HOW INTERPERSONAL TRUST IS DEVELOPED FROM SOCIAL EXCHANGE:

POSSIBLE MECHANISMS AND CULTURAL DIFFERENCES

by

Yiming Jing

A dissertation submitted to the Faculty of the University of Delaware in partial fulfillment of the requirements for the degree of Doctor of Philosophy in Psychology

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POSSIBLE MECHANISMS AND CULTURAL DIFFERENCES

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ABSTRACT

A mediation model is proposed to explain the development of dyadic trust (i.e., trust between two partners) wherein the quality of affective exchange (i.e., exchange fulfilling people’s need for interpersonal affection) mediates the contribution of instrumental exchange (i.e., exchange fulfilling people’s pragmatic needs). Moreover, some cultural boundary-conditions of this model are hypothesized when comparing Western and Confucian cultures. In one cross-sectional survey (142 American undergraduates, and 126 Chinese undergraduates), daily relationship data supports the mediation model in both cultural groups. However, Chinese trust building is more affectively based compared to American trust building, whereas American trust building is more instrumentally based compared to Chinese trust building. Two experimental studies utilizing a repeated trust game (116 American undergraduates and 123 Chinese undergraduates) further validate a critical, temporal mediation mechanism of the model for trust development, showing that this mechanism works similarly for both cultural groups in the laboratory setting. Lastly, Chinese participants compared to American participants tend to exhibit greater partner trust and lesser inequity aversion towards unbalanced exchange outcomes, whether self-advantaging or self-disadvantaging, in the repeated trust game. This cultural difference can be attributed to different cultural norms of reciprocity. The findings have important practical implications for business and management processes concerning marketing, negotiation, conflict resolution, and workplace relationships.
Keywords: trust development, social exchange, interpersonal relationships, the trust game, cross-cultural differences
Chapter 1

INTRODUCTION

Trust is a resurgent construct in the social and behavioral sciences over the past two to three decades. To date, research across different disciplines has been conducted to understand trust (for a review, see Fehr, 2009; Kramer, 1999; Rousseau, Sitkin, Burt, & Camerer, 1998; Schoorman, Mayer, & Davis, 2007; Sheppard & Sherman, 1998). However, as criticized by Lewick, Tomlinson, and Gillespie (2006), “most research on trust has taken a static, ‘snapshot’ view; that is, it has approached trust as an independent, mediating, or dependent variable captured by measuring trust at a single point in time.” (p. 991) So, it is important for trust researchers to recognize that trust can develop over time within interpersonal relationships and develop testable models to assess its growth.

With regard to the extant research on trust development (e.g., Lewicki & Bunker, 1995; Mayer, Davis, & Schoorman, 1995; McAllister, 1995; Nicholson, Compeau, & Sethi, 2001; Rousseau, Sitkin, Burt, & Camerer, 1998; Shapiro, Sheppard, & Cheraskin, 1992; Williams, 2001), the present study aims to address two limitations. First, a gap between social exchange, personal relationships, and trust formation is observed, such that the interplay between resource exchange, interpersonal affection, and trust building has seldom been examined. However, such interplay is fundamental to social life, and has broad practical implications for business and management.
Secondly, there has been little research addressing the cultural constraints that might influence trust development (for some exceptions, see Bond & Forgas, 1984; Donney, Cannon, & Mullen, 1998; Fulmer & Gelfand, 2013; Jing & Bond, 2015a), despite considerable variability in levels of interpersonal trust observed across countries (e.g., Delhey, Newton, & Welzel, 2011; Inglehart, 1999; La Porta, Lopez-de-Silanes, Shleifer, & Vishny, 1997; Jing & Chen, 2014; Muethel & Bond, 2013; Zak & Knack, 2001). In particular, the role of cultural context in social exchange and trust building has yet to be well understood, even though this issue is practically important for cross-cultural business and management processes (e.g., cross-cultural marketing, negotiation, conflict resolution, etc.). The present study attempts to shed light on this matter.

To connect the dots between social exchange and trust development, I posit that the instrumental facet of social exchange (i.e., exchange fulfilling people’s pragmatic needs) and the affective facet of social exchange (i.e., exchange fulfilling people’s need for interpersonal affection) are two fundamental platforms for social agents to evolve trusting relationships. More importantly, based on some management theory (see Doney et al., 1998; Lewicki et al., 2006, for a review), I argue that the advancement of people’s affective exchange, as reflected by interpersonal liking or affection, is the “rocket-booster” that transforms interpersonal trust from a provisional and calculated process to a “passionate” faith (Williamson, 1993) that renders the trustor willing to assume social risks (see Jing & Bond, 2015b).

As a result, I develop a mediation model of interpersonal trust development, hypothesizing that interpersonal affection mediates the contribution of instrumental exchange to promoting or undercutting dyadic trust, viz., trust between two partners.
Furthermore, I argue that cultural norms of social exchange differ between Western and non-Western cultural groups, which in turn constrains the way in which interpersonal trust develops in different cultural contexts. These predictions are tested using survey and experimental data from the United States and from China.

**Social Exchange and Interpersonal Trust Development**

A fundamental drive for human social bonding is to satisfy one’s needs for *material* and *psychological* resources (Foa, 1971; Foa & Foa, 1980). In particular, people exchange resources via their social networks, following different norms and principles. An influential typology of these exchange rules is the framework where economic exchange (or exchange relationships) and social exchange (or communal relationships) are differentiated (e.g., Blau, 1964; Fiske, 1992; Mills & Clark, 1982; 1994; See Belk & Coon, 1993; Cropanzano, & Mitchell, 2005, for a review).

Essentially, economic exchange relies on market pricing and contractual enforcement which minimize uncertainty and risks. By contrast, social exchange relies on more informal and open-ended reciprocity which requires trust (see Belk & Coon, 1993; Colquitt, Scott, & LePine, 2007; Cropanzano, & Mitchell, 2005; Molm, Takahashi, & Peterson, 2000).

**Building Trust based on Instrumentality vs. Affection**

Unlike pure economic exchange, social exchange has both instrumental and expressive facets (see Cropanzano & Mitchell, 2005). As a result, interpersonal trust can be built based on instrumental exchange for material resources and services (*calculated trust*), and affective exchange for psychological resources and attachment.
(affective trust) (see Chen, Chen, & Meindel, 1998; Doney et al., 1998; Lewicki et al., 2006).

However, as commonly maintained in management theory, trust based on interpersonal affection is the higher, deeper, or more stabilized stage of trust building compared to trust based on instrumental calculation (e.g., Lewicki & Bunker, 1995; McAllister, 1995; Rousseau et al., 1998; Williams, 2001. For a review, see Lewicki et al., 2006). This is evident in the fact that calculated trust is subject to monitoring of the other party’s performances (Geyskens, Steenkamp, Scheer, & Kumar, 1996; Lewicki & Bunker, 1995; Williamson, 1993; Zaheer & Venkatraman, 1995; see Doney et al., 1998, for a review), and to incentive structures or deterrence mechanisms that prevent the partner’s opportunism (see Shapiro et al., 1992; Yamagishi, 1998). In contrast, affective trust is characterized by absence of monitoring, and the willingness to forgive the other party’s minor trust-violations (Williamson, 1993; Xue & Silk, 2012).

The Mediation Model of Interpersonal Trust Development

From the developmental perspective, cooperative relationships often begin with calculated trust, but may later expand to affective trust (see Lewicki et al., 2006, for a review). The critical process that transforms calculated trust to affective trust resides in the emergence of personal and close relationships (see Tooby & Cosmides, 1996; Williamson, 1993). In particular, affective exchange, such as self-disclosure, may gradually evolve from repeated, frequent and satisfying instrumental exchanges, which in turn bring “non-economic favors”, such as commitment and trust, into the initially short-term relationships (Lewicki et al., 2006; Rousseau et al., 1998; Zaheer & Venkatraman, 1995). Personal dialogues can also engender information about each party’s history and character, dissolving the cognitive barrier to trust (McAllister,
1995; Shapiro et al., 1992). Once the relationship becomes committed and intimate, the parties understand and internalize each other’s desires and intentions, and in turn establish an intrinsic and stabilized state of mutual trusting (see Lewicki & Bunker, 1995; Shapiro et al., 1992).

Taken together, as illustrated in Figure 1, I propose a mediation model wherein the quality of affective exchange, as reflected by interpersonal liking or affection, mediates the contribution of instrumental exchange to promoting or undercutting interpersonal trust (affective trust). On the other hand, instrumentality alone can also exert direct impact on trust propagation, but in a calculated way (calculated trust) (see Lewicki & Bunker, 1995; McAllister, 1995; Shapiro et al., 1992). It should be noted that interpersonal affection and affective trust, being once formed, would in turn modulate instrumental exchange, such that resource exchange becomes more altruistic (Williamson; 1993; Fiske, 1992; Xue & Silk, 2012; Zaheer & Venkatraman, 1995), involves less monitoring (Mills & Clark, 1994; Xue & Silk, 2012), and serves more expressive functions (e.g., via gift exchange, see Belk & Coon, 1993), in close and trusting relationships compared to distant and provisional relationships.
Instrumental exchange refers to social exchange aiming at material resources and services, whereas affective exchange refers to social exchange aiming at psychological resources and attachment. This model depicts an indirect path whereby instrumental exchange promotes trust via enhancing affective exchange and affectively based trust building. Additionally, this model also posits a direct path whereby instrumental exchange promotes trust in a calculated way (instrumentally based trust building). However, and not illustrated in this figure, interpersonal affection and affective trust, being once formed, would modulate instrumental exchange, and make it more communal-oriented.

**The Role of Cultural Context**

Past research has revealed considerable cultural variations in cooperation and trust (e.g., Delhey et al., 2011; Gachter, Herrmann, & Thoni, 2010; Henrich et al., 2001; Jing & Bond, 2015a; for a review, see Balliet, Mulder, & Van Lange, 2011; Chen et al., 1998). One possible mechanism leading to such cultural differences may reside in divergent cultural norms regulating people’s sociality (e.g., Chen et al., 1998; Fiske, 1992; Fukuyama, 1995; Jing & Chen, 2014; Triandis, 1995). In particular, Western culture holds an individualistic world-view, positing that the self is a unique and bounded entity separate from others. By contrast, non-Western culture, especially Confucian culture, holds a relational-oriented world-view, positing that the self is
deeply embedded in its relations to others (see Ho, 1998; Hofstede & Bond, 1988; Hsu, 1981; Markus & Kitayama, 1991; Triandis, 1995; Yum, 1988). As a result, Western culture and Confucian culture endorse different norms for social exchange, which in turn may constrain the way people build interpersonal trust.

The Contribution of Instrumentality and Affection

Under a Western individualistic world-view, the default strategy for social exchange is a “market economy” rationality whereby the actor’s self-interest is enhanced (see Chen et al., 1998; Jung, Hall, Hong, Goh, Ong, & Tan, 2014; Westwood, Chan, & Linstead, 2004). Based on this conceptualization of rationality, social interdependence exists as an instrument for achieving personal goals, and instrumentality is the major criterion for people to engage in cooperative relationships (Chen et al., 1998; Doney et al., 1998). When emotional bonding is not the primary goal for sociality, it is common for Westerners to carry out cooperation on an economically rational, calculated basis (Wang, 2007; Yum, 1988), and to avoid blending one’s instrumental ties with affective considerations (Chua, Morris, & Ingram, 2009; Sanchez-Burks, 2002).

