

MORE OR LESS *GUANXI*:
TRUST IS 60% NETWORK CONTEXT, 10% INDIVIDUAL DIFFERENCE
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<http://faculty.chicagobooth.edu/ronald.burt/research>.

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Abstract

The strong ties known in China as guanxi can be distinguished by a high level of trust relatively independent of the surrounding social structure. Using network data from a stratified probability sample of 700 entrepreneurs citing 4,664 contacts, we study guanxi relative to other relations to learn how much individual differences such as well-being, business differences, political participation and demographic factors matter for the guanxi distinction. Two findings stand out: First, the connection between trust and social network is robust to most differences between individuals, especially business and political differences. Trust variance is 60% network context, and 10% individual differences. Trust increases within a relationship as network closure increases around the relationship, but some relationships mature into guanxi ties within which trust is high and relatively independent of the surrounding social structure. Second, when individual differences matter, they concern social isolation. Guanxi ties are more distinct in the networks around entrepreneurs with small, marginal families, and around those with small, closed networks. Both categories of entrepreneurs are likely to experience difficulties with respect to resource access and doing business with people beyond their network, which may explain why longstanding guanxi ties linked to important events are particularly distinct for these entrepreneurs.

Keywords: trust; guanxi; network closure; entrepreneurs; social isolation

A first rule of social capital is that closed networks facilitate trust. The gist of the rule's explanation is that evaluative stories about personal behavior reach everyone within a closed network such that reputational distinctions arise between admired and distained individuals, and to preserve one's own reputation, people in the network avoid individuals with negative reputations in preference for individuals with positive reputations. By creating a reputation cost for bad behavior, closed networks lower the odds of bad behavior between people in the network, so the risk of trusting others within the network goes down, and the probability of trusting others goes up. In short, closed networks facilitate trust and collaboration by creating reputation costs for bad behavior. Or, as Coleman (1988:107-108) summarized: "Reputation cannot arise in an open structure, and collective sanctions that would ensure trustworthiness cannot be applied." The high trust found in closed networks can enable predators (Yenkey, 2018), but there is abundant evidence in economics, political science, and sociology showing that trust is typically higher within relationships more embedded in a closed network (e.g., Coleman, 1988; Greif, 1989; Putnam, 1993; Uzzi, 1997, 1999; see Burt, 2005:Chps 3-4, for review).

Evidence for the closure-trust association has been primarily from networks around North Americans and Europeans, but Burt and Burzynska (2017) use exceptional data on a large sample of Chinese entrepreneurs to show that trust and closure are associated in Chinese business networks as they are in the networks around Western managers. At the same time, trust is so strong in some cases that trust is relatively independent of the surrounding social structure. Burt and Bruzynska show that such ties can also be found in the West, where about one in ten relations corresponds to such ties for the Western business leaders, but they are more characteristic of the networks around the Chinese numbering two out of three contacts, so they refer to the ties by their colloquial Chinese label: *guanxi*. In Chinese literature, *guanxi* ties have three qualities: (1) familiarity, intimacy (2) trust, and (3) mutual obligation (Bian, 1997, 2005; see Bian, 2018, for analytical review of the literature; see Luo, Huang, and Wang, 2011, for meta-analysis; and Chen, Chen, and Huang, 2013,

for broader review; Lin, 2017, for the link with sentiment; Fei, 1948, for early roots in social science; Horak, 2014, for analogous concepts in Korea). In the absence of network data, researchers have distinguished *guanxi* ties by role relations associated with familiarity, trust, and obligation — role relations such as family, or close friends from school (e.g., Farh et al., 1998). Armed with network data, Burt and Opper (2017) show that the quality and nature of dyadic relationships that Burt and Burzynska term “*guanxi*” are less distinguished by distinct roles and structural homophily (such as joint education, military service, or co-membership in business or party organizations) than by instances of significant help in the history of a long-standing relationship — which, of course, can include relationships with members of one’s family, or with close friends from school. The shift from roles to interpersonal history is well aligned with research on trust. Beneficiaries of pro-social or cooperative behavior are typically more inclined to trust the other than those who have not experienced such a critical test (Kollock, 1994). Experience of fair, and potentially advantageous behavior can solidify trust towards the other (Hardin, 1991). Such effects can be pronounced when help is in short supply and therefore most valuable. The early firm development, typically characterized by weak organizational legitimacy (Suchman, 1995), standard problems of the liability of newness (Stinchcombe 1965; Freeman, Carroll, and Hannan, 1983), and — in the case of China — weak institutional support providing necessary access to key resources (Nee & Opper, 2012; Peng & Luo, 2000; Xin & Pierce, 1996), could therefore present a key stage of network formation.

The above results on Chinese networks need to be replicated using similar survey questions in North America and Europe before authoritative conclusions can be drawn about the relative prominence of *guanxi* in China versus the West. Still, knowing how certain kinds of people are more or less prone to *guanxi* could be a guide to strategic sampling for replication, and would be a contribution to better understanding the closure-trust association. To study the association free of respondent differences, effort is made in the above-cited evidence to hold respondent differences constant when describing differences between relationships. Control strategies include randomization,

respondent fixed effects, and regression models holding constant select respondent characteristics.

Here we build on these prior studies focusing on the quality of the dyad (Burt and Burzynska 2017; Burt and Opper 2017) and—while using the same sample of entrepreneurs—change perspective to understand how the closure-trust association covaries with individual respondent differences: How do differences in the network context for trust covary with respondent differences such that what is *guanxi* to one kind of person need not be *guanxi* to another? For this work we use Chinese survey network data documenting the personal networks surrounding 700 randomly sampled entrepreneurs with a total of 4,464 contacts that provide ample variation on relations that are more or less like *guanxi*. We study the usual suspects that are commonly assumed to explain the quality of relational ties and trust in China. These include attributes capturing an individual's well-being (Helliwell and Putnam 2004), business experience (Luo et al. 2011, Peng and Luo 2000) and political participation (Ma and Parish 2006), as well as socio-demographic factors, reflecting the respondent's current and previous situation in life (for an overview of the literature, see Chen et al. 2013). Note that the same or similar attributes play a prominent role in survey-based cross-country research exploring individual level antecedents of interpersonal trust outside of China.

BASELINE MODEL AND DATA

We begin with the baseline model that provides the frame of reference for our analysis. Figure 1 is a diagram of the network definition of *guanxi* as ties with individuals who have provided significant help in the history of a long-standing relation proposed in Burt and Burzynska (2017). We should note that these event contacts qualify as *guanxi* regardless of when the contact was cited for an event, and regardless of the substance

of the event(s) for which the contact was cited (Burt and Opper, 2017).¹ The unit of analysis is a relationship. The horizontal axis distinguishes relations by the extent to which they are embedded in a closed network (Granovetter's, 1992, "structural embedding"), here measured by the number of third parties (mutual contacts) surrounding a relationship. The vertical axis is a measure of trust in the relationship (measure discussed below). Trust within each relationship is regressed across log number of third parties embedding the relationship.

———— Figure 1 About Here ————

We turn to data in a moment, but the point in Figure 1 is the two closure-trust associations: a nonlinear dashed line spanning a wide range of trust levels that increase with network closure (number of third parties to a relationship), and a solid line of high trust levels that do not covary much with network closure. The dashed line is often found in the networks around Western managers. When two people have no mutual friends, their relationship is a bridge between their respective groups, illustrated by the diagram below the zero point on the horizontal axis. The more mutual friends two people have, the more closed the network around their relationship, and the more likely the two people are members of the same group, illustrated by the diagram below the "6 or more" point on the horizontal axis. Trust increases quickly with the first few third parties, then less quickly with additional third parties (e.g., Burt, 2005: Chps. 3-4). This is also the closure-trust association on average across business relations in China (Burt and Burzynska, 2017:Figure 4). *Guanxi* ties are a level and slope adjustment to the familiar (dashed-line) closure-trust association: the solid line in Figure 1 shows a high level of trust across levels of network closure. These findings resonate well with trust research showing higher levels of trust when trustee and truster experience a "critical test" in exchanging and receiving a unilateral favor (Kollock, 1994).

