants in our study were strangers in an unfamiliar setting. Given this context it may have been the case that cultural frameworks related to power, status, and hierarchy were more salient. Relatively fewer differences between the participants on Power Distance would reflect a more egalitarian framework for both, relegating each other more as equals and thus producing more cooperative behaviors. Relatively greater differences, however, may have reflected a more hierarchical, status or power driven framework for the participants (or at least for one of them), which may have facilitated more competitive behaviors in order to establish or clarify the hierarchical relationship between the two. Indeed this is what we found: less differences on Power Distance were associated with more cooperation and

less competition while greater differences on Power Distance were associated with less cooperation and more competition. Of course this interpretation is speculative and future research will need to address whether these status and power-related frameworks were indeed salient in the participants and whether such power dynamics are actually at work in these situations.

The results of the self-reported emotions provide some credence to this interpretation. If status and power dynamics are at work in the Intercultural Condition, then it may make sense that Americans increased in contempt at the end of the play while the International Students did not. Contempt is an emotion about hierarchy and status differences, and American students may have felt relatively more contempt because of a (perhaps unconscious) tension concerning power and status. The International Students, however, increased in happiness and pride and decreased in guilt. It is possible that the International Students had these positive emotional reactions in relation to the same tension related to power and status. These speculative interpretations are bolstered by the fact that on the average the International Students ended up with a slightly more money payoffs than did the Americans (albeit a non-significant difference).

These speculations are related to several extant literatures. Research in the tradition of Social Identity Theory (Tajfel & Turner, 2004) has shown that individuals discriminate more against perceived outgroup members and it could have been the case that participants in the Intercultural Condition perceived each other as outgroups (although the non-findings on Individualism vs. Collectivism may argue against this possibility). Alternatively the perception of an outgroup member may have been associated with uncertainty, thereby making more salient questions concerning identity (Hogg, 2007), which would have been more closely aligned with issues concerning power and status. Future studies may incorporate these broader paradigms in further investigating the mediating mechanisms for the effects we found.

Although not predicted, we also found that differences in player's levels of Openness were associated with some of the behavioral outcomes. In fact the regression analyses indicated that differences in Openness were better predictors of some outcomes (Total Yellow Plays, Total Trials, Total Prosocial Acts) but not others (Total Blue Plays, Total Dollar Payoffs, and Total Antisocial Acts). This finding also bolsters the interpretation above concerning cultural differences fueling the behavioral outcomes we observed, as Openness would reflect the degree to which individuals were receptive to engaging with differences. It was equally interesting that differences on the other personality traits were not related to the outcomes. Differential effects for different outcome variables raise the interesting possibility that personality and cultural variables may differentially influence outcome variables. These suggestions should be pursued in future studies examining the effects of personality by culture difference interactions on cooperative behavior.

These findings have important implications for future empirical work. As discussed in the Introduction, this study adds to a growing literature examining behavioral outcomes of intercultural interactions in cooperative tasks, demonstrating that these interactions can be costly. The present findings should spur the search for more precise cultural ingredients that drive these costly differences. Future studies involving differences in attitudes, values, beliefs, goals, and especially norms should be fruitful in uncovering the active cultural ingredients that drive the differences observed.

These findings also have important ramifications for practitioners. Knowing that intercultural interactions are difficult and potentially costly, especially among strangers as in our experiment, is important for many to recognize. Identifying the specific source of the differences can help practitioners to target those variables in order to avoid unnecessary conflict and to facilitate cooperation and harmony in intercultural interactions. This should be true in health-care interactions, negotiations, and business settings alike.

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