However, under the Confucian relational-oriented world-view, the default strategy for social exchange is a “moral economy” rationality whereby the actor’s social connectedness is enhanced (see Jung et al., 2014; Westwood et al., 2004). Based on this conceptualization of rationality, character development via social interdependence is the purpose of a person’s existence, and being responsive to other people’s needs is his or her duty (see King & Bond, 1985; Markus & Kitayama, 1991; Yang, 1995). Pure instrumental or economic exchange, however, is seldom encouraged by the Confucian doctrine (Hwang, 1987; Wang, 2007; Yum, 1988).
Instead, it is interpersonal affection, whether spontaneous or normative, that guides social transactions (see Hwang, 1987; Wang, 2007; Yang, 2001). This is why even for building business connections, persons from Confucian-influenced countries tend to make considerable “emotional investments” (see Pearce & Robinson, 2000; Wang, 2007; Yang, 1994).

Therefore, the contributions of instrumentality and interpersonal affection in building trust may differ in the Western context vs. Confucian context. Specifically, I predict that:

_Hypothesis 1a. Instrumentality contributes more to developing interpersonal trust among Westerners (e.g., Americans) than among East Asians (e.g., Chinese)._  

_Hypothesis 1b. Interpersonal affection contributes more to developing interpersonal trust among East Asians (e.g., Chinese) than among Westerners (e.g., Americans)._  

Balanced Reciprocity vs. Altruistic Reciprocity

The Western market economy versus the Confucian moral economy also engenders different cultural modalities for reciprocity. In the Western context, the default reciprocity norm is _balanced_ reciprocity, which provides economically rational transactors with short-term balance, and eliminates their social indebtedness (see Wang, 2007; Westwood et al., 2004; Yeung & Tung, 1996; Yum, 1988). In social exchange, Westerners tend to follow the equity rule (i.e., payoff is in proportion to individual contribution) (see Adams, 1965), and are averse to socially over-benefiting (e.g., Uehara, 1995) or under-benefiting (e.g., Sprecher, 2001) from the transaction.

On the contrary, in the Confucian context, the default reciprocity norm is _altruistic_ reciprocity, which produces short-term imbalance benefiting the recipient,
and sustains social indebtedness (see Chen & Chen, 2004; Hwang, 1987; Wang, 2007; Yang, 1994; Yeung & Tung, 1996; Yum, 1988). In social exchange, East Asians tend to repay their partners’ favors generously (see Chen & Chen, 2004; Hwang, 1987; Jung et al., 2014; Wang, 2007), and to defer their partner’s repayment to some unspecified future (see Chen & Chen, 2004; Leung & Bond, 1984; Yang, 1994; Yum, 1988).

As a result, I further predict that:

**Hypothesis 2a:** Balanced reciprocity promotes interpersonal trust more effectively for Westerners (e.g., Americans) than for East Asians (e.g., Chinese).

**Hypothesis 2b:** Altruistic reciprocity promotes interpersonal trust more effectively for East Asians (e.g., Chinese) than for Westerners (e.g., Americans).

There is some indirect evidence to support these predictions. For instance, Deluga (1994) revealed that the equity or “fairness” of leader-member exchange was positively associated with American employees’ trust of their supervisor, but unbalanced, altruistic reciprocity was considered a critical strategy for developing trust in Chinese workplace (see Chen & Chen, 2004; Wang, 2007). Furthermore, Buchan, Croson, and Dawes (2002) found that Chinese participants reciprocated more generously in a trust game than did American participants. This may suggest that altruistic reciprocity is a more practiced strategy for building trust in the Confucian context than in Western context.

**The Current Study**

Three cross-cultural studies are conducted to validate the proposed trust development model and test its cultural boundary conditions (hypothesis 1 to 2). In Study 1, American and Chinese participants complete survey questionnaires, reporting
their relationship qualities, including instrumentality and affection, and their trust with regard to various partners from their daily lives. The correlational linkages between instrumentality, affection, and trust are tested; cultural differences in these linkages are compared.

In Study 2a and 2b, I test a critical, temporal mechanism of the mediation model in a laboratory setting. Specifically, these laboratory studies validate the temporal linkages that a satisfactory instrumental exchange generates interpersonal affection, which in turn promotes interpersonal trust. To test this mechanism, I design a repeated trust game, and measure trustors’ responses over time. Additionally, I manipulate trustees’ reciprocation strategies in the game to mirror altruistic, balanced, and egoistic reciprocations. American and Chinese trustors’ trust-related responses to each of these manipulated strategies are compared.
Chapter 2

STUDY 1

In this study, two questionnaires were developed, assessing people’s relationship qualities, including instrumentality and affection, and trust in partner, in U.S. and in China. American and Chinese undergraduates’ relational experience was sampled from three types of their daily relationships: Relationships with close others, relationships with acquaintances, and relationships with distant others. This cross-sectional, relational data was used to test the mediation model, and its cultural differences.

Method

Participants

American participants were 142 undergraduates (70 males) from a university in the mid-Atlantic area, whose ages ranged from 18 years to 22 years ($M_{age} = 19.00$ years, $SD = 1.01$). Chinese participants were 126 Chinese undergraduates (63 males) from a university in Central China, whose ages ranged from 17 years to 25 years ($M_{age} = 19.75$ years, $SD = 1.71$). Both American and Chinese participants completed this survey in exchange for research credit in their psychology courses.

Procedure

Participants completed an online survey assessing their relationship qualities and trust with regard to three different targets from their daily lives: A Close Other
with whom they interact most frequently, an *Acquaintance* with whom they have some interaction, and a *Distant Other* with whom they interact least frequently. Participants first specified each target based on their experience, and then answered the questionnaire battery. The order of targets was randomized between participants. Survey materials were originally written in English, and were translated into Chinese by bilingual researchers.

**Key Measures**

**Relationship Quality Scale (RQS)**

This scale was developed to measure a person’s relationship qualities with his or her partner. Three subscales were originally designed, including instrumentality, affection, and obligation (sample item: “I feel the responsibility to promote the well-being of this person”). Items were adapted from the extant American and Chinese relationship quality scales (Jing, 2009; Lau, 2005; Sternberg, 1997). Participants responded to each item on a 9-point scale (1=completely disagree, 9=completely agree) with regard to each partner. Mean scores were averaged across items for each subscale.

Exploratory analysis, however, indicated that subscales of affection and obligation were highly intertwined, suggesting a common affective component. Given my research focus, the RQS was shortened, and only instrumentality and affection

---

1 Although some other scales also have items relevant to relationship instrumentality (e.g., The Relationship Rating Form, Davis & Latty-Mann, 1987; The Network of Relationship Inventory, Furman & Buhrmester, 1985; The Relationship Quality Interview, Lawrence, Brock, Barry, Langer, & Bunde, 2009; The Quality of Relationship Inventory, Pierce, Sarason, & Sarason, 1991), they lack the reciprocal perspective that my items possess (see Appendix A).
subscales were retained (see Appendix A for final items). Cronbach’s alphas for the affection subscale (4 items) were .64 (close others), .90 (acquaintances), and .90 (distant others) for Americans, and .87 (close others), .90 (acquaintances), and .94 (distant others) for Chinese. Cronbach’s alphas for the instrumentality subscale (4 items) were .57 (close others), .70 (acquaintances), and .77 (distant others) for Americans, and .68 (close others), .57 (acquaintances), and .63 (distant others) for Chinese.

Using Mplus 7.0 (Muthen & Muthen, 2012), Confirmatory Factor Analysis (CFA) for repeated measures (see Little, 2013) confirmed the two-factor structure of the RQS across all three relationships (i.e., with close others, with acquaintances, and with strangers), in both the American sample ($\chi^2 = 335.68, df = 213, CFI = .94$, RMSEA = .06, SRMR = .06) and the Chinese sample ($\chi^2 = 389.61, df = 213, CFI = .90$, RMSEA = .08, SRMR = .08) (for cut-off values, see Hooper, Coughlan, & Mullen, 2008; Hu & Bentler, 1999).

A multiple group CFA for repeated measures was then performed to examine the cross-cultural measurement invariance (see Chen, 2008) between the two cultural groups. The measurement model achieved configural invariance ($\chi^2 = 725.29, df = 426, CFI = .92$, RMSEA = .07, SRMR = .07), and partial metric invariance ($\chi^2 = 775.88, df = 443, CFI = .91$, RMSEA = .07, SRMR = .08) as well as partial scalar invariance ($\chi^2 = 809.65, df = 455, CFI = .91$, RMSEA = .08, SRMR = .08) (for cut-off values, see Chen, 2007). The lack of metric and scalar invariance may cause bias in cross-cultural comparisons of regression slopes and means (see Chen, 2008), but a
supplemental analysis indicated limited influence of this measurement non-invariance.

Dyadic Trust Scale (DTS)

This scale was developed to measure a person’s trust in his or her relational partner. Three subscales were originally constructed, including trust in the partner’s intentions, trust in the partner’s competence (sample item: “I am confident in this person’s ability to keep his/her word”), and trust in the partner’s dependability (sample item: “If this person promised to do me a favor, I am certain he/she would follow through”). Items were partly adapted from the extant Western trust scales (Johnson-George & Swap, 1982; Rempel, Holmes, & Zanna, 1985). Participants responded to each item on a 9-point scale (1=completely disagree, 9=completely agree) with regard to each partner. Mean scores were averaged across items for each subscale.

Exploratory analysis revealed that these three subscales are highly correlated, suggesting a uni-dimensional construct. Accordingly, I shortened the DTS, and only retained the subscale of trust in the partner’s intentions (see Appendix A for final items). Cronbach’s alphas of this shortened DTS (4 items) were .79 (close others), .84 (acquaintances), and .88 (distant others) for Americans, and .93 (close others), .83 (acquaintances), .91 (distant others) for Chinese.

____________

2 For my reported cross-cultural findings, I compared measurement estimates, including latent means and regression slopes, with and without imposing cross-cultural scalar invariance. I only detected one potential comparison bias, reported in the Result section.
CFA for repeated measures confirmed the one-factor structure of DTS across all three relationships, in both the American sample ($\chi^2 = 35.07, df = 39, CFI = 1.00, RMSEA = .00, SRMR = .036$), and the Chinese sample ($\chi^2 = 58.71, df = 39, CFI = .98, RMSEA = .063, SRMR = .046$).

Multiple group CFA for repeated measures then confirmed the configural invariance ($\chi^2 = 93.32, df = 78, CFI = .99, RMSEA = .04, SRMR = .04$), the metric invariance ($\chi^2 = 105.23, df = 87, CFI = .99, RMSEA = .04, SRMR = .05$), and the scalar invariance ($\chi^2 = 132.96, df = 96, CFI = .98, RMSEA = .05, SRMR = .05$), between the two cultural groups. As a result, DTS scores are cross-culturally comparable in this study.

**Criterion Measures and Other Relational Information**

To validate these newly developed scales, the following criterion measures were also included: The Inclusion of Other in the Self (IOS) scale (Aron, Aron, & Smollan, 1992), the dictator game, and the one-shot trust game (Berg, Dickhaut, & McCabe, 1995). Analyses confirmed the criterion validity of the relationship quality scale and partner trust scale, based on their expected associations with these criterion measures. For details, please see the supplemental materials in Appendix D.

In addition, Participants were asked to provide each target person’s demographic information (e.g., age, gender, ethnicity, religion, etc.), as well as their relationship duration (in years and months) and interaction frequency (1=diary basis, 2=weekly basis, 3=monthly basis, 4=several times a year, 5=on average less than one time per year. Scores were recoded so that higher values indicated greater frequency). Relationship duration and interaction frequency for all three relationships are reported
in the Result section, as a way to understand the characteristics of relationships sampled in this study.