¹Founding the business is an exception. Contacts cited as most valued in founding stand apart as extreme *guanxi* ties – higher in average trust than any other relationship, with trust least contingent on network closure (Burt and Opper 2017).

Network Data

We have data on the social networks around 700 Chinese entrepreneurs operating manufacturing firms in three provinces surrounding the Yangtze River Delta: China's financial center, Shanghai, Jiangsu Province with the capital Nanjing to the north, and Zhejiang Province with the capital Hangzhou to the south. The three provinces account in 2013 for 20.2% of China's gross domestic product, and 31.9% of China's imports and exports. The sample is a 2012 continuation of samples surveyed in 2006 and 2009 (see Nee and Opper, 2012:52-70, for details).

Network data were obtained with name generator and name interpreter items. Such items are, of course, routine in survey network research (Marsden, 2011), familiar in network surveys of management populations (Burt, 2010:281ff.), and have precedent in China (Ruan, 1998, the 2003 Chinese General Social Survey, Bian and Li, 2012; Xiao and Tsui, 2007; Batjargal et al., 2013). The survey instrument and interview materials are available in the original English (see acknowledgement note).

Our name generators asked for the people most valuable to the respondent's business this year (2,357 people named), the most valuable employee in the business this year (700 people named), the person most difficult to deal with in the respondent's business this year (700 people named), and a residual category of people significant to the business who had not yet been named (16 people named). We refer to people named on these generators as "current contacts." One person could be cited on multiple name generators. The 3,773 current-contact citations identify 3,123 individuals cited as current contacts.

To stretch the network data back in time, respondents were also asked about contacts associated with up to five significant events since the firm's founding. The survey deliberately did not provide an objective definition of what makes an event "significant," but wanted to capture what the respondent deemed significant. The only guidance respondents received was that events should be important in the overall "history of the company development" to be regarded as "significant" (Burt and Opper 2017). An example timeline in the questionnaire illustrated the focus on milestone events in the company's development. Across a wide spectrum of possibilities, cited

events include replacing a lost supplier, getting a big contract, raising money for equipment purchase, introducing new production technology, getting preferential land or tax treatment, managing a quality-control disaster (Burt and Opper, 2017:Table 3). The idea is to create a time line of concrete events, then ask for the names of contacts who were most valued during each event. All respondents named a contact most valuable when the business was founded. Most respondents then named five subsequent events and a person most valued for help during each event. Contacts cited in association with significant events we reference as “event contacts.” A contact can be cited in association with multiple events, so the number of event contacts is lower than the number of events (3.86 event contacts cited on average with respect to 4.95 events on average). About half of current contacts are people cited as most valued during significant events in the history of the business (1,564 of 3,123).

Name interpreter items elicited information on the kind and strength of relations with and among the cited contacts. Respondents were asked to indicate which of multiple roles are, or have been, played by each contact (immediate family, extended family, childhood friend, classmate, colleague, co-member of a business association, military, party). Relation strength is measured in terms of emotional closeness, duration, frequency, and trust. To scale relations, respondents were asked to describe whether their relation with each contact was “especially close,” “close,” “less close,” or “distant,” and whether the connection between each named contact was “especially close,” “distant,” or something in between (“neither distant nor especially close”). Duration was measured by asking: “How long have you known each person?” (years). Frequency was measured by asking: “On average, how often do you talk to each person?” (daily, weekly, monthly, less often). Event contacts are cited in association with the history of the business, so it could seem reasonable to see them as contacts from an entrepreneur’s past, but more than half of them are currently met daily.

Trust

The literature offers an abundance of trust definitions (e.g., Rousseau et al., 1998; Harden, 2002). The trust question in this survey relies on respondent interpretation.

For each cited contact, respondents were asked: “Think about your trust level towards him/her. Please circle the closest option (1 least trust; 5 highest trust).”² In Chinese, the question reads: 想一想您对他/她的信任程度; 请在表意最接近的选项上画圈 (1 最不信任-5 最信任). The word used for trust is “信任”, which is a word as ambiguous in Chinese as “trust” is in English. Using a measure of trust open to respondent interpretation is likely to generate trust ratings of cited contacts that covary with trust-related respondent differences, and our goal in this paper is to inventory those differences. All the more striking that network prediction is so robust despite respondent differences.

Estimates for the Baseline Model

Figure 1 reports means and OLS estimates across all 4,464 cited relationships (before controls are added). Table 1 contains estimates with controls. The estimates are made with respondent fixed effects, so trust variance between respondents is held constant to see trust covariation within respondent networks. The first column in Table 1 connects our network data with more traditional analyses. Trust is regressed across respondent role relations (contacts often play multiple roles). As others have found, trust is significantly higher in family than in other contacts (e.g., Fahr et al., 1998), but note the significantly low level of trust in relations beyond the listed seven role relations. “None of the above” refers to relations that involve none of the listed role relations. The negative coefficient for “none of the above” means that trust is significantly higher with any role-relation contact than it is with a person beyond the listed role relations (excluding the ambiguous connection of being co-members in a business association). The last two columns of Table 1 show how rarely role-relation contacts are cited. Far

²Interviewers were trained to guide respondent queries about what we mean by trust in the following way: “Consider the extent to which you trust each of the listed people. For example, suppose one of the people asked for your help. The help is not extreme, but it is substantial. It is a level of help you cannot offer to many people. To what extent would you trust each person to give you all the information you need to decide on the help? For example, if the person were asking for a loan, would they fully inform you about the risks of them being able to repay the loan? If the person was asking you give a job to one of their relatives, would they fully inform you about their relative's poor work attitude or weak abilities, or other qualities that would make you prefer not to hire the relative?”

and away, the majority of event contacts (75.5%) and nonevent contacts (93.1%) come from roles beyond the seven listed in the table.^{3,4}

———— Table 1 About Here ————

The second and third columns in Table 1 add network variables to the prediction. Only family and classmates have statistically significant trust associations when network structure is held constant, and the coefficient for family is much reduced (.444 reduces to .220). Test statistics for the network variables are much stronger than test statistics for role labels, and the explained variance in trust increases from 25% with role labels, to 70% with role labels and network structure. When role labels are deleted entirely from the prediction, in the third column of the table, explained variance in trust decreases hardly at all, from 70.0% down to 69.6%, emphasizing the predominant influence of social structure on inter-personal trust relations (Coleman, 1988; Greif, 1989; Putnam, 1993; Uzzi, 1997, 1999; see Burt, 2005:Chps 3-4, for review).⁵

As illustrated in Figure 1, trust on average increases with network closure (dashed line in Figure 1, 21.04 t-test in Table 1), is significantly higher in relations with event

³We combine immediate and extended family roles. Immediate family was defined as parent, spouse, or child, leaving any other relative to extended family. We combine immediate and extended family into a single family variable in the analysis because (a) there are so few family contacts of either kind cited (of 4,464 cited contacts, 252 are immediate family and 120 are extended family), and (b) trust is high on average for both kinds of family contacts (re-estimating the model in the first column of Table 1 with separate dummy variables for immediate and extended family contacts yields t-tests of 2.00 and 2.86 respectively, which are similar to the 2.05 reported in Table 1 for the two variables combined).

⁴The respondent's worksheet defined colleague as "you and the person have been employed in the same organization." However, we failed in the questionnaire to distinguish between colleagues in the respondent's current organization versus former organizations. Not knowing what colleague means, we put it aside for this analysis. Nevertheless, it is worth noting that most of the "none of the above" contacts in Table 1 below are "colleagues" (79%). The ambiguity should be removed in future data collection. We put a warning about this point on the downloadable network questionnaire in the acknowledgement note.

⁵For a reader interested in the incremental contribution of each network predictor, here are the increases in R^2 as we add predictors in the order of Table 1 t-tests: .249 R^2 for the first model in Table 1 increases to .463 when interaction frequency is added to the prediction, then .533 when number of third parties is added, then .677 when the event dummy is added, then .688 when the interaction between event dummy and closure is added, then .700 when all five are present (which is the second model in Table 1).

contacts (20.50 t-test), and trust in relations with event contacts is significantly less contingent on network closure (bold line in Figure 1, -10.49 t-test in Table 1).⁶

We control for two relationship strength variables likely to covary with trust within networks: frequency and duration. We measure frequency by the number of days that separate meetings with a contact. Trust decreases linearly with the number of days between meetings (-27.72 t-test in Table 1): 4.26, 3.92, 3.73, and 2.13 mean trust respectively in contacts met daily, weekly, monthly, and less often (which we coded as three-month intervals to preserve the linear trust association through daily, weekly, and monthly meetings). We measure duration by the log of years known, which is positively associated with trust (16.76 t-test).