Results

Descriptive Statistics

Table 1 displays means and standard deviations for the relationship quality and trust measures, separated by social distances and by cultural groups. Notably, the pattern in the table indicates that both Americans and Chinese interact more closely with their closer partners than with more distant ones, either at the instrumental level or at the affective level.
Table 1  Means and Standard Deviations for Relationship Quality and Trust Measures in Study 1, Separated by Social Distances and by Cultural Groups

<table>
<thead>
<tr>
<th></th>
<th>Duration</th>
<th>Frequency</th>
<th>Affection</th>
<th>Instrumentality</th>
<th>Trust</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>U.S.</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Close others</td>
<td>7.11</td>
<td>4.72</td>
<td>7.57</td>
<td>6.86</td>
<td>8.16</td>
</tr>
<tr>
<td></td>
<td>(7.05)</td>
<td>(.61)</td>
<td>(1.46)</td>
<td>(1.58)</td>
<td>(1.27)</td>
</tr>
<tr>
<td>Acquaintances</td>
<td>2.90</td>
<td>4.09</td>
<td>3.47</td>
<td>5.03</td>
<td>5.92</td>
</tr>
<tr>
<td></td>
<td>(5.25)</td>
<td>(1.00)</td>
<td>(2.17)</td>
<td>(1.71)</td>
<td>(1.95)</td>
</tr>
<tr>
<td>Distant others</td>
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<td>(2.38)</td>
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<td>Standard Deviation</td>
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<td>-----------</td>
<td>--------------------</td>
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<td>Close others</td>
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<td>(1.64)</td>
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<td></td>
<td>7.90</td>
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<tr>
<td>Acquaintances</td>
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<td>3.26</td>
<td>(1.33)</td>
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<td>(2.08)</td>
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<td>5.36</td>
<td>(1.77)</td>
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</tr>
<tr>
<td>Distant others</td>
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<td>(9.78)</td>
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<tr>
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<td>2.63</td>
<td>(1.39)</td>
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<td>(2.51)</td>
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<td>4.62</td>
<td>(1.74)</td>
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<td></td>
<td>4.87</td>
<td>(2.29)</td>
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</tr>
</tbody>
</table>

*Note.* Standard deviations are in parentheses. Relationship duration is in years. Greater scores of frequency indicate more frequently interacted relationships.

**Affection Mediates the Linkages from Instrumentality to Trust**

**General Model**

Using Mplus 7.0, the proposed model of trust development was tested across both cultural groups. In particular, a mediation model was estimated where the linkages from instrumentality to dyadic trust are mediated by affection. This model for different relationships was estimated simultaneously, taking into account the dependency of repeated measures. The multiple group analysis indicates that the hypothesized path structure fit the data well in both cultural groups, $\chi^2 = 33.59, df =$
36, CFI = 1.00, RMSEA = .00, SRMR = .04. As illustrated in Figure 2, the contribution of instrumentality to developing trust was partially mediated by affection, except for a full mediation observed within Chinese acquaintance relationships.
Study 1 U.S.

Indirect effects: Close others = .14 (CI: .04-.24), $p < .05$; Acquaintances = .23 (CI: .16-.30), $p < .001$; Distant others = .19 (CI: .09-.29), $p < .01$.

Study 1 China

Indirect effects: Close others = .31 (CI: .17-.45), $p < .001$; Acquaintances = .27 (CI: .16-.38), $p < .001$; Distant others = .35 (CI: .26-.44), $p < .001$. 
The Estimated Mediation Model of Dyadic Trust Development in Study 1. Coefficient estimates (standardized $\beta$s) for each path are displayed for close others, acquaintances, and distant others, respectively. For the path from instrumentality to trust, coefficients in parentheses were estimated before the mediator was included. Standard errors and the 90% confidence intervals of indirect effect were generated by Bootstrapping with 1000 repetitions. Partial mediations were observed in both cultural groups, except for a full mediation observed within Chinese acquaintance relationships. *$p < .05$. **$p < .01$. ***$p < .001$.

Cultural Differences

Using Mplus 7.0’s multiple group analysis, the magnitude of indirect effects and path coefficients were further compared between the two cultural groups. Consistent with hypothesis 1a, the direct effects of instrumentality on developing trust were stronger within American relationships than within Chinese relationships (close others: b difference = -.40, CI = -.58 to -.25, $p < .001$; acquaintances: b difference = -.43, CI = -.65 to -.23, $p < .01$; distant others: b difference = -.39, CI = -.58 to -.16, $p < .01$).

Consistent with hypothesis 1b, associations between affection and trust were stronger within Chinese relationships than within American relationships (close others: b difference = .52, CI = .33 to .70, $p < .001$; acquaintances: b difference = .15, CI = .01 to .30, $p = .082$; distant others: b difference = .35, CI = .20 to .52, $p < .001$).

However, the magnitude of the affection effect on trust may be underestimated for American close relationships, as a result of measurement non-invariance$^3$. But its

---

$^3$ I compared regression-slope estimates produced by measurement models where parameter equalities were imposed or not. For American close relationships, the regression coefficient $b$ for affection is .200 ($p > .05$) when cross-cultural scalar invariance is not imposed. But $b$ estimate increases to .384 ($p < .05$) when scalar invariance is imposed.
influence on cultural comparison is limited, given the large coefficient of difference between the two cultural groups within close relationships.

Furthermore, indirect effects were stronger within Chinese distant relationships than within American distant relationships (effect difference = .23, CI = .07 to .42, \( p < .05 \)). On the contrary, there were no substantial cultural differences in indirect effects with regard to close relationships (effect difference = .14, CI = -.02 to .30, \( p > .10 \)), and acquaintance relationships (effect difference = .04, CI = -.13 to .19, \( p > .10 \)). No other substantial cultural differences in path magnitude were found (\( ps > .05 \)).

**Discussion**

The survey data confirms the correlational linkages of the model for trust development in the two cultures, but cultural differences are also observed between responses from American participants and from Chinese participants. In particular, consistent with the hypotheses, instrumentality contributes more to dyadic trust development in the American cultural context than in the Chinese. On the contrary, interpersonal affection contributes more to dyadic trust development in the Chinese cultural context than in the American. These findings support the argument from the theory of Individualism and Collectivism that trust in collectivistic societies is more affective, whereas trust in individualistic societies is more calculated (see Chen et al., 1998; Doney et al., 1998).

Additionally, I also find that instrumentality’s contribution to trust is mediated by affection to a greater extent among Chinese distant relationships than among American distant relationships. This is consistent with Chua et al.’s (2009) finding, suggesting that outside intimate relationships, Chinese tend to mix their affective ties
and instrumental ties to a greater extent compared to Americans (see also Hwang, 1987; Yang, 1995).

Given the cross-sectional design of this study, however, the temporal linkages of the mediation model have yet to be validated. Moreover, the impact of reciprocity strategies on trust development has not been compared between Americans and Chinese. Study 2a and Study 2b were designed to address these limitations.
Chapter 3

STUDY 2A

In this study, the original, one-shot trust game (Berg et al., 1995) was modified to a repeated, socially interactive version. In particular, participants (trustors) were asked to play the game with three hypothetical partners (trustees) repeatedly, and to evaluate their impressions of each partner, including perceived likeability and trustworthiness, at different time points. Next, a test was made of the temporal linkages from participants’ game transaction quality at time one, to their liking toward their partner at time two, which in turn was assessed as contributing to their reported trust in the partner at time three.

Moreover, this study manipulated the trustee’s reciprocation strategies, to mirror altruistic reciprocation, balanced reciprocation, and egoistic reciprocation (i.e., the trustee reciprocates the trustor, but gains more from the transaction than the trustor does). Participants’ reported trust and behavioral trust in response to these manipulations, and the associated cultural differences were compared between American and Chinese participants.

Method

Participants

American participants were 56 undergraduates (23 males) from a university in the mid-Atlantic area, whose ages ranged from 18 years to 25 years ($M_{age} = 19.07$ years, $SD = 1.17$). Chinese participants were 60 Chinese undergraduates (27 males)
from a university in Central China, whose ages ranged from 18 years to 23 years ($M_{age} = 19.50$ years, $SD = 1.03$). Both American and Chinese participants completed this experiment in exchange for research credit in their psychology courses.

**Materials and Procedure**

Participants came to the laboratory to complete a computerized experiment entitled “social interaction and impression formation”. They were informed that the purpose of this experiment was to understand how people get to know a stranger and develop a social bond. In particular, participants were invited to play a “decision game” with three hypothetical partners over multiple trials. The “decision game” is in fact the modified trust game where participants evaluated their impressions of each partner twice. Each participant took the computerized task in a cubicle privately. Experimental materials were originally written in English, and were translated into Chinese by bilingual researchers.

**The Repeated Trust Game**

In this game, participants played the role of sender (the trustor) with each of three hypothetical responders (trustees) over ten trials. The rules of the game were identical to the standard trust game - The sender could send some of his or her initial endowment to the responder. Any money sent was tripled by the experimenter. The responder then decided how much of the now-tripled money was returned to the sender. Any money not returned was the responder’s to keep.

At the beginning of each trial, the participant and the partner were each given 15 game points as an initial endowment. Participants decided how many points out of 15 they are willing to send to the partner, choosing between four fixed options: 0 point,
5 points, 10 points, or all 15 points. The computer then showed participants how many points the participant and the partner gained from that transaction, as a result of the participant’s own decision and the partner’s decision (when the partner is involved). The computer also showed participants their total points earned over trials.

Participants understood that the partner was not a real person, and the computer simulated the partner’s decision strategies. But participants were told that the simulated decisions mirrored certain type of people’s daily interaction strategies. To make the task economically relevant, participants were asked to treat game points as cash, and to try to collect as many points as possible.

There was a short break between the fifth trial and the sixth trial, so that participants could evaluate their impressions of the partner during the game. They were asked to make such evaluation again, when all ten trials were completed. However, participants were not told in advance when the impression test would be given, and when the game would be ended.

**The Responder Manipulation**

The repeated trust game’s pay-off structure was manipulated, to mirror three types of responder’s reciprocation-altruistic reciprocation, balanced reciprocation, and egoistic reciprocation. Specifically, under the condition where the responder performed altruistic reciprocation, the participant’s average pay-off (60% of the total wealth generated in each round) was greater than the responder’s pay-off (40% of the total wealth). Under the condition where the responder performed balanced reciprocation, the participant’s average pay-off (50% of the total wealth generated in each round) was equal to the responder’s pay-off (50% of the total wealth). Under the condition where the responder performed egoistic reciprocation, however, the
participant’s average payoff (40% of the total wealth generated in each round) was less than the responder’s pay-off (60% of the total wealth).

This pay-off equality/inequality was conveyed to participants, by showing their own and their partner’s pay-offs generated in each trial (post-decision feedback). Appendix B describes the detailed manipulation of the pay-off matrix. This pay-off manipulation was administrated to every participant identically. Manipulation conditions-altruistic, balanced, or egoistic reciprocation were counterbalanced with a Latin-Square-Design.

**Impression Evaluation**

In the original survey battery, participants evaluated their impressions of each partner on perceived likeability, competence, trustworthiness, generosity and fairness. In addition, they also reported their satisfaction with game transactions. Here, only findings from participants’ perceived likeability and trustworthiness of the partner are reported. For details of additional survey measures, please see the supplemental materials in Appendix D.

Perceived likeability was assessed by three adjectives including *likeable, nice,* and *friendly.* Perceived trustworthiness was assessed by three adjectives including *trustworthy, moral,* and *honest.* These impression adjectives have been used and validated in past facial perception research (Chen, Jing, & Lee, 2012; 2014). Participants rated each adjective on a 9-point scale, (1= *completely disagree,* 9=*completely agree*), with regard to each partner. They made such evaluations twice, during the game (after the fifth trial) and after the game (after the tenth trial). Table 2 displays Cronbach’s alphas for impression measures at each time point. Mean scores were averaged across three adjectives of each trait.
Table 2  Cronbach’s Alphas for Key Partner-Impression Measures in Study 2a, Separated by Partner Types and by Cultural Groups

<table>
<thead>
<tr>
<th>Partner type</th>
<th>Time one</th>
<th>Time two</th>
<th>Time one</th>
<th>Time two</th>
</tr>
</thead>
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<tr>
<td>Altruistic reciprocator</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>U.S.</td>
<td>.93</td>
<td>.96</td>
<td>.90</td>
<td>.91</td>
</tr>
<tr>
<td>China</td>
<td>.92</td>
<td>.86</td>
<td>.93</td>
<td>.86</td>
</tr>
<tr>
<td>Balanced reciprocator</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>U.S.</td>
<td>.92</td>
<td>.93</td>
<td>.84</td>
<td>.90</td>
</tr>
<tr>
<td>China</td>
<td>.83</td>
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<td>.91</td>
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</table>
Egoistic reciprocator

<table>
<thead>
<tr>
<th></th>
<th>U.S.</th>
<th>China</th>
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<tbody>
<tr>
<td></td>
<td>.92</td>
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</tr>
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<td>.91</td>
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<tr>
<td></td>
<td>.88</td>
<td>.93</td>
</tr>
</tbody>
</table>

*Note.* Time one was assessed after the fifth trial of the repeated trust game. Time two was assessed after the tenth trial. Playing with the altruistic responder, participants earned more points than their partner on average from the transaction. Playing with the balanced responder, participants earned equal points as their partner on average from the transaction. Playing with the egoistic responder, however, participants earned less points than their partner on average from the transaction.

This study’s sample size was not sufficient for testing cross-cultural measurement invariance. This test will be performed in Study 2b, by pooling samples from Study 2a and 2b.

**Results**

Descriptive Statistics

Table 3 displays means and standard deviations for participants’ game responses and partner impressions, separated by partner types and by cultural groups. As expected, both American and Chinese participants benefited more from transactions with the more altruistic responder, and tended to like and trust more the more altruistic partner.
<table>
<thead>
<tr>
<th>Partner type</th>
<th>Total points earned</th>
<th>Total points sent</th>
<th>Perceived likeability</th>
<th>Perceived trustworthiness</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>U.S.</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Altruistic reciprocator</td>
<td>215.39</td>
<td>76.87</td>
<td>6.14</td>
<td>5.68</td>
</tr>
<tr>
<td></td>
<td>(29.39)</td>
<td>(29.21)</td>
<td>(1.32)</td>
<td>(1.21)</td>
</tr>
<tr>
<td>Balanced reciprocator</td>
<td>184.46</td>
<td>70.17</td>
<td>5.30</td>
<td>5.01</td>
</tr>
<tr>
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<td>(23.88)</td>
<td>(30.69)</td>
<td>(1.20)</td>
<td>(1.15)</td>
</tr>
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<td>Egoistic reciprocator</td>
<td>156.73</td>
<td>48.93</td>
<td>3.80</td>
<td>3.92</td>
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<td></td>
<td>(11.67)</td>
<td>(32.16)</td>
<td>(1.37)</td>
<td>(1.34)</td>
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### China

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<th>99.25</th>
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<th>6.18</th>
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<td>(30.09)</td>
<td>(29.96)</td>
<td>(1.34)</td>
<td>(1.43)</td>
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<tr>
<td>Balanced reciprocator</td>
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<td>88.75</td>
<td>5.32</td>
<td>5.35</td>
</tr>
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<td>(22.88)</td>
<td>(32.42)</td>
<td>(1.26)</td>
<td>(1.25)</td>
</tr>
<tr>
<td>Egoistic reciprocator</td>
<td>163.38</td>
<td>85.00</td>
<td>3.84</td>
<td>4.11</td>
</tr>
<tr>
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<td>(14.87)</td>
<td>(34.84)</td>
<td>(1.64)</td>
<td>(1.62)</td>
</tr>
</tbody>
</table>

*Note.* Standard deviations are in parentheses. Points earned or sent in the table are total points aggregated across trials. Partner impression scores are averaged between two time points.

Liking Mediates the Temporal Linkages from Instrumentality to Trust

**Reported Trust**

Using Mplus 7.0’s multiple group analysis, a test was first made of the temporal, mediating mechanism suggested by the model of trust development across
the two cultural groups. Specifically, a mediation model was estimated where instrumentality at time one (i.e., participants’ total points earned from the first five trials) increased participants’ interpersonal liking at time two (i.e., participants’ perceived partner likeability after the fifth trial), which in turn promoted their reported trust at time three (i.e., participants’ perceived partner trustworthiness after the tenth trial). This model was estimated for different manipulation conditions simultaneously, taking into account the dependency of repeated measures.

The model fit the data adequately across the two cultural groups, $\chi^2 = 57.01, df = 36$, CFI = .92, RMSEA = .10 (CI: .04 - .15) $^4$, SRMR = .08. As illustrated in Figure 3, the contribution of instrumentality to reported trust was fully mediated by liking for the altruistic reciprocator and the balanced reciprocator in the Chinese sample (altruistic: indirect effect = .31, CI = .18 to .44, $p < .001$; balanced: indirect effect = .17, CI = .06 to .28, $p < .05$), and for the altruistic reciprocator in the American sample (indirect effect = .21, CI = .03 to .38, $p = .05$). On the contrary, the indirect effects were not substantial for the egoistic reciprocator in both American and Chinese samples, and for the balanced reciprocator in the American sample ($ps > .05$).

Using multiple group analysis, the magnitude of indirect effects and path coefficients were further compared between the two cultural groups. No reliable cultural differences in these parameters were found ($ps > .05$).

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$^4$ This RMSEA value indicates a mediocre fit (see Hu & Bentler, 1999; MacCallum, Browne, & Sugawara, 1996). However, given the likely inflation of fit-indices in small sample study (see Chen, Curran, Bollen, Kirby, & Paxton, 2008; Kenny, Kaniskan, & McCoach, in press), I applied a less stringent cut-off standard to the model fit.
Study 2a U.S.

Indirect effects: Altruistic reciprocator = .21 (CI: .03-.38), p = .05; Balanced reciprocator = .15 (CI: -.00-.30), p > .10; Egoistic reciprocator = -.04 (CI: -.19-.10), p > .10.

Study 2a China

Indirect effects: Altruistic reciprocator = .31 (CI: .18-.44), p < .001; Balanced reciprocator = .17 (CI: .06-.28), p < .05; Egoistic reciprocator = .06 (CI: -.10-.22), p > .10.
Figure 3 The Estimated Mediation Model of Dyadic Trust Development in Study 2a. Coefficient estimates (standardized $\beta$s) for each path are displayed for the altruistic reciprocator, the balanced reciprocator, and the egoistic reciprocator, respectively. Instrumentality at time one was assessed by the total points earned by participants from the first five trials. Liking at time two was assessed by participants’ perceived partner likeability, after the fifth trial. Reported trust at time three was assessed by participants’ perceived partner trustworthiness, after the tenth trial. For the path from instrumentality to reported trust, coefficients in parentheses were estimated before the mediator was included. Standard errors and the 90% confidence intervals of the indirect effect were generated by Bootstrapping with 1000 repetitions. Full mediations were observed for the altruistic responder in the American sample, and for the altruistic responder and the balanced responder in the Chinese sample. * $p < .05$. ** $p < .01$. *** $p < .001$.

**Behavioral Trust**

The mediation model was also tested using participants’ behavioral trust as the outcome variable at time three, viz., points that participants were willing to send in the sixth trial, right after their first impression evaluation at time two (i.e., after the fifth trial). Although the model fit the data well across both cultural groups, $\chi^2 = 37.70$, $df = 36$, CFI = .99, RMSEA = .03, SRMR = .07, no substantial mediation effects were found ($ps > .05$).

Trust as a Function of Cultures and Reciprocation Manipulation

**Reported Trust**

A 2 (cultures) $\times$ 3 (reciprocation manipulation) repeated measures ANOVA only revealed a significant main effect of the reciprocation manipulation on perceived partner trustworthiness (averaged across the two time points), $F (1.75, 199.30) = 85.47, p < .001$, partial $\eta^2 = .43$, with Greenhouse-Geisser correction. Post-hoc analysis indicated that both American and Chinese participants reported greatest trust
in the altruistic responder (trustworthiness: $M = 5.94$, $SD = 1.35$). They reported modest trust in the balanced responder (trustworthiness: $M = 5.19$, $SD = 1.21$), and least trust in the egoistic responder (trustworthiness: $M = 4.02$; $SD = 1.48$) (pair-wise comparisons $ps < .001$).

**Behavioral Trust**

A 2 (cultures) × 3 (reciprocation manipulation) repeated measures ANOVA revealed a significant interaction for participants’ overall behavioral trust in the game (i.e., total points sent to the partner from all trials), $F (2, 228) = 5.99$, $p < .01$, partial $\eta^2 = .05$. As illustrated in Figure 4, this interaction showed a quadratic-trend, $F (1, 114) = 5.47$, $p < .05$, partial $\eta^2 = .05$ (based on the quadratic contrast). Specifically, further plotting indicated that Chinese participants constantly exhibited greater behavioral trust in their partners than American participants ($ps < .01$). However, the magnitude of this cultural difference tended to be greater for the altruistic reciprocator (American: $M = 76.87$, $SD = 29.21$; Chinese: $M = 99.25$, $SD = 29.95$) and for the egoistic reciprocator (American: $M = 48.93$, $SD = 32.16$; Chinese: $M = 85.00$, $SD = 34.85$), compared to responses for the balanced reciprocator (American: $M = 70.18$, $SD = 30.69$; Chinese: $M = 88.75$, $SD = 32.43$).
Figure 4  A Quadratic-Trend Interaction between Cultures and Partner Types on Participants’ Behavioral Trust (i.e., total points sent to the partner across all trials), in Study 2a’s Repeated Trust Game. Playing with the altruistic responder, participants earned more points than their partner on average from the transaction. Playing with the balanced responder, participants earned equal points as their partner on average from the transaction. Playing with the egoistic responder, however, participants earned less points than their partner on average from the transaction.

Discussion

The laboratory data gives preliminary support for the temporal mechanism that satisfying instrumental exchange can generate interpersonal affection, which in turn
promotes interpersonal trust. However, this study provides no evidence that this mechanism works differentially between Americans and Chinese. Additionally, Americans and Chinese did not differ in their reported trust in different reciprocators. On the contrary, findings show that Chinese exhibited greater behavioral trust in the repeated trust game than Americans. It is true that, as predicted by hypothesis 2b, the Chinese entrusted the altruistic reciprocator more than Americans. However, the most striking cultural difference occurred under the egoistic reciprocation condition - while the Chinese still showed some gracious gestures to the egoistic responder who constantly outperformed them, Americans withdrew their cooperation dramatically in response to such unfair exchange (see Figure 4).

Essentially, as suggested by previous research (e.g., Chen et al., 2009; Jung et al., 2014) persons from Confucian-influenced countries (vs. Western countries) are less likely to engage in negative reciprocity, viz. retaliation and punishment, in response to unfair social transactions. This can be attributed to the Confucian norms, including “moral economy” and altruistic reciprocity, which cultivate people to maintain interpersonal harmony, and focus on possible long-term balance to develop in their social exchange (see also Chen et al., 2009; Jung et al., 2014).