A Careful Look at Duration

Given the importance of interpersonal history to the network definition of *guanxi* (Burt and Oppen 2017), we considered alternative ways to think about duration. Figure 2 offers an illustration with data on one of the respondents. Time runs from 1974, when the respondent was born, to 2012, when the respondent was interviewed about his network. The respondent graduated from high school in 1992, and founded his current business in 2000. By 2012, he had grown the business to 467 employees. The dark bars below the horizontal axis in Figure 2 show when contacts were cited in association with significant events in the history of the business. Soon after founding the business in 2000, the respondent secured an overseas customer (event 1 in 2001), and then

⁶We get similar results if we replace the count of third parties with strength of indirect connection through third parties ($\sum_k z_{ik}z_{kj}$, $k \neq j$, where i is the respondent, and z_{kj} varies from zero to one with the emotional closeness between persons j and k). Across our 4,464 relations between respondents and cited contacts, the count of third parties is correlated .80 with the strength of indirect connection. If the strength of indirect connection replaces the count of third parties in Table 1, the association between trust and closure has a t-test of 19.70 instead of the 20.04 in Table 1, and the t-test for the slope adjustment for the weaker closure-trust association in event ties is -10.33 instead of the -10.72 in Table 1. Given so little prediction improvement with the strength of indirect connection, we stay with the simpler measure, the count of third parties. In networks containing more casual relationships, strength of indirect connection might be less similar to a count of third parties, so strength of indirect connection could be a preferable measure.

secured a reliable supplier (event 2 in 2002). There was a plant explosion in 2006 (event 3), financial crisis in 2009 (event 4), and a plant discharge issue in 2012 (event 5). The bars above the horizontal in Figure 2 show when the respondent met the people he cited as key contacts. Bar height indicates the respondent's trust in each contact.

Our analysis in Table 1 includes a simple count of the years for which respondent and contact have known each other. The trust bars above the horizontal in Figure 2 increase with years known: They are low for contacts known four or five years, higher for contacts known longer. And on average, the top graph in Figure 3 shows that trust increased with years known — low between people who have only known one another for a year, higher in the second year, higher still in the third year, and increasing somewhat linearly thereafter. The rapid increase in trust through the first few years, followed by smaller increases thereafter, is well captured by the log of years known. Predicting trust from log years known and respondent fixed effects describes 42% of the variation in trust (R^2 in Figure 3 top graph).

———— Figure 2 and Figure 3 About Here ————

Alternatively, the association between trust and duration could be linked to key events, such as the founding of the business. The respondent in Figure 2 met five of his nine cited contacts before founding his business in 2000, and his trust is higher in those early contacts than is his trust in contacts met after he had his business running. The middle graph in Figure 3 shows a linear increase in trust for all respondents across years known before or after founding the business. The horizontal axis is the year when the respondent met a contact minus the year when the respondent founded his business. Positive numbers are people known before founding the business. The substantively significant point is that there is no threshold transition around the zero point from low trust in contacts met after founding to high trust in contacts met before. And the squared multiple correlation shows that measuring duration with respect to founding explains less variance in trust than measuring duration in terms of years known ($.36 R^2$ in Figure 3 middle graph).

A third perspective is to think about time in terms of the respondent's life. The people to whom the Figure 2 respondent turned in founding his business and securing his first overseas contract are people he knew since his high school days. The two contacts are neither family, nor neighbors, nor classmates, nor friends from military service. They are trusted friends the respondent has known for many years, and when asked about the relationship between the two contacts, the respondent said they are "especially close." The respondent's trust in these two school-age contacts is higher than his trust in his other contacts, on average. And across all respondents, the bottom graph in Figure 3 shows that trust is higher in people met before high school graduation than it is in people met later. Again, however, the trust association with years known before or after high school graduation is linear with time, showing no threshold transition around the zero point from high trust in people met before high school graduation and low trust in people met after. And again, the squared multiple correlation shows that measuring duration with respect to a milestone in the respondent's life, such as high school graduation, explains less variation in trust than measuring duration in terms of years known (.35 R^2 in Figure 3 bottom graph).

Our conclusion is that the association between trust and relationship duration is not about the trust-creating effect of milestone events in the life of the business or the respondent. Separate from these 'bonding' events, duration is about getting to know a person, which happens during the first four or five years of a relationship, after which trust increases at a slow, almost linear rate, over additional years. Overall, this process is reasonably captured by log years known (as in Table 1 and the top graph in Figure 3), which we continue to use in our further analysis.

FRAME OF REFERENCE

Table 2 contains estimates of the parameters in the Figure 1 closure-trust association, with summary statistics and correlations in Table 3. The first row of Table 2 contains estimates with respondent fixed effects, as in Table 1. A dummy variable is added to the regression equation to control for each respondent as a unique individual. Levels of trust vary with closure across relations within each entrepreneur's network. The second

row of Table 2 contains estimates without respondent fixed effects. Levels of trust vary within and across respondents.

———— Table 2 and Table 3 About Here ————

Two points are illustrated. First, the closure-trust association is stronger when respondent differences are held constant. Beta is higher (.760 > .680), and the adjustment down for *guanxi* ties is lower (-.496 > -.608), so trust within *guanxi* ties increases more with closure (.264 for the *guanxi* slope, versus .072 without respondent fixed effects). Second, the estimates with respondent fixed effects describe 10% more trust variance (squared multiple correlations of .696 versus .594). We use that 10% as an upper limit — a frame of reference — for trust variance explained by individual differences between respondents when network structure is held constant.

RESPONDENT DIFFERENCES

Both homophily and heterogeneity characterize *guanxi* ties. Previous research with general population samples in China indicate that *guanxi* ties are strong ties that link similar people (Ruan 1998), that strong ties are more frequently used than weak ties by job seekers (Bian 1997; Bian, Huang, and Zhang 2015), and that “discussion networks” are even more homogenous in terms of gender and age than those in the United States (Blau, Ruan, and Ardelit 1991). At the same time, one must understand an important feature of Chinese *guanxi* networks: *guanxi* ties connect not just similar people but, for facilitating favor exchange, they are developed and maintained among similar people who have different kinds of resources to exchange with each other (Fei 1948; Bian 2018). Therefore, heterogeneity is always an essential part of *guanxi* networks, and this is especially true for the networks of Chinese entrepreneurs (Chen, Chen, and Huang 2013; Bian and Zhang 2014; Burt and Burzynska 2017). For this study, our interviews and broad observations have informed us that the “entrepreneurial group” in itself is highly homogenous in personal attributes, dominated by male Han Chinese of a distinct age group and similar education. As prior research in this project (Burt and Burzynska 2017; Burt and Opper 2017) has already confirmed the limited effect of role homophily, the present analysis shifts attention to the potential impact of respondent differences.

Table 4 lists the five distinct categories of respondent differences we study. In total we include 50 attributes offering a fine-grained account of four broad categories of kinds of individual differences, and 3 measures of network differences. Each row reports the results for one distinguishing attribute. The first column in Table 4 shows the squared multiple correlation that results from adding four control variables to the baseline model. The squared multiple correlations are close to the value in the second row of Table 2, in which no individual differences were added. The .594 squared multiple correlation in the second row of Table 2 increases to .597 on average across the 53 individual-difference variables tested in Table 4, and the maximum we report is an increase to .614 (for network density, at the bottom of Table 4). In short, the closure-trust graph in Figure 1 is robust across a variety of individual differences. The other columns in Table 4 report test statistics on the four control variables added for each row measure of individual difference. As in the second row of Table 2, we use the “cluster” option in Stata to adjust test statistics down for autocorrelation between relations described by the same respondent.