Despite these intriguing findings, this study has several limitations. In particular, pay-off equality/inequality between participants and their partners was manipulated based on their trial-outcomes. Nevertheless, the partner’s decision processes were kept ambiguous (i.e., the exact way in which tripled money is allocated in each trial), which might have caused difficulties for participants to understand the flow of exchanges in the game. More importantly, the manipulation of pay-off equality did not strictly follow equity theory, where fairness is influenced by both the
transactor’s input and output (see Fehr & Schmidt, 1999). Since the responder’s input to the transaction was unknown, it is questionable to what extent participants felt that a 50% vs. 50% pay-off division was a “balanced” exchange. Study 2b was designed to address these issues, as well as to replicate Study 2a’s major findings.
Chapter 4

STUDY 2B

In this study, Study 2a’s repeated trust game was modified, making the trustor and the trustee contribute equally to a transaction. Furthermore, participants were given detailed post-decision feedback about how pay-offs were determined by their and their partner’s decisions. Again, participants’ game responses and partner impressions were assessed at different time points, with regard to the altruistic reciprocator, the balanced reciprocator, and the egoistic reciprocator. Here the goal was to replicate Study 2a’s major findings using this new design, but also to provide a design and procedure more responsive to the flow of exchanges between the interaction partners.

Method

Participants

American participants were 60 undergraduates (18 males) from a university in the mid-Atlantic area, whose ages ranged from 18 years to 22 years ($M_{age} = 18.72$ years, $SD = .96$). Chinese participants were 63 Chinese undergraduates (19 males) from a university in Central China, whose ages ranged from 17 years to 22 years ($M_{age} = 19.81$ years, $SD = 1.18$). American participants completed this experiment in exchange for research credit in their psychology courses. Chinese participants received small gifts for their participation in this experiment.
Materials and Procedure

Participants came to the laboratory to complete a computerized experiment entitled “social interaction and impression formation”. They were briefed about the task in the same way as in Study 2a.

The Repeated Trust Game

Participants played the modified, repeated trust game with each of three hypothetical partners over ten trials. Rules and procedure of this game were similar to the standard trust game in Study 2a. In this modified version, however, the critical change was that, when the participant decided to send his or her initial endowment, the partner had to match the participant’s input.

Specifically, in each game round, a “group account” was set up. Once the participant decided to send money to the partner, the experimenter (the computer) put the money in the group account and tripled its amount. The partner had to match the participant’s input, and add the same amount of money to the group account. The partner’s task was then to decide how much money from the group account was returned to the participant. Any money not returned was the partner’s to keep. In this scenario, the equality/inequality of trial-pay-offs strictly follows the equity rule, because the participant and the partner contribute equally to generating “collective wealth” per trial (see Appendix C, for a graphical illustration). As in study 2a, the participant and the partner were each given 15 game points at the beginning of each trial. The participant could send 0 points, 5 points, 10 points, or all 15 points to the partner. Participants were told that they should treat game points as cash, and their partner was told the same.
The Responder Manipulation

The same pay-off matrix from Study 2a (see Appendix B) was used to manipulate three different responders-the altruistic reciprocator, the balanced reciprocator, and the egoistic reciprocator. This is possible, due to the identical amount of total points that can be generated per trial, in the standard trust game and in this modified trust game (see Appendix C). But, unlike Study 2a, participants were provided not only with post-decision feedback about their total pay-offs across trials, but also with feedback about the partner’s total pay-offs across trials. I also displayed post-decision feedback about participants and their partner’s pay-offs per trial. Manipulation conditions were counterbalanced with a Latin-square design.

Impression Evaluation

The same survey battery from Study 2a was used to assess participants’ perceived likeability and trustworthiness of the partner. For additional measures in the survey, please see the supplemental materials in Appendix D. Participants reported their impressions twice, during the game (i.e., after the fifth trial) and after the game (i.e., after the tenth trial). Table 4 displays Cronbach’s alphas for impression measures at each time point. Mean scores were averaged across the three adjectives constituting each trait.
Table 4  Cronbach’s Alphas for Key Partner-Impression Measures in Study 2b, Separated by Partner Types and by Cultural Groups

<table>
<thead>
<tr>
<th>Partner type</th>
<th>Perceived likeability</th>
<th>Perceived trustworthiness</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Time one</td>
<td>Time two</td>
</tr>
<tr>
<td>Altruistic reciprocator</td>
<td></td>
<td></td>
</tr>
<tr>
<td>U.S.</td>
<td>.90</td>
<td>.91</td>
</tr>
<tr>
<td>China</td>
<td>.92</td>
<td>.86</td>
</tr>
<tr>
<td>Balanced reciprocator</td>
<td></td>
<td></td>
</tr>
<tr>
<td>U.S.</td>
<td>.92</td>
<td>.92</td>
</tr>
<tr>
<td>China</td>
<td>.87</td>
<td>.95</td>
</tr>
<tr>
<td>Egoistic reciprocator</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

42
Note. Time one was assessed after the fifth trial of the repeated trust game. Time two was assessed after the tenth trial.

By pooling Study 2a and 2b’s samples (116 Americans, and 123 Chinese), the multiple group analysis confirmed this two-factor, impression measure’s configural invariance ($\chi^2 = 375.25$, $df = 204$, CFI = .97, RMSEA = .08, SRMR = .03), metric invariance ($\chi^2 = 383.96$, $df = 216$, CFI = .97, RMSEA = .08, SRMR = .04), and scalar invariance ($\chi^2 = 432.25$, $df = 228$, CFI = .96, RMSEA = .09, SRMR = .04), between the two cultural groups. As a result, reported likeability and trustworthiness are comparable between Americans and Chinese in these studies (2a and 2b).

**Results**

**Descriptive Statistics**

Table 5 displays means and standard deviations for trust game responses and impression measures, separated by partner types and by cultural groups. As in Study 2a, both American and Chinese participants benefited more from transactions with the more altruistic responder, and tended to like and trust more the more altruistic partner.
Table 5  Means and Standard Deviations for Game and Impression Measures in Study 2b, Separated by Partner Types and by Cultural Groups

<table>
<thead>
<tr>
<th>Partner type</th>
<th>Total points earned</th>
<th>Total points sent</th>
<th>Perceived likeability</th>
<th>Perceived trustworthiness</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Participant</td>
<td>Partner</td>
<td></td>
<td></td>
</tr>
<tr>
<td>U.S.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Altruistic reciprocator</td>
<td>232.45</td>
<td>251.72</td>
<td>92.08</td>
<td>5.55</td>
</tr>
<tr>
<td></td>
<td>(31.64)</td>
<td>(35.16)</td>
<td>(30.38)</td>
<td>(1.34)</td>
</tr>
<tr>
<td>Balanced reciprocator</td>
<td>203.92</td>
<td>292.58</td>
<td>98.25</td>
<td>4.79</td>
</tr>
<tr>
<td></td>
<td>(17.10)</td>
<td>(35.48)</td>
<td>(24.46)</td>
<td>(1.45)</td>
</tr>
<tr>
<td>Egoistic reciprocator</td>
<td>163.53</td>
<td>282.47</td>
<td>73.00</td>
<td>2.93</td>
</tr>
<tr>
<td></td>
<td>(13.27)</td>
<td>(53.53)</td>
<td>(30.91)</td>
<td>(1.42)</td>
</tr>
</tbody>
</table>
### China

<table>
<thead>
<tr>
<th>Type</th>
<th>Reported Points</th>
<th>Sent Points</th>
<th>Earned Points</th>
<th>Liking</th>
<th>Trust</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Altruistic reciprocator</strong></td>
<td>245.97</td>
<td>254.35</td>
<td>100.16</td>
<td>5.36</td>
<td>5.24</td>
</tr>
<tr>
<td></td>
<td>(25.43)</td>
<td>(30.63)</td>
<td>(25.76)</td>
<td>(1.34)</td>
<td>(1.35)</td>
</tr>
<tr>
<td><strong>Balanced reciprocator</strong></td>
<td>206.11</td>
<td>289.92</td>
<td>98.02</td>
<td>4.47</td>
<td>4.43</td>
</tr>
<tr>
<td></td>
<td>(20.43)</td>
<td>(40.04)</td>
<td>(28.81)</td>
<td>(1.61)</td>
<td>(1.66)</td>
</tr>
<tr>
<td><strong>Egoistic reciprocator</strong></td>
<td>165.32</td>
<td>298.97</td>
<td>82.14</td>
<td>3.12</td>
<td>3.40</td>
</tr>
<tr>
<td></td>
<td>(14.28)</td>
<td>(62.97)</td>
<td>(35.26)</td>
<td>(1.54)</td>
<td>(1.61)</td>
</tr>
</tbody>
</table>

*Note.* Standard deviations are in parentheses. Points earned or sent in the table are total points aggregated across trials. Partner impression scores are averaged between two time points.

Liking Mediates the Temporal Linkages from Instrumentality to Trust

**Reported Trust**

As in Study 2a, the mediation model was tested where satisfying instrumental exchange at time one (i.e., across the first five trials) increases participants’
interpersonal liking at time two (i.e., after the fifth trial), which in turn promotes their reported partner trust at time three (i.e., after the tenth trial). This model was tested across different manipulation conditions, and across the two cultural groups.

The model fit the data adequately across American and Chinese participants, \( \chi^2 = 49.61, df = 36, CFI = .96, \) RMSEA = .08, SRMR = .09. As illustrated in Figure 5, the contribution of instrumentality to reported trust was fully mediated by interpersonal liking in the American group except for the egoistic reciprocator (Altruistic: indirect effect = .17, CI = .05-.29, \( p < .05 \); Balanced: indirect effect = .26, CI = .12-.40, \( p < .01 \); Egoistic: indirect effect = .18, CI = .02-.33, \( p = .06 \)), and for all types of reciprocator in the Chinese group (Altruistic: indirect effect = .24, CI = .11-.36, \( p < .01 \); Balanced: indirect effect = .18, CI = .09-.28, \( p < .01 \); Egoistic: indirect effect = .18, CI = .03-.32, \( p < .05 \)).

Comparing the magnitude of indirect effects and path coefficients, no reliable cultural differences in the tested, temporal mediation model were found (\( ps > .05 \)).
Indirect effects: Altruistic reciprocator = .17 (CI: .05-.29), p < .05; Balanced reciprocator = .26 (CI: .12-.40), p < .01; Egoistic reciprocator = .18 (CI: .02-.33), p = .06.

Indirect effects: Altruistic reciprocator = .24 (CI: .11-.36), p < .01; Balanced reciprocator = .18 (CI: .09-.28), p < .01; Egoistic reciprocator = .18 (CI: .03-.32), p < .05.
Figure 5  The Estimated Mediation Model of Dyadic Trust Development in Study 2b. Coefficient estimates (standardized $\beta$s) for each path are displayed for the altruistic reciprocator, the balanced reciprocator, and the egoistic reciprocator, respectively. Instrumentality at time one was assessed by the total points earned by participants from the first five trials. Liking at time two was assessed by participants’ perceived partner likeability, after the fifth trial. Reported trust at time three was assessed by participants’ perceived partner trustworthiness, after the tenth trial. For the path from instrumentality to reported trust, coefficients in parentheses were estimated before the mediator was included. Standard errors and the 90% confidence intervals of indirect effect were generated by Bootstrapping with 1000 repetitions. Full mediations were observed in both cultural groups, except for the American responses to the egoistic responder. $^*p < .05.$ $^*^*p < .01.$ $^*^*^*p < .001.$

Behavioral Trust

The mediation model was also tested using participants’ behavioral trust as the outcome at time three (i.e., the amount of points sent in the sixth trial). The model did not fit the data, $\chi^2 = 72.15$, $df = 36$, CFI = .87, RMSEA = .13, SRMR = .12, and no reliable mediation effects based on this model were found ($ps > .05$).

Trust as a Function of Cultures and Reciprocation Strategies

Reported Trust

A 2 (cultures) × 3 (reciprocation manipulation) repeated measures ANOVA was conducted on participants’ reported partner trustworthiness (averaged across the two time points). A significant interaction based on the quadratic contrast was found, $F(1, 121) = 4.51, p < .05$, partial $\eta^2 = .04$. As illustrated in Figure 6, the trend indicates that Americans reported greater trust in the balanced reciprocator ($M = 4.56$, $SD = 1.55$) than the Chinese. ($M = 4.43$, $SD = 1.66$) ($p > .05$), whereas the Chinese reported greater trust in the altruistic responder ($M = 5.24$, $SD = 1.35$) and in the
egoistic responder ($M = 3.40, SD = 1.61$) than the Americans. (Altruistic: $M = 5.08$, $SD = 1.67$; Egoistic: $M = 2.88$, $SD = 1.47$) (pair-wise comparisons $ps > .05$). With regard to all three conditions, the most striking difference lies with greater Chinese trust (vs. American trust) in the egoistic reciprocator ($p = .06$).

Figure 6
A Quadratic-Trend Interaction between Cultures and Partner Types on Participants’ Reported Partner Trustworthiness (average across the two time points) in Study 2b’s Repeated Trust Game.
**Behavioral Trust**

A 2 (cultures) × 3 (reciprocation manipulation) repeated measures ANOVA also revealed a significant, quadratic-trend interaction on participants’ behavioral trust (i.e., total points sent to the partner across all trials), $F(1, 121) = 5.42, p < .05$, partial $\eta^2 = .04$. As illustrated in Figure 7, the trend suggests that Americans ($M = 98.01, SD = 28.81$) and Chinese ($M = 98.25, SD = 24.46$) exhibited similar behavioral trust in the balanced reciprocator, whereas the Chinese exhibited greater behavioral trust in the altruistic responder ($M = 100.16, SD = 25.76$) and in the egoistic responder ($M = 82.14, SD = 35.26$) than the Americans (altruistic: $M = 92.08, SD = 30.38$; egoistic: $M = 73.00, SD = 30.91$) (pair-wise comparisons $ps > .05$).
Discussion

This laboratory study replicates Study 2a’s major findings. In particular, there is compelling evidence for a critical, temporal mediation mechanism - satisfying instrumental exchange can generate interpersonal affection, which in turn promotes interpersonal trust. This mechanism is evident under almost all manipulation conditions in this experiment, and in both cultural groups. As in Study 2a, no cultural
differences in this temporal mediation mechanism were observed. This suggests that the predicted cultural effects, viz., American trust is more instrumentally based whereas Chinese trust is more affectively based, only emerge from social exchanges that last over extended time-periods, and involve real-world, face-to-face interactions.

Additionally, using a strict manipulation of trial-pay-off equality, I found cultural differences in participants’ responses to balanced and unbalanced reciprocations. In particular, in parallel with Study 2a, the Chinese tended to report and exhibit greater trust than Americans in response to the partner’s altruistic reciprocation. This is direct support to hypothesis 2b. On the other hand, there is no compelling evidence to support hypothesis 2a. American and Chinese participants seemed to equally favor and trust the balanced reciprocator.

More importantly, I observed a consistent, striking American-Chinese difference across Study 2a and Study 2b, not predicted by the hypotheses. Specifically, compared to American trust, Chinese trust suffered less from self-disadvantaging, unbalanced social exchange.

Taken together, the results suggest that American undergraduates and Chinese undergraduates differ in their preferences for unbalanced reciprocity in building trust, but do not differ much in their preferences for balanced reciprocity in building trust. Interestingly, Americans may be so accustomed to applying the equity norm that they exhibit even greater behavioral trust to the balanced responder than to the altruistic responder (see Figure 7). As in some previous studies (e.g., Uehara, 1995), it is observed that Americans are averse to over-benefiting from their social exchange.
Chapter 5

GENERAL DISCUSSION

People build interpersonal relationships and trust through repeated, daily social exchanges. In this study, a mediation model was tested, accounting for the transformational process from people’s calculated trusting to affective trusting of a partner. More importantly, the study sheds light on the cultural boundary conditions of interpersonal trust development between Western and East Asian cultures. Across three studies, results confirm that the quality of people’s affective exchange mediates the contribution of their instrumental exchange to developing trust, in both the American and Chinese cultural context. However, results also highlight that, in daily social interaction, American trust building is more instrumentally based, whereas Chinese trust building is more affectively based. Additionally, altruistic reciprocation seems to work more effectively for Chinese in building trust than for Americans. On the other hand, egoistic reciprocation seems more detrimental for Americans in building trust than for Chinese. Taken together, a similar, basic social exchange mechanism for trust development exists in American culture and in Chinese culture, yet Americans and Chinese differ in their exchange focus and strategies for the specific, culturally-constrained way of building trust.

In the management literature, it is often concluded that trust development is a process whereby calculated trust gives way to affective trust (see Lewicki et al., 2006, for a review). Nevertheless, the present study is one of the few elucidating and validating the psychological mechanism for this transformational process, and does so
This study also bridges the gap between social exchange theory and trust development. The mediation model highlights the interplay between calculated processes and affective processes in promoting interpersonal trust. Future researchers should pay more attention to both cognitive factors, such as the trustee’s reliability, predictability, and credibility (see Doney et al., 1998) and also to affective factors, such as the trustee’s intentions and the trustor’s interpersonal attitudes, with respect to their interactions in promoting trust.

Furthermore, the study sheds light on the cultural context of interpersonal trust development, especially between Western and Confucian cultures. The literature review, together with this study’s cross-cultural findings, suggest that instrumentally based trust building is rooted in the logic of a market economy, and promoted by a rational, individualistic ideology (i.e., Western Individualism), whereas affective-based trust building is rooted in the logic of a moral economy, and sustained by the relationally oriented cultural legacy (e.g., Confucianism). This cultural ideological impact may be mediated by people’s self-construals. In particular, more relational-oriented people tend to develop communal relationships, whereas less relational-oriented people tend to engage exchange relationships (e.g., Mattingly, Oswald, & Clark, 2011). Previous research suggests that relational-oriented self-construals are more prevalent among East Asians than among Westerners (see Cross, Gore, & Morris, 2003).

Other societal factors, however, may also contribute to this cultural difference. For instance, social mobility in individualistic societies is greater than in collectivistic societies (Triandis, 1995; Yamagishi, 1998). As a result, instrumentally based trust building is adopted by Westerners for building trust with strangers, whereas
affectively based trust building is more adopted by East Asians for maintaining trust within their committed relationships (see Jing & Chen, 2014; Yamagishi, 1998). Likewise, it has been shown that monetary-based exchange is conducive to cooperation and trust in large, impersonal groups, whereas gift-based exchange (i.e., offering altruistic help and reciprocating that help) is only effective for maintaining trust in small, dyadic groups (see Camera, Casari, & Bigoni, 2013). This may also explain why persons from modern, Western societies prefer instrumentally-based trust building, whereas persons from relational-oriented, Confucian societies prefer affectively-based trust building.

This dissertation’s cross-cultural experiments reveal striking cultural differences in the impact of reciprocity strategies on trust. In particular, an interesting and novel finding is that Chinese trustors are more tolerant of an egoistic reciprocator, whereas Americans trustors respond more negatively to unfair, self-disadvantaging transactions. According to Fehr and Schmidt’s (1999) influential economic theory, people desire equitable or fair social transactions, but are most averse to self-disadvantaging transactions. Nonetheless, the present study challenges the universality of this individualistic perspective (see also Chen et al., 2009; Jung et al., 2014). Results indicate that a long-term and relationally oriented mindset, such as the Confucian, can offset one’s disadvantages from social transactions. Indeed, withholding negative reciprocity may be a better way to minimize social costs (e.g., the escalation of mutual retaliation) in a closed, stable network, and to forgive the partner’s unintended mistakes (c.f., generous tit-for-tat, see Nowak & Sigmund, 1992). Future research should further investigate how this cultural difference in “inequity aversion” (Fehr & Schmidt, 1999), in relation to trust, impacts business and
management processes, such as negotiation and conflict resolution across cultural lines.

**Practical Implications**

The present study has important implications for business and management. Firstly, it suggests a critical, psychological mechanism for building interpersonal trust, based on daily social exchanges. This mechanism can be translated into marketing by promoting seller-consumer trust, or into management by promoting trust in the workplace. Secondly, it suggests different reciprocity strategies to build interpersonal trust, and highlight its relational constraints. Importantly, within instrumentally oriented ties, it is better to build calculated trust based on balanced reciprocity. By contrast, within affectively-oriented ties, it is better to build affective trust based on altruistic reciprocity.

Lastly, this study provides international business practitioners and managers with different solutions for building trust in different cultures. For Westerners, it is crucial to learn the building for affectively based trust with persons from East Asian societies. On the contrary, for East Asians, it is crucial to learn the building of instrumentally based trust with persons from Western societies. Nonetheless, East Asians also need to enhance their skills for building calculated trust with unfamiliar persons from their own cultures, given East Asians’ “cultural deficits” in establishing generalized trust (see Fukuyama, 1995; Jing & Bond, 2015a; Jing & Chen, 2014; Yamagishi, 1998).
Limitations

This research has some limitations. First of all, the current study is based on limited, undergraduate samples. Future research should test the model in different, adult samples, and extend the framework to different social contexts (e.g., in the workplace). Additionally, the reader may wonder to what extent the differences between American and Chinese undergraduates in this research can represent cultural differences. On the one hand, I admit that this cross-cultural study is preliminary, given its limited sampling scope. On the other hand, I should point out that the cross-cultural findings of this study are especially intriguing, because Chinese younger generations are much more westernized compared to their elders. As a matter of fact, I expect that the cultural effect will be more pronounced among elder participants, between American and Chinese contexts (see also Jing, 2009).

Secondly, this work validates the temporal, mediating mechanism in a hypothetical, experimental setting. However, affective exchange in this setting, if any, is preliminary and shallow. This zero-acquaintance situation also precludes the possibility that affective exchange may precede instrumental exchange (e.g., within family relationships or romantic relationships). Future research should validate the model using daily, longitudinal data. Additionally, future study should test the model in different relational contexts whose communal strength varies.

Thirdly, in the experimental studies (Study 2a and 2b), participants’ reported liking only mediated the linkages from their game pay-offs to reported trust, but not to their behavioral trust. This may be explained by smaller risk premiums associated with people’s trusting beliefs than by their behavioral trust (see Jing & Bond, 2015b; Jing & Chen, 2014), or/and the limitation of people’s self-introspection (see Nisbett & Wilson, 1977). In addition, my supplemental analysis indicates that reported liking’s
mediation effect is not driven by liking alone, but by the covariation between liking and trust at the same time (see the supplemental materials in Appendix D). Given this potential confound, future work should try to manipulate liking independent of trust, and see its temporal effect on trust.

Fourthly, as an early attempt, the current study only considers a simple, unidirectional mediation model across different relational contexts. Future research should add more parameters and constraints to this model, and to fit the more complicated social reality. For instance, as I noted before, affection and trust can modulate how instrumental exchange is carried out within strong ties compared to weak ties. Future research should examine these relational boundary conditions more systematically. Additionally, future research should explore the plausible, bi-directional relationships between instrumentality, affection and trust, and transform my unidirectional, mediation model to a bi-directional, dynamic model.

Lastly, the current study only compared cultural differences between one Western society and one Confucian society. However, the framework can be extended to other cultural regions as well. Future research should pay more attention to less studied regions, such as the Middle East, South America, and Africa (Smith, Fisher, Vignoles, & Bond, 2013). Additionally, future research should also explore the variations within the same cultural zone, such as within Western societies (e.g., Western and Northern Europe vs. Southern Europe), and within East Asian societies (e.g., China vs. Japan).
REFERENCES


Appendix A

STUDY 1’S RELATIONSHIP QUALITY SCALE (RQS) AND DYADIC TRUST SCALE (DTS)

Final Items of Relationship Quality Scale (RQS)

Instrumentality Subscale (4 items)

If he/she helped me or did me a favor, I would feel the need to return the favor.