Happy, Healthy People

We begin our analysis with the possible correlation between measures of individual well-being and trust. A broad empirical literature using cross-country and single country survey designs shows a correlation between individual well-being and a respondent’s social network, including measures of specific and generalized trust (Glaeser, Laibson and Scerdote 2002; Helliwell 2006; Helliwell and Putnam 2004). A similar interplay between well-being and trust in *guanxi* ties seems likely. Here we focus on respondent differences in happiness and health status, both central factors explaining individual well-being. Consider the first row of Table 4. We wanted to know whether people who are happy trust in ways different than people who are unhappy. Respondents were asked: “Considering all aspects of your life, how happy would you say you are, on the whole?” Responses were on a five-point scale but few people were extremely unhappy, so the Table 4 difference in respondent happiness is a contrast between three categories: high (“very happy”), medium (“happy”), and low (“less than happy”).

Responses are scaled as 1, 0, -1 respectively in the row regression, so interaction effects with happy are for “happy” respondents as the reference category (zero point on the happy variable).

———— Table 4 About Here ————

Four adjustments are reported in the table. The first is a level adjustment to average trust in bridge relations with nonevent contacts (alpha in Figure 1 and Table 2). Happy respondents tend to be a little less trusting of such contacts, but not significantly so (-1.19 t-test in Table 4). The second adjustment is for the slope of the association between trust and closure around relations with nonevent contacts (beta in Figure 2 and Table 2). Happy respondents and unhappy respondents have exactly the same closure-trust association with nonevent contacts (0.00 t-test). The third adjustment is for the increased trust associated with event contacts, which are guanxi ties in these data (gamma in Figure 1 and Table 2). Respondents in general have high trust in their guanxi contacts, but happy respondents trust significantly more than that (2.74 t-test in Table 4). The fourth adjustment is for trust in event contacts being less contingent on closure (lamda in Figure 1 and Table 2). The significantly negative test statistic in Table 4 for the fourth adjustment (-2.38) shows that above and beyond the average tendency for people to express trust in event contacts independent of closure, happy people are even less concerned with closure around their event contacts.

Figure 4 displays the closure-trust association described by the four adjustments. The dots are average levels of trust within a relationship (vertical axis) across levels of closure around the relationship (horizontal). The bold lines are averages for respondents in the high category of happy (“very happy”). Thin lines are averages for respondents low on happy. Respondents in-between are not displayed.

———— Figure 4 About Here ————

Trust in nonevent contacts increases with closure similarly for respondents more or less happy. The two dashed lines in Figure 4 are nearly identical, corresponding to the negligible test statistics in Table 4 for adjustments to alpha and beta.

Difference between happy and unhappy respondents is apparent in their trust in event contacts, their guanxi ties. The solid thin line in Figure 4 shows that the least

happy respondents have high trust in their bridge relations with event contacts, but their trust in event contacts increases as the connection is more embedded in mutual friends. Happy respondents have higher trust in bridge relations with event contacts (2.74 in Table 4) and their trust with event contacts stays at that high level regardless of mutual friends (so λ , the negative adjustment to beta for *guanxi* ties, is significantly more negative: the -2.38 test statistic in Table 4).

In words, the statistics in Table 4 and the graph in Figure 4 show that *guanxi* ties are more distinguishable in the networks around happy respondents. There is a bigger increase in trust associated with *guanxi* ties for happy respondents, and there is less contingency on closure. The second row of Table 4 shows the same pattern for respondents who self-report themselves as “healthy.” In sum, *guanxi* ties are more distinguishable in the networks around respondents who feel more happy and healthy.

The result is consistent with a central feature of *guanxi* ties: *guanxi* ties facilitate favor exchange (Fei, 1948; Liang, 1949; Bian, 2005), and happy and healthy people are generally in a better position than their unhappy and unhealthy counterparts to engage in favor exchanges. This also implies an ugly face of *guanxi* ties: when you are politically troubled, financially vulnerable, or socially unpopular so that you become unhappy and/or unhealthy, your *guanxi* ties get away from you as a result of decreased trust.

The result is also consistent with recent trust research exploring the association between personal trustor attributes and generalized trust. Using individual level data drawn from U.S. localities, for instance, Alesina and La Ferrara (2002) report that people who have experienced seriously negative events such as recent medical or financial trauma, divorce, or social discrimination express low trust in strangers. Related, Dunn and Schweitzer (2005) present experiment evidence showing that even incidental emotions of happiness and anger respectively increase and decrease trust in others, and Opper, Nee, and Holm (2017) present field experiment evidence that risk averse Chinese entrepreneurs shy away from using *guanxi* ties in their business

activities. Happiness and individual well-being may well provide a mind-set that reduces an individual's need for social control when extending trust in others.

Business Differences

Building on the wide-spread assumption that *guanxi* ties help to facilitate business deals, are instrumental in getting access to scarce resources and offer protection in China's complex regulatory environment, individual business differences may well correlate with the necessity (and subsequent success) in forming trusted relations (Luo et al. 2011, Peng and Luo 2000, Xin and Pearce 1996). Specifically, status differences defined by firm size, business success, technical sophistication, and firm age may correlate with *guanxi* ties. Similarly, differences in the quality of local regulatory institutions and industrial policies—most evident in the designation of local industrial and technology parks—may influence a respondent's reliance on and trust in *guanxi* ties.

Having described the Table 4 statistics in detail for one kind of difference between respondents, we can be more succinct about others. In Table 4 we compare respondents who were founders with respondents who took over their business from its founder. We compare respondents running older businesses with those running newer ones. Most of the respondents were founders (79.9%), and for most founders, the current business was their first (87.7%). However, founding does not mean the same thing for all of the businesses. In our survey, a business is founded when it is registered with the government as a private firm. For various reasons, some businesses began operating before, either under different (non-private) ownership forms or as small-scale private enterprises not requiring a formal registration as a private firm.

Table 4 contains tests for respondent differences in whether their business was operating before it was registered as a private firm, whether it was registered after the 2004 Constitutional amendment increasing the legal status of private enterprise, how successful the business was in the year before the survey (success in terms of sales, book value of total assets, and return on assets). We compared respondents in small businesses with those in large businesses

(government categories and number of employees), and compared respondents with (self-reported) middle or senior management experience before running the business versus ordinary managers and people with no management experience. We compared respondents running family businesses versus those not. The business differences listed in the table are differences used to distinguish kinds of business and predict business success in Burt and Burzynska (2017) and Burt and Opper (2017), where further details are available.

For this paper, the differences do not matter. In all, Table 4 contains tests for 29 business differences between respondents. With four parameters per test, we expect by random chance five or six statistically significant adjustments. There are four scattered among the tests. Three of the four are adjustments for the industry in which a business operates. We ran a test just for the significance of the industry adjustments. Businesses are drawn from five industries, and four parameter estimates are tested, so we have 16 independent parameter adjustments estimated. The summary $F_{(16,699)}$ test statistic for the industry adjustments is 1.55, which has a .08 probability of being zero in the population. In sum, we conclude that the closure-trust graph in Figure 1 is stable across business differences between respondents.

Differences in Political Participation

With guanxi ties deemed specifically helpful when navigating a company through administrative and political challenges (Luo and Peng 1996; Xin and Pearce, 1996), the respondent's own political role and status is commonly perceived as a predictor of the quality and intensity of networking activities (Ma and Parish 2006). Political status of the trustor could therefore well modify the observed trust-closure association. Potential transmission channels could be the quality of information available to the trustor and the perceived dependence on the trustee. However, we do not find significant differences between respondents in terms of their political participation. The most obvious is to compare respondents who are members of the Chinese Communist Party (CCP) at the time of the survey with those who are not — which generates the negligible adjustments

in the first Table 4 row under political differences. A person might feel motivated to join the CCP once his or her business is up and running. We tested for being a member before the business was founded — which generates the negligible adjustments in the next row of Table 4. However, CCP-membership per se may not yet imply active political participation or signal better access to political capital. For this reason we also controlled whether the entrepreneur held a formal position within the CCP, for instance in the role of a party secretary or deputy secretary. The contrast in Table 4 is between respondents who held a formal position in the CCP, ordinary CCP members, and those who did not join the CCP. Neither generated significant adjustments to Figure 1. We get the same negligible results for respondents who regularly contributed funds to support party activities. All together, the results lead us to conclude that the closure-trust graph in Figure 1 is stable across respondent differences in political participation.

Demographic Differences

Prior research focusing on individual level differences of *guanxi* ties suggests that demographic factors reflecting an individual's current and former situation in life plays a significant role in explaining the quality of relational ties (for an overview, see Chen et al. 2013). We have for this reason cast our net wide to not only include standard demographic factors capturing a respondent's current situation in life. We also include attributes associated with a respondent's formative childhood experience such as exposure to periods of hunger—an experience shared by more than 10 percent of the sample entrepreneurs and likely to undermine an individual's trust in others.⁷ Yet, most demographic differences do not matter. Respondent gender, age, exposure to privation, being officially registered in a rural area, and education do not generate statistically significant adjustments in Table 4. When the closure-trust association turned out to be the same for men and women, we tested for homophily effects, thinking that the key difference might not be male versus female respondents, but men dealing

⁷The inclusion of periods of hunger is in line with survey research establishing a link between traumatizing personal experience and the development of trust in others (Alesina and La Ferrara 2002; Rahn et al. 2009):

with men or women dealing with women. Trust is slightly higher between female respondents and female contacts, but not significantly so, and the four adjustments to the closure-trust association for gender homophily are negligible.

The demographic difference that matters is family, particularly family of origin. People who have many children are slightly less likely to trust in bridge relations with nonevent contacts, but the most significant adjustments in Table 4 for demographic differences are for people with many siblings who often turn to family as business contacts. Respondents with more siblings express higher trust in nonevent contacts and that trust is less dependent on mutual friends (2.92 and -2.17 t-tests in Table 4). And *guanxi* ties are less distinct for respondents with more siblings: Trust increases less for event contacts (-3.85 t-test in Table 4), and closure is less discounted for event contacts, though the adjustment is negligible (1.60 t-test in Table 4). We suspect that family obligations between siblings are substituting for the reputation costs created by closure. Consistent with that suspicion, a similar pattern of adjustments occurs between respondents differing in the proportion of cited contacts who are family: trust is high in nonevent contacts (2.17 t-test in Table 4), trust increases less for event contacts, and closure is significantly less discounted for event contacts (-2.15 and 2.58 t-tests respectively in Table 4).⁸

To summarize the family effect, we created a contrast between three kinds of families: large and prevalent, small and marginal, versus something in between the two. Large and prevalent families surround respondents who have more than 3 siblings and

⁸In 1979, couples were limited by law to one child. Respondents born earlier are more likely to have siblings. To make sure that the more homogeneous trust from respondents with multiple siblings is due to being raised before family size was regulated by law, we added three variables to the number of siblings row in Table 4: respondent age, respondent age times number of siblings, and respondent age times siblings times event contact. The second term measures whether the siblings adjustment to alpha varies with respondent age. The third term measures whether the siblings adjustment to gamma varies with respondent age. Both tests are statistically negligible ($F_{(2,699)} = 1.49$, $P \sim .23$). To explicitly test for the 1979 law, we added the same three variables with age measured as a dummy variable equal to 1 if the respondent was born after 1975 (to be flexible about pre-1979 birth order). Again, both tests are statistically negligible ($F_{(2,699)} = 0.94$, $P \sim .39$).

cite more than 20% contacts who are family (280 of 700 respondents, 1,808 of 4,464 cited relationships). Small and marginal families surround respondents who have one, two, or no siblings and cite no family members as contacts (187 respondents, 1,162 cited relationships). Breakpoints in number of siblings and percent family contacts were determined by plotting average trust levels across both variables, looking for thresholds on the family variables at which trust increased. Statistical tests in Table 4 comparing the three categories of family are similar to the adjustments for number of siblings and proportion of contacts who are family.

———— Figure 5 About Here ————

Figure 5 graphs the adjustments. Here, as in Figure 4, mean levels of trust are plotted (vertical axis) across levels of closure (number of mutual friends, horizontal axis). The two bold lines are closer together in Figure 4 relative to Figure 1, showing that respondents with large, prevalent families express higher levels of trust on average, with less distinction between *guanxi* and other ties. *Guanxi* ties are most pronounced for people with small, marginal families: The thin lines in Figure 5 are further apart, showing lower trust on average in nonevent contacts, and a larger jump in trust for event contacts. Trust in nonevent contacts is slightly more dependent on closure, which makes trust in event contacts stand out all the more as independent from closure — the flat line at the top of Figure 5. In sum, *guanxi* are more distinct for respondents with small, marginal families. .

———— Figure 6 About Here ————

The distinction between small, marginal families and large, prevalent families explains the *guanxi* difference between happy and unhappy respondents. Happy respondents show higher trust in *guanxi* bridge relations (Figure 4), which is similar to the higher trust in *guanxi* bridge relations displayed by respondents in small, marginal families (Figure 5). Figure 6 shows that respondents in small, marginal families tend to be happier than respondents in large, prevalent families (29.25 chi-square with 4 d.f., $P < .001$). When we make level and slope adjustments for the three-category family variable in Table 4 and the three-category happy variable simultaneously, test statistics

for the happy variable are negligible. Specifically, there is no longer increased trust in *guanxi* bridges nor decreased *guanxi* dependence on closure (2.74 and -2.38 t-tests in Table 4 for three-category happy differences drop to 1.51 and -1.64 respectively, $F_{(2,699)} = 1.35$, $P \sim .26$). This findings is in line with earlier research linking frequent contacts with family and friends with individual wellbeing (Helliwell and Putnam 2004).

Network Differences

Aggregate network structure could affect the closure-trust association within any one relationship. Table 4 contains adjustments for the size of a respondent's network, the density (average strength of connections between cited contacts), and a summary contrast between large, open networks, typically discussed as broker networks, and small, closed networks, here discussed as clique networks, referring to cliques as small groups of densely interconnected people.

The results show that *guanxi* ties are less distinct in larger, more open networks. With respect to network size, trust is higher in bridge relations with nonevent contacts (4.67 t-test in Table 4), and less increased for event contacts (-4.27 t-test). There is no change in the closure-trust association. Density is the opposite: Trust is lower in bridge relations with nonevent contacts (-8.23 t-test in Table 4), and increased for bridge relations with event contacts (9.33 t-test).

————— Figure 7 About Here —————

Closure-trust associations are plotted in Figure 7 for respondents with large, open networks (brokers) versus respondents with small, closed networks (clique members). Thick lines describe the associations for network brokers. These are respondents with large, open networks (above-median number of contacts and below-median density, 188 of 700 respondents, 1,494 of 4,464 cited relationships). Clique members are respondents with small, closed networks (below-median number of contacts and above-median density, 247 respondents, 1,302 relationships).

The thick lines are close together in Figure 7, which means relations are more homogeneous in broker networks — nonevent contacts are trusted more, trust increases less for event contacts, and trust in event contacts increases more with

closure. Respondents in small, closed networks make a stronger distinction between *guanxi* and other ties — trust is lower in bridge relations with nonevent contacts, highest in bridge relations with event contacts, and increases little with closure around relationships with event contacts.⁹

CONCLUSIONS

We began with the theoretical association between trust and network illustrated in Figure 1: Owing to closure's reputation mechanism, trust increases within a relationship as network closure increases around the relationship, but some relationships mature into *guanxi* ties within which trust is high and relatively independent of the surrounding social structure. From our analysis, we draw two broad conclusions about individual differences affecting the association: one about individual differences that matter, and the other about the extent to which individual differences matter.