I provide this person with assistance or resources because I expect him/her to do the same thing for me in times of need.

My interaction with this person often requires reciprocity, such as giving gifts and doing a favor.

My relationship with this person can be considered mutually beneficial.

Affection Subscale (4 items)

I experience intimate interactions with this person.

This person and I often share secrets and private feelings.

I feel emotionally close to this person.

This person and I often tell each other everything we are going through.

Final Items of Dyadic Trust Scale (DTS) (4 items)

I am certain that this person would not cheat me, even if there was no chance that he/she would get caught.

I rarely worry that this person might take advantage of me.
I have no doubt that this person is always on my side.

I am confident that this person would never harm me.
Appendix B

PAY-OFF MATRIX FOR THE REPEATED TRUST GAME IN STUDY 2A AND STUDY 2B

The pay-off matrix described in Table 6 was used to manipulate the sender and the responder’s pay-off-equality (vs. inequality) in the repeated trust game, mirroring outcomes resulting from altruistic, balanced, or egoistic reciprocation. Specifically, playing with the altruistic responder, the sender’s expected trial-pay-off is 60% of total points generated in the trial, whereas the responder’s expected trial-pay-off is 40% of total points generated in the trial. For instance, if the sender decides to send 5 points to the responder, the total points generated in that trial will be 40 points (30 initial endowment from both the sender and the responder, plus 10 points, viz., “surplus”, given by the experimenter). The sender will then get 24 points, whereas the altruistic responder will get 16 points (see Table 6). Playing with the balanced responder, the sender’s expected trial-pay-off is 50% of total points generated in the trial, and the balanced responder’s expected trial-pay-off is also 50%. Playing with the egoistic responder, however, the sender’s expected trial-pay-off is only 40% of total points generated in the trial, whereas the egoistic responder’s expected trial-pay-off is 60%.

To add uncertainty to the consequences of trust, the responder pocketed all of the sender’s investment on the third and the seventh trials, regardless of manipulation conditions (see Table 6). For other trials, to avoid repetitiveness, under the altruistic and the egoistic reciprocation conditions, each trial’s specific pay-offs were varied around the expected pay-offs based on a pseudo-random series, but the direction of the
sender and the responder’s pay-off-inequality was retained in the manipulated way (i.e., an altruistic responder or a egoistic responder). Under the balanced reciprocation condition, however, each trial’s pay-offs are identical to the expected, equal pay-offs between the sender and the responder. It should also be noted that the sender’s decision to send points, (i.e., be willing to trust, is always more profitable than the decision to keep the initial endowment, regardless of the responder’s reciprocation strategies.
Table 6  The Sender’s and the Responder’s Pay-offs in Each Trial, Depending on the Sender’s Decisions and the Responder’s Reciprocation Strategies

<table>
<thead>
<tr>
<th>Trial</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>Expected Pay-offs</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The sender’s decisions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The altruistic reciprocator</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Send 5</td>
<td>22 (vs. 18)</td>
<td>23 (vs. 17)</td>
<td>10 (vs. 30)</td>
<td>25 (vs. 15)</td>
<td>25 (vs. 15)</td>
<td>23 (vs. 30)</td>
<td>10 (vs. 15)</td>
<td>25 (vs. 15)</td>
<td>24 (vs. 16)</td>
<td>24 (vs. 16)</td>
<td></td>
</tr>
<tr>
<td>Send 10</td>
<td>28 (vs. 22)</td>
<td>27 (vs. 23)</td>
<td>5 (vs. 45)</td>
<td>34 (vs. 16)</td>
<td>28 (vs. 18)</td>
<td>32 (vs. 45)</td>
<td>5 (vs. 19)</td>
<td>31 (vs. 16)</td>
<td>34 (vs. 24)</td>
<td>30 (vs. 20)</td>
<td></td>
</tr>
<tr>
<td>Send 15</td>
<td>33 (vs. 27)</td>
<td>32 (vs. 28)</td>
<td>0 (vs. 60)</td>
<td>42 (vs. 18)</td>
<td>34 (vs. 26)</td>
<td>31 (vs. 29)</td>
<td>0 (vs. 60)</td>
<td>37 (vs. 23)</td>
<td>42 (vs. 18)</td>
<td>37 (vs. 24)</td>
<td>36 (vs. 24)</td>
</tr>
<tr>
<td>The balanced reciprocator</td>
<td></td>
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72
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<th>20</th>
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<th>20</th>
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<th>20 (vs. 20)</th>
</tr>
</thead>
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|---------|----|----|----|----|----|----|----|----|----|-------------|

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<th>30</th>
<th>30 (vs. 30)</th>
</tr>
</thead>
<tbody>
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<td>60</td>
<td>30</td>
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</table>

The egoistic reciprocator

<table>
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<th>15</th>
<th>15</th>
<th>17</th>
<th>10</th>
<th>15</th>
<th>15</th>
<th>16</th>
<th>16 (vs. 24)</th>
</tr>
</thead>
<tbody>
<tr>
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<td>22</td>
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<td>23</td>
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<table>
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<th>16</th>
<th>22</th>
<th>18</th>
<th>5</th>
<th>19</th>
<th>16</th>
<th>24</th>
<th>20 (vs. 30)</th>
</tr>
</thead>
<tbody>
<tr>
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<td>28</td>
<td>45</td>
<td>34</td>
<td>28</td>
<td>32</td>
<td>45</td>
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<td>34</td>
<td>26</td>
<td>26</td>
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</tbody>
</table>

<table>
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<th>27</th>
<th>0</th>
<th>18</th>
<th>26</th>
<th>29</th>
<th>0</th>
<th>23</th>
<th>18</th>
<th>23</th>
<th>24 (vs. 36)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>28</td>
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<td>26</td>
<td>29</td>
<td>0</td>
<td>23</td>
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<tr>
<td>33)</td>
<td>32)</td>
<td>60)</td>
<td>42)</td>
<td>34)</td>
<td>31)</td>
<td>60)</td>
<td>37)</td>
<td>42)</td>
<td>37)</td>
<td></td>
</tr>
</tbody>
</table>

*Note.* Numbers outside parentheses are the sender’s pay-offs. Numbers in parentheses are the responder’s pay-offs.
Appendix C

COMPARISONS BETWEEN THE TRUST GAME IN STUDY 2A AND IN STUDY 2B

Rules of the trust game in Study 2a and in Study 2b are illustrated in Figure 8 and Figure 9, respectively. The trust game in Study 2a is the standard trust game, whereas the trust game in Study 2b is the modified version. Essentially, the modification makes the sender and the responder contribute equally to a transaction in the trust game. Nevertheless, the modification does not change the amount of “surplus” generated in each round. When the sender sends y points to the responder, in both games there is a 2y “surplus” generated by the experimenter (see Figure 8 and Figure 9). This is why in Study 2a and Study 2b, the same pay-off matrix can be used to manipulate the partner’s reciprocation strategies. More importantly, the modification retains the key feature of the trust game where the sender can take risks to entrust the responder.
Figure 8  Rules of the Trust Game in Study 2a. The participant plays the role of player 1 (the sender), whereas the partner plays the role of player 2 (the responder). The left part of this figure illustrates the first step in each round, whereas the right part illustrates the second step in each round. This figure is from the actual experiment’s instructions.
Figure 9  Rules of the Trust Game in Study 2b. The participant plays the role of the sender, whereas the partner plays the role of the responder. The left part of this figure illustrates the first step in each round, whereas the right part illustrates the second step in each round. This figure is from the actual experiment’s instructions.
Appendix D

SUPPLEMENTAL MATERIALS

Study 1: Description of Criterion Scales

The Inclusion of Other in the Self (IOS) Scale (Aron, Aron, & Smollan, 1992)

The IOS is an established scale assessing a person’s perceived self-other overlap or “oneness”. It consists of a set of seven pairs of circles whose overlap is linearly increasing. Participants selected the pair of circles that best characterized their relationships with the target person. Scores were recoded so that higher values indicated greater self-other overlaps. The IOS was used as a criterion measure against our relationship quality scale and dyadic trust scale.

The Dictator Game (DG)

Participants completed two hypothetical DGs where they divided 50 dollars (300 RMB), or 100 dollars (600 RMB) between themselves and each of three target persons. Decisions (i.e., the proportion of money sent to the partner) were averaged across the two DGs, given their high correlation in this sample. The DG was used as a criterion measure against our relationship quality scale, given that participants should make more generous DG allocation to their closer others (see Fiske, 1992, Xue & Silk, 2012).

The Trust Game (TG) (Berg, Dickhaut, & McCabe, 1995)
The TG is a widely-used behavioral two-person game that assesses interpersonal trust. The rules are as following. One person plays the role of the sender (the trustor) and the other plays a role of the responder (the trustee). The sender and the responder are each given the same amount of money as an initial endowment. The sender can send some, all, or none of his or her endowment to the responder. Any money sent will be tripled. Then the responder will decide how much of the tripled money, if any, to return to the sender. Any money not sent back will be the responder’s to keep.

Participants imagined playing the TG with the target person in a single round, and were designated as the sender. For each of three targets, participants made their decisions twice, with regard to initial endowment as 50 dollars (300 Chinese RMB), or as 100 dollars (600 Chinese RMB). Decisions (i.e., the proportion of initial endowment sent to the partner) were averaged across the two TGs, given similar responses in this sample. The TG was used as a primary criterion measure against our dyadic trust scale.

Descriptive statistics for these criterion measures are displayed in Table 7, separated by social distances and by cultural groups.
Table 7  Means and Standard Deviations for Criterion Measures in Study 1, Separated by Cultural Groups and by Social Distances

<table>
<thead>
<tr>
<th></th>
<th>Inclusion of other in the self (IOS)</th>
<th>Dictator game (DG)</th>
<th>Trust game (TG)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>U.S.</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Close others</td>
<td>5.44</td>
<td>51%</td>
<td>62%</td>
</tr>
<tr>
<td></td>
<td>(1.48)</td>
<td>(.17)</td>
<td>(.28)</td>
</tr>
<tr>
<td>Acquaintances</td>
<td>2.68</td>
<td>38%</td>
<td>46%</td>
</tr>
<tr>
<td></td>
<td>(1.57)</td>
<td>(.21)</td>
<td>(.30)</td>
</tr>
<tr>
<td>Distant others</td>
<td>2.69</td>
<td>38%</td>
<td>47%</td>
</tr>
<tr>
<td></td>
<td>(1.68)</td>
<td>(.19)</td>
<td>(.31)</td>
</tr>
<tr>
<td><strong>China</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Quality</td>
<td>Trust</td>
<td>Other</td>
</tr>
<tr>
<td>----------------</td>
<td>---------</td>
<td>-------</td>
<td>--------</td>
</tr>
<tr>
<td>Close others</td>
<td>5.52</td>
<td>62%</td>
<td>68%</td>
</tr>
<tr>
<td></td>
<td>(1.58)</td>
<td>(.20)</td>
<td>(.25)</td>
</tr>
<tr>
<td>Acquaintances</td>
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<td>42%</td>
<td>46%</td>
</tr>
<tr>
<td></td>
<td>(1.58)</td>
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<td>(.24)</td>
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<tr>
<td>Distant others</td>
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<td>40%</td>
</tr>
<tr>
<td></td>
<td>(1.86)</td>
<td>(.23)</td>
<td>(.25)</td>
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</tbody>
</table>

*Note.* Standard deviations are in parentheses.