Social isolation matters. We see this in family and network differences between respondents. With respect to family, *guanxi* ties are more distinct for entrepreneurs with small, marginal families, which were distinguished in our data as having fewer than three siblings and citing no family members among their business contacts. *Guanxi* ties for these entrepreneurs involve a higher level of trust less dependent on closure around a *guanxi* tie (Figure 5). Multiple, non-exclusive explanations are possible. One thought is that entrepreneurs with small, marginal families perceive the help received in the context of distinct events as relatively more important or valuable than entrepreneurs with large families. The latter can, absent outside support, rely on family members. For entrepreneurs from small, marginal families trust in event contacts may therefore be higher and less conditional on closure, as the help received constitutes a more 'critical test' (Kollock 1994) of the relationship. Alternatively, the social norms governing

⁹Number of third parties is truncated at 4 for small, closed networks in Figure 7 because so few third parties are available to embed a relationship. The small, closed networks contain no relations embedded in six or more third parties, and a total of 60 relations embedded in five (5 nonevent and 55 event, combined in Figure 7 with relations embedded in four third parties).

behavior between family members could substitute for closure's reputation mechanisms. For entrepreneurs with small, marginal families forming deep family-like *guanxi* connections with select business contacts can be an adaptation to their relative lack of family.

With respect to the broader network around a respondent, *guanxi* are more distinct in small, closed networks (Figure 7). We infer that people in small, closed networks are accustomed to the safety of closure's reputation mechanism regulating behavior, so they are uncomfortable with the mechanism's absence in bridge relations. However, once a clique member establishes trust with an outsider, that trust escalates to a high level — as if the contact were an insider, creating a foundation for feelings of betrayal and denigration of the contact's character if trust is violated (Burt and Luo, 2017). This process is all the more likely in China's transitory business environment, where access to outside resources is still limited, not always regulated by market exchange and for this reason highly valued (Nee and Opper 2012).

What do entrepreneurs with small, marginal families have in common with those who have small, closed networks? Both conditions are associated with more distinct *guanxi* ties: higher trust in *guanxi* ties and lower *guanxi* dependence on closure. More simply: Entrepreneurs in both conditions make sharper us-them distinctions between my people and other people. When we test for family and network differences simultaneously, the significant test statistics in Table 4 remain statistically significant, so neither difference explains the other.¹⁰ Entrepreneurs with small, dense networks are relatively isolated, and entrepreneurs with small, marginal families can be expected to feel relatively isolated in China, where family has such a cultural emphasis. Both categories of entrepreneurs are therefore likely to experience difficulties with respect to resource access and doing business with people beyond their network, which may

¹⁰The three-category family and broker contrasts in Table 4 do not significantly overlap (7.63 chi-square with 4 d.f., $P \sim .11$). With simultaneous Table 4 adjustments for the family and broker contrasts, both the family adjustments and the broker adjustments are statistically significant (respective tests from the estimation with all eight adjustments are $F_{(4,699)}$ statistics of 12.72 and 32.14, both of which reject the null hypothesis well beyond the .001 level).

explain why longstanding *guanxi* ties linked to important events are particularly distinct for these entrepreneurs.

Our second conclusion is that individual respondent differences matter little relative to network context. Figure 8 is a decomposition of trust variance across the 4,464 cited relationships. Three broad components are distinguished: the prediction from network context (59.4%), additional variance due to individual differences (10.2%), and residual variance (30.4%). We are struck by the large amount of variance predicted by network context, both the portion predicted by the traditional embedding factors of closure, duration, and frequency (39.2%), and the portion predicted by distinguishing *guanxi* ties (20.2%).¹¹ Relatively little variance is attributed to individual differences (10.2% is the difference in R^2 between the two rows in Table 2). And 10.2% is the upper limit. Some unknown portion of the 10.2% is due to measurement issues, such as our assumption that different respondents make trust evaluations on the same scale, when in fact some respondents use higher trust ratings on average than other respondents.¹² More concretely, we recover 3.9% of trust variance beyond the network

¹¹We use the model in the second row of Table 2 to partition trust variance due to network theory. The variation due to structural embedding, duration, and frequency is the sum of $b_j r_j$ across the three predictor variables j , where b_j is the standardized regression coefficient for predictor j and r_j is the correlation between trust and predictor j . The variation due to *guanxi* is the sum of $b_j r_j$ across two predictor variables j : the dummy variable distinguishing *guanxi* ties, and the interaction between the dummy variable and log number of mutual contacts.

¹²Half of the trust variance attributed to individual differences can be attributed to respondent differences in average trust rating. We get to that statement by averaging trust scores for each respondent, and adding the average as a predictor to the 67-predictor regression in the next footnote. The .633 R^2 for the 67-predictor model increases to .680, which is a .047 increase, which is about half of the .102 trust variance attributed to individual differences in Table 2. Holding constant respondent mean trust strengthens the family and network effects discussed in the text. The test statistic profile for large, prevalent families changes from 2.27, -1.08, -4.53, and 2.17 in Table 4 to 3.92, -1.45, -5.15, and 2.72 respectively. The test statistic profile for network brokers changes from 6.67, -1.35, -6.77, and 2.45 in Table 4 to 7.26, -1.70, -7.64, and 3.35 respectively. Individual differences we have not considered explain some portion of the mean trust differences between respondents, however, our point in this note is merely that beyond the diverse differences in Table 4, a substantial proportion of the trust variance attributed to individual differences could be no more than differences in response style, some respondents using higher ratings on average than other respondents.

variables if we add simultaneously all 53 individual-difference variables in Table 4.¹³ That is a small gain for a substantial increase in number of predictors. Of course, there are additional individual differences to consider beyond the 53 in Table 4. However, we have tested the usual suspects, and even the 10.2% upper limit to trust variance attributed to individual differences is small relative to the 59.4% attributable to the social network around a relationship.

The implication is that trust is difficult to predict with individual differences absent network data, and much of the trust variance predicted will be differences in individual response style rather than something substantive about trust (e.g., see footnote 12). Nevertheless, survey and experiment research on trust routinely uses large data samples to report statistically significant predictions from sociodemographic attributes such as age, education, gender, and race to the trust people have in co-workers, other people, professions, corporations, or government. Given our evidence of the strong trust association with network context, and the relatively weak relevance of individual differences, perhaps it should not be surprising that efforts to predict trust from individual differences yield such low multiple correlations (e.g., Glaeser et al., 2000; Alesina and La Ferrara, 2002), or that including modest measures of network context might improve prediction (e.g., Glaeser et al., 2000:835, look at structural embedding [mutual friends] and duration [months students know each other]).

We hasten to emphasize a qualification to the implication: We have described relative trust within the network around a person, as predicted by network theory. Individual differences matter little, relative to network structure, for a person's relative trust in people within their network. However, we have no data on relations beyond the

¹³If we add all 53 individual difference variables in Table 4 to the network prediction of trust with five network variables in the second row of Table 2, and add the statistically significant level and slope adjustments illustrated for happy (Figure 4), family (Figure 5), and network (Figure 7), we increase the trust R^2 from .594 for the five network variables to .633 for all 67 predictors, a .039 increase in R^2 . If we privilege the 62 individual difference variables by putting them into the prediction before the five network variables, the individual differences still only account for 8.5% of trust variance across relations, which pales in comparison to the 59.4% described by the five network variables.

network. We suspect that the decision to trust a person beyond the network, an outsider, is guided by friends of friends (Goeree et al., 2010) and homophily (McPherson, Smith-Lovin, and Cook, 2001). Is the outsider a previously unknown friend of a friend, whereupon trustworthiness can be predicted by network closure around the indirect connection between ego and the outsider? With respect to homophily, does the outsider share some significant personal attribute that suffices to create a feeling of network closure around ego and the target (e.g., ego and the outsider are two of Durkheim's Protestants who meet in a town where everyone else is Catholic)? Thus, although individual differences are a minor factor predicting relative trust within the network around a person, they are likely important in predicting trust and cooperation beyond the network — which is the premise for using individual differences to predict trust and cooperation. Our results imply that homophily will be a stronger predictor of trust in relations beyond a person's immediate social circle.

Ending on a more positive inference from our results, we find that people with large, open networks, and people with large, prevalent families (which are the Chinese entrepreneurs happier with their current situation) make a less sharp distinction between *guanxi* and other relations, which is a less sharp us-them distinction between my people versus other people. Therefore, we expect that people with large, open networks and people with large, prevalent families are more experienced in collaborating with people outside their immediate social circle, so they are people more likely to trust beyond their immediate social circle (which seems to be true for the Chinese entrepreneurs, Opper, Burt, and Holm, 2017). Naturally, generalization of our findings requires replication studies in different cultural and social contexts.