**Study 1: Correlations between Relationship Qualities, Partner Trust, and Criterion Variables**

Table 8 displays correlations between relationship quality scale, dyadic trust scale, and other criterion scales, separated by social distances and by cultural groups. As illustrated in this table, in both cultural groups, reported affection was positively related to participants’ reported instrumentality, to their perceived self-other overlaps (IOS), and to their generosity in DG. Additionally, reported dyadic trust was positively associated with participants’ behavioral trust in TG, as well as their perceived self-
other overlaps. Taken together, the criterion validity of the relationship quality scale and dyadic trust scale is confirmed.
Table 8  Correlations between Relationship Quality and Trust Measures in Study 1, Separated by Cultural Groups and by Social Distances

<table>
<thead>
<tr>
<th></th>
<th>China</th>
<th>U.S.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Affection</td>
<td>Instrumentality</td>
</tr>
<tr>
<td></td>
<td>Trust</td>
<td>IOS</td>
</tr>
<tr>
<td>Close others</td>
<td>.30**</td>
<td>.74**</td>
</tr>
<tr>
<td>Acquaintances</td>
<td>.38**</td>
<td>.59**</td>
</tr>
<tr>
<td>Distant others</td>
<td>.53**</td>
<td>.71**</td>
</tr>
<tr>
<td>Instrumentality</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Close others</td>
<td>.40**</td>
<td>.10</td>
</tr>
<tr>
<td>Acquaintances</td>
<td>.61**</td>
<td>.24**</td>
</tr>
<tr>
<td></td>
<td>Distant others</td>
<td>Trust</td>
</tr>
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</tr>
<tr>
<td>Close others</td>
<td>.74**</td>
<td>.47**</td>
</tr>
<tr>
<td>Acquaintances</td>
<td>.47**</td>
<td>.35**</td>
</tr>
<tr>
<td>Distant others</td>
<td>.35**</td>
<td>.32**</td>
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<td>.59**</td>
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<tr>
<td>Distant others</td>
<td>.60**</td>
<td>.69**</td>
</tr>
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</table>

*Note: *The table above shows correlation coefficients between different groups, with significant levels indicated as **p < 0.01.*
DG

<table>
<thead>
<tr>
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<th>Acquaintances</th>
<th>Distant others</th>
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</tr>
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<td>.18*</td>
<td>.34**</td>
<td>.22**</td>
</tr>
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<td>.80**</td>
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</table>

TG

<table>
<thead>
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<td>.30**</td>
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<tr>
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<td>.32**</td>
<td>.45**</td>
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<td></td>
<td>.11</td>
<td>.21*</td>
<td>.27**</td>
</tr>
<tr>
<td></td>
<td>.32**</td>
<td>.47**</td>
<td>.60**</td>
</tr>
</tbody>
</table>

*Correlations from Chinese participants are above the diagonal. Correlations from American participants are below the diagonal. IOS=the Inclusion of Other in the Self Scale; DG=the dictator game; TG=the trust game. *p < .05. **p < .01.*
Study 2a and 2b: Description of Additional Impression and Transaction Measures

Partner Impression

Perceived partner competence was assessed by three adjectives including intelligent, competent, and effective. Participants made their evaluations on a 9-point scale (1=completely disagree, 9=completely agree), with regard to each partner. Table 9 and Table 11 display Cronbach’s alphas for this measure in Study 2a and in Study 2b, respectively. Mean scores of competence were averaged across the three adjectives.

To check the manipulation on the partner’s reciprocation strategies, participants were asked to evaluate each partner’s generous, fair, and selfless. Participants made their evaluations on a 9-point scale (1=completely disagree, 9=completely agree), with regard to each partner.

Transaction satisfaction

Participants’ transaction satisfaction was assessed by three items, including “I was satisfied with my transactions with this person”, “Our transactions were mutually beneficial”, and “Our transactions were fair”. Participants made their evaluations on a 9-point scale (1=completely disagree, 9=completely agree), with regard to each partner. Table 9 and Table 11 display Cronbach’s alphas for this measure in Study 2a and in Study 2b, respectively. Mean scores of transaction satisfaction were averaged across the three items.

Descriptive statistics for these additional impression and transaction measures are displayed in Table 10 (Study 2a) and in Table 12 (Study 2b), separated by partner types and by cultural groups.
Table 9  Cronbach’s Alphas for Additional Impression and Transaction Measures in Study 2a, Separated by Partner Types and by Cultural Groups

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<th>Partner type</th>
<th>Perceived competence</th>
<th>Transaction satisfaction</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Time one</td>
<td>Time two</td>
</tr>
<tr>
<td>Altruistic reciprocator</td>
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<td>.84</td>
</tr>
<tr>
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<td>.72</td>
</tr>
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<td></td>
<td>China</td>
<td>.81</td>
</tr>
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<tr>
<td></td>
<td>0.90</td>
<td>0.90</td>
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<td>------</td>
<td>------</td>
</tr>
<tr>
<td>China</td>
<td>0.88</td>
<td>0.93</td>
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<td>Responder type</td>
<td>Perceived Competence</td>
<td>Perceived Generosity</td>
</tr>
<tr>
<td>----------------</td>
<td>----------------------</td>
<td>----------------------</td>
</tr>
<tr>
<td>U.S. Altruistic</td>
<td>6.09 (1.16)</td>
<td>6.12 (1.69)</td>
</tr>
<tr>
<td>U.S. Balanced</td>
<td>6.08 (1.14)</td>
<td>4.57 (1.55)</td>
</tr>
<tr>
<td>U.S. Egoistic</td>
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<td>2.85 (1.45)</td>
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### China

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<td>(1.66)</td>
<td>(1.42)</td>
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<td>(1.41)</td>
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<td>(1.70)</td>
<td>(1.83)</td>
<td>(1.56)</td>
<td>(1.80)</td>
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</table>

*Note.* Standard deviations are in parentheses. Scores were averaged across two time points.
Table 11  Cronbach’s Alphas for Additional Impression and Transaction Measures in Study 2b, Separated by Partner Types and by Cultural Groups

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<th>Transaction satisfaction</th>
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<td>Time two</td>
</tr>
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<td></td>
</tr>
<tr>
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<td>.86</td>
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<td>.90</td>
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<td>.83</td>
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<td>China</td>
<td>.91</td>
<td>.90</td>
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<tr>
<td>Egoistic reciprocator</td>
<td></td>
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</table>

91
<p>| | | | | |</p>
<table>
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<th></th>
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<th></th>
</tr>
</thead>
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<td>.83</td>
<td>.91</td>
<td>.91</td>
</tr>
<tr>
<td>China</td>
<td>.87</td>
<td>.87</td>
<td>.90</td>
<td>.89</td>
</tr>
<tr>
<td>Responder type</td>
<td>Perceived Competence</td>
<td>Perceived Generosity</td>
<td>Perceived Fairness</td>
<td>Perceived Selflessness</td>
</tr>
<tr>
<td>---------------</td>
<td>----------------------</td>
<td>----------------------</td>
<td>-------------------</td>
<td>------------------------</td>
</tr>
<tr>
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<td></td>
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<td></td>
</tr>
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<td>4.90</td>
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<td>(1.96)</td>
<td>(1.93)</td>
<td>(1.84)</td>
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<td>(1.84)</td>
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<td>(1.55)</td>
<td>(1.30)</td>
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<td>China</td>
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<td>(1.37)</td>
<td>(1.34)</td>
<td>(1.36)</td>
</tr>
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<td>4.29</td>
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</tr>
<tr>
<td></td>
<td>(1.75)</td>
<td>(1.77)</td>
<td>(1.72)</td>
<td>(1.52)</td>
</tr>
<tr>
<td>Egoistic</td>
<td>4.82</td>
<td>2.86</td>
<td>3.02</td>
<td>2.57</td>
</tr>
<tr>
<td></td>
<td>(1.99)</td>
<td>(1.67)</td>
<td>(1.62)</td>
<td>(1.40)</td>
</tr>
</tbody>
</table>

*Note.* Standard deviations are in parentheses. Scores were averaged across two time points.
Supplemental Analysis of Reported Liking’s Mediation Effect on the Temporal Linkages from Instrumentality to Reported Trust

Study 2b provides evidence for the temporal mediation mechanism suggested by my model. In this analysis, I further tested to what extent this mediation effect was driven by reported liking alone. Specifically, while estimating the temporal mediation model described in Study 2b, I controlled for the covariation between reported liking and reported trust at time two (see Figure 10). This hypothesized model, however, did not fit the data in both cultural groups, $\chi^2 = 147.79$, $df = 72$, CFI = .92, RMSEA = .13, SRMR = .21. As illustrated in Figure 10, reported liking’s mediation effects no longer remain significant after controlling for reported trust at the same time.
Study 2b U.S.

Instrumentality (time one) → Liking (time two, control for trust) → Reported trust (time three)

Indirect effects: Altruistic reciprocator = .02 (CI: -.10-.15), p > .05; Balanced reciprocator = -.00 (CI: -.12-.11), p > .05; Egoistic reciprocator = .01 (CI: -.04-.07), p > .05.

Study 2b China

Instrumentality (time one) → Liking (time two, control for trust) → Reported trust (time three)

Indirect effects: Altruistic reciprocator = .01 (CI: -.17-.20), p > .05; Balanced reciprocator = .05 (CI: -.04-.14), p > .05; Egoistic reciprocator = .15 (CI: -.01-.31), p > .05.
Figure 10  The Estimated Mediation Model of Dyadic Trust Development in Study 2b, Controlling for the Covariation between Liking and Trust at Time Two. Coefficient estimates (standardized $\beta$s) for each path are displayed for the altruistic reciprocator, the balanced reciprocator, and the egoistic reciprocator, respectively. For the path from instrumentality to reported trust, coefficients in parentheses were estimated before the mediator was included. Standard errors and the 90% confidence intervals of indirect effect were generated by Bootstrapping with 1000 repetitions. No significant mediation was observed in both cultural groups. *$p < .05$. **$p < .01$. ***$p < .001$. 
Appendix E

APPROVAL OF HUMAN SUBJECTS RESEARCH
DATE:          October 22, 2014

TO:            Yiming Jing
FROM:          University of Delaware IRB

STUDY TITLE:   [526794-3] Interpersonal Relationship and Trust

SUBMISSION TYPE: Continuing Review/Progress Report

ACTION:        APPROVED

APPROVAL DATE: October 22, 2014

EXPIRATION DATE: November 7, 2015

REVIEW TYPE:   Expedited Review

REVIEW CATEGORY:   Expedited review category # (7)

Thank you for your submission of Continuing Review/Progress Report materials for this research study. The University of Delaware IRB has APPROVED your submission. This approval is based on an appropriate risk/benefit ratio and a study design wherein the risks have been minimized. All research must be conducted in accordance with this approved submission.

This submission has received Expedited Review based on the applicable federal regulation.

Please remember that informed consent is a process beginning with a description of the study and insurance of participant understanding followed by a signed consent form. Informed consent must continue throughout the study via a dialogue between the researcher and research participant. Federal regulations require each participant receive a copy of the signed consent document.

Please note that any revision to previously approved materials must be approved by this office prior to initiation. Please use the appropriate revision forms for this procedure.

All SERIOUS and UNEXPECTED adverse events must be reported to this office. Please use the appropriate adverse event forms for this procedure. All sponsor reporting requirements should also be followed.

Please report all NON-COMPLIANCE issues or COMPLAINTS regarding this study to this office.

Please note that all research records must be retained for a minimum of three years.

Based on the risks, this project requires Continuing Review by this office on an annual basis. Please use the appropriate renewal forms for this procedure.