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Table 1.
Trust Is a Function of Network, Not Roles

	Prediction with Just Contact Roles	Contact Roles and Network Structure	Prediction with Just Network Structure	Means	
				Event Contacts	NonEvent Contacts
Closure, Structural Embedding (log number of third parties, 0-6)	—	.770 *** (21.21)	.760 *** (21.04)	3.22	2.73
Event Contact (0-1)	—	1.447 *** (20.87)	1.419 *** (20.50)	1.00	0.00
Interaction (event contact x number of third parties)	—	-.508 *** (-10.72)	-.496 *** (-10.49)	3.22	0.00
Rarely-Met Contacts (days between meetings, 1 – 90)	—	-.014 *** (-27.11)	-.014 *** (-27.72)	10.29	19.25
Years Known (log 1-60)	—	.269 *** (12.00)	.334 *** (16.76)	13.22	5.50
Childhood Friend (0-1)	.328 (1.80)	.217 (1.88)	—	.017	.001
Classmate in School (0-1)	.302 (1.86)	.215 * (2.10)	—	.064	.003
Co-Member in Business Association (0-1)	-1.757 *** (-9.16)	-.073 (-0.59)	—	.021	.044
Family (0-1)	.444 ** (2.62)	.220 * (2.05)	—	.122	.011
Military (0-1)	.369 (1.22)	-.158 (-0.83)	—	.007	.001
Neighbor (0-1)	-.006 (-0.04)	.210 (1.89)	—	.025	.007
Party (0-1)	-.051 (-0.23)	.051 (0.36)	—	.015	.003
None of the Above (0-1)	-.703 *** (-4.19)	-.002 (-0.02)	—	.755	.931
Constant	4.495	2.038	1.959		
R ²	.249	.700	.696		

NOTE — OLS regression results with respondent fixed effects predict trust on a five-point scale (N = 4,464 relations). Average trust levels are significantly different between respondents ($F_{(699,3759)} = 1.80, P < .001$ in the third model). Contacts can be cited for multiple roles (e.g., a contact can be “neighbor” and “classmate”). Number of third parties is increased by one and logged to capture nonlinear association with trust (but means are counts of third parties). Categories of contact frequency are entered in days (1 for “daily,” 7 for “weekly,” 30 for “monthly,” and 90 for “less often”). Years known are entered as log years (but means are number of years). “None of the Above” is 1 if contact is none of the seven kinds of contacts listed. “Event Contacts” are people cited as most valued during one or more of the significant events in the business (N = 2,905 relations). “NonEvent Contacts” are anyone else (N = 1,559 relations). ** P < .01 *** P < .001

Table 2.
Respondent Differences Add
Ten Percent to Predicted Trust Variance

R²	Coefficients for NonEvent Contacts		Adjustments for Event Contacts (<i>Guanxi</i> Ties)		<i>Guanxi</i> Slope ($\beta + \lambda$)	
	Alpha	Beta	Gamma	Lamda		
.696	1.959	0.760	1.419	-0.496	0.264	With Respondent Fixed Effects
.594	2.206	0.680	1.685	-0.608	0.072	Without Respondent Fixed Effects

NOTE — Coefficients in the first row are from the third model in Table 1. Coefficients in the second row are for the same model, estimated without respondent fixed effects, with standard errors adjusted for correlation between relations cited by the same respondent (using “cluster” option in Stata).

Table 3.
Summary Statistics on Baseline Variables

	1	2	3	4	5	6
Trust (1-5)	1.00					
Closure, Structural Embedding (number of third parties, 0-6)	.45	1.00				
Event Contact (0-1)	.58	.20	1.00			
Interaction (event contact x number of third parties)	.56	.47	.90	1.00		
Rarely-Met Contacts (days between meetings, 1 – 90)	-.53	-.45	-.17	-.21	1.00	
Years Known (1-60)	.50	.28	.53	.53	-.23	1.00
Means	3.92	1.30	.65	.89	13.42	2.06
Standard Deviations	1.08	.49	.48	.73	25.07	.79

NOTE — Summary statistics are computed from 4,464 relations with cited contacts. Number of third parties is increased by one and logged to capture nonlinear association with trust. “Event Contacts” are people cited as most valued during one or more of the significant events in the business. Categories of contact frequency are entered in days (1 for “daily,” 7 for “weekly,” 30 for “monthly,” and 90 for “less often”). Years known are entered as log years.

Table 4. Test Statistics for Adjustments to Baseline Model for Kinds of Respondents

R ²	NonEvent Coefficients		Event (<i>Guanxi</i>) Coefficients		Respondent Differences
	Alpha	Beta	Gamma	Lamda	
Differences in Well-Being					
.596	-1.19	0.00	2.74	-2.38	Happy (high, medium, low; 1, 0, -1)
.595	-1.40	1.78	2.26	-2.63	Good Health (high, medium, low; 1, 0, -1)
Business Differences					
.595	-0.60	0.76	0.48	-0.87	Respondent Is Founder (versus manager)
.596	-0.01	0.10	-1.70	0.75	Age of Firm (years)*
.594	-0.22	-0.39	0.37	0.03	Log Business Sales Last Year*
.595	-0.83	-0.41	0.24	0.65	Log Value of Business Assets*
.595	0.95	0.27	0.02	-0.57	Log Return on Assets (net income/assets)*
.595	0.10	-0.43	-0.53	0.54	Business Was Operating before Founding
.597	1.67	-1.58	-0.01	0.56	Firm Founded after 2004 Amendment
.597	-1.27	2.08	0.17	-0.90	Respondent Had Middle or Senior Manager Experience Before Running Business
.595	1.66	-1.72	-1.31	1.17	Firm Size (large, medium, small; 1, 0, -1)
.595	1.32	0.90	-1.20	-1.36	Firm Size (log number of employees)*
.596	-1.48	0.54	1.31	-1.40	Family Firm
.595	-0.74	0.53	0.94	-1.39	Spouse Works in the Firm
.595	-1.35	0.31	1.73	-1.13	Business Has an R&D Department
.600	-2.84	0.42	3.79	-1.31	Percent Skilled Labor in the Business*
.594	-0.58	0.39	1.20	-0.55	Employee Turnover (average last 3 years)*
.595	0.16	0.76	-0.05	-0.42	Electronics

Table 4 continued, page two

R ²	NonEvent Coefficients		Event (<i>Guanxi</i>) Coefficients		Respondent Differences
	Alpha	Beta	Gamma	Lamda	
.595	-1.66	1.51	1.51	-1.23	Machinery
.595	0.13	0.55	-1.40	1.03	Pharmaceuticals
.596	2.39	-1.94	-2.49	1.90	Textiles
.596	-1.68	0.21	2.22	-1.40	Transportation Equipment
.597	1.10	-2.33	-0.25	0.64	Business Is in Jiangsu Province
.595	-1.85	1.72	1.11	-0.71	Business Is in Shanghai Province
.596	-0.10	1.51	-0.54	-0.25	Business Is in Zhejiang Province
.596	-1.13	1.15	1.84	-1.17	Business Is in a City (versus town/village)
.595	-0.19	-0.02	0.49	-0.08	Suppliers Are Geographically Distant**
.595	-0.04	-0.15	0.90	-0.58	Customers Are Geographically Distant**
.595	1.11	-0.99	-0.79	0.67	Firm Uses <i>Guanxi</i> Ties with Suppliers**
.595	-1.17	0.81	1.47	-1.20	Firm Uses <i>Guanxi</i> Ties with Customers**
.595	-1.17	0.34	2.30	-1.85	Key Customer (Largest Sales) Came Through Family, Friend, or Acquaintance
Political Participation					
.595	--0.46	-0.55	0.60	-0.12	Respondent Is a Member of the Party
.595	0.22	-0.83	0.37	0.05	Was a Member Before Founding
.596	0.28	-1.51	0.18	0.37	Respondent Has Been More than a Member of the Party (yes, no, not member; 1, 0, -1)
.595	1.46	-2.09	-0.34	0.44	Respondent Has Been a Cadre
.595	-0.66	0.26	0.72	-0.39	Respondent Has a Relative Who Is a Cadre

Table 4 continued, page three

R ²	NonEvent Coefficients		Event (<i>Guanxi</i>) Coefficients		Respondent Differences
	Alpha	Beta	Gamma	Lamda	
.595	0.86	-1.34	-1.26	1.89	Respondent Has Managed an SOE
.595	-0.77	0.88	0.41	-0.80	Party Organization Inside the Business
Demographic Differences					
.595	1.24	-1.25	0.21	-0.41	Respondent Is Female
.596	-1.38	0.68	-0.42	1.66	Respondent and Contact Same Gender
.597	0.21	-1.48	-1.04	1.13	Respondent Age*
.595	0.04	-1.19	-0.10	0.70	Age at Founding*
.595	1.73	-1.30	-1.13	0.80	Respondent Suffered Periods of Hunger
.596	0.19	0.88	-1.32	0.03	Registered in Rural Area (Hukou when born)
.597	-0.85	-0.32	1.69	-0.17	Respondent Education (years)*
.595	0.35	-0.39	0.18	0.34	Respondent Is College Graduate
.602	2.92	-2.17	-3.85	1.60	Respondent From Large Family (# siblings)*
.600	-2.06	-0.21	1.13	-1.05	Respondent Has Large Family (# children)"
.597	2.17	0.61	-2.15	2.58	Percent of Cited Contacts Who Are Family*
.601	2.27	-1.08	-4.53	2.17	Respondent Family (large & present, middling, small & marginal; 1, 0, -1)
Network Differences					
.603	4.67	-0.76	-4.27	0.56	Size (all cited contacts, 3 – 12)*
.614	-8.23	2.92	9.33	-4.54	Density (0.00 – 1.00)*
.611	6.67	-1.35	-6.77	2.45	Network Broker Contrast (1, 0, -1)

Table 4 continued, page four

NOTE — Except for the squared multiple correlation in the first column, entries are t-tests for adjustments to the four parameters in Table 2 when estimated without respondent fixed effects: a level adjustment to alpha for more or less trust in bridge nonevent contacts, a slope adjustment to beta for stronger or weaker association between trust and closure for nonevent contacts, a level adjustment to gamma for higher or lower trust in event contacts cited, and a slope adjustment to lamda for stronger or weaker association between trust and closure for event contacts.

*In the final column, row variables are binary variables, unless they are marked as high, medium, low (1, 0, -1 respectively), or marked with an asterisk. Variables marked with an asterisk are continuous variables specified in the prediction as deviations from their mean value.

**The four variables marked with double asterisks are continuous indices specified in the prediction as deviations from their mean value. For the distant-suppliers measure, respondents gave the proportion of their suppliers who were at four distances: (0) in same locality as the business, (1) not local but in same region, (2) not in region but in China, (3) overseas. The control variable is a weighted sum: proportion in same region + 2 x proportion in China + 3 x proportion overseas. The distant-supplier variable averages 1.077 across the 700 businesses, varying from 0.0 when all suppliers are local (29 businesses), up to a maximum of 2.8 for a business buying most of its supplies overseas. The distant customers is computed across the same four categories, averaging 1.472, and varying from 0.0 when all customers are local (13 businesses), up to a maximum 3.0 when all customers are overseas (36 businesses). Following Peng and Luo (2000), the two *guanxi* variables are responses to the question “Please give us the number best describing the extent to which your firm currently utilizes *guanxi* connections with XXX” (7-point scale, from very little to very much), where XXX is “buyers” for one question, then “suppliers” for a second question.

Figure 1. *Guanxi* Graph for the Closure-Trust Association

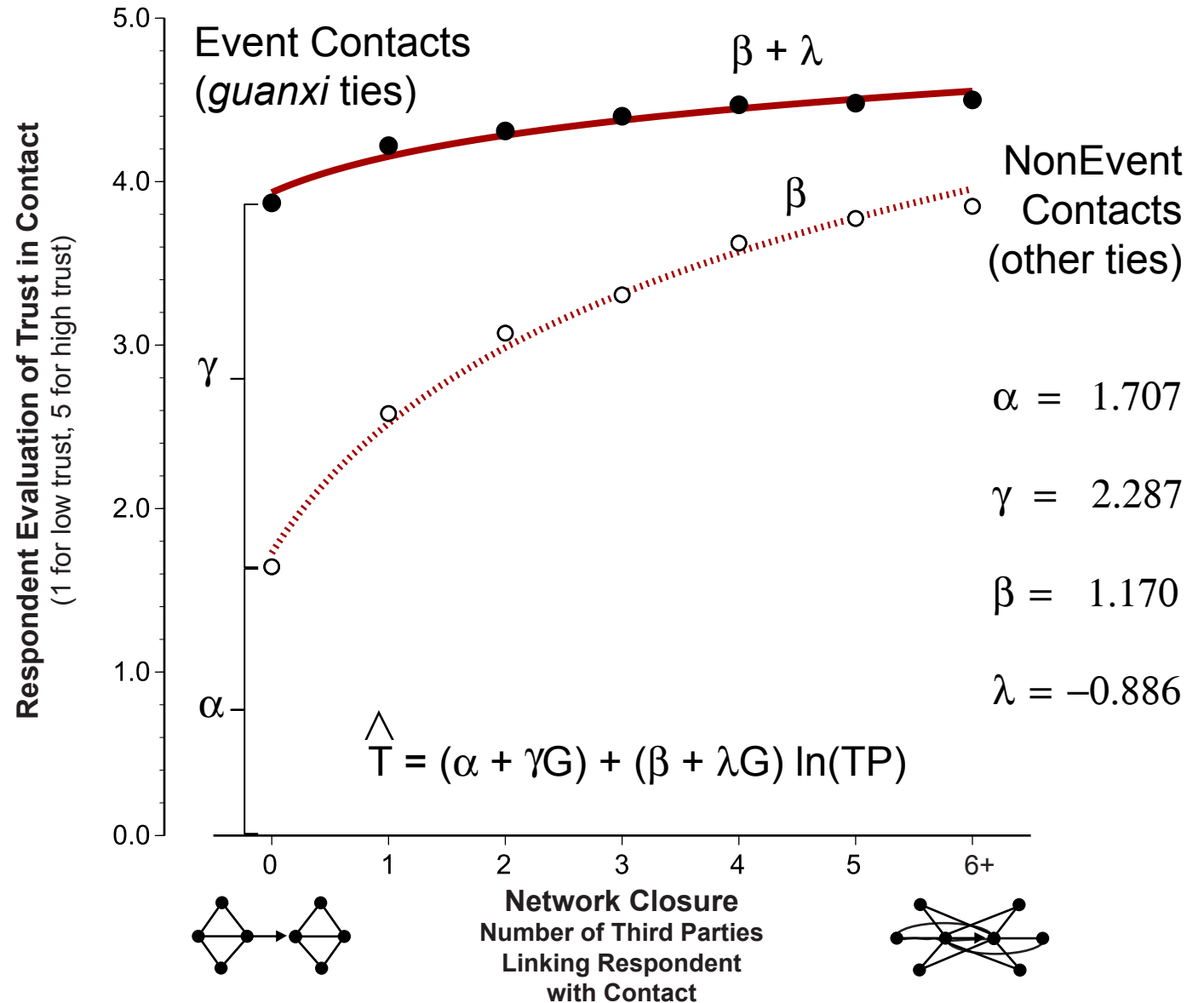
Alpha — average trust in a nonevent bridge relationship

Gamma — increase to alpha if bridge is *guanxi*

Beta — average increase in trust associated with the log of mutual contacts embedding a nonevent relationship

Lambda — adjustment to beta when relationship is *guanxi*

NOTE — Dots are average scores on vertical axis at each level of horizontal. Vertical axis is mean respondent trust in a contact, measured on a five-point scale (T). Horizontal axis is closure measured by number of mutual contacts in respondent network (count of third parties, TP). G is a dummy variable equal to 1 for a *guanxi* tie, here operationalized by a citation as the most valued contact in a significant event. Parameters are estimated by OLS for 2905 relations with event contacts, and 1559 relations with nonevent contacts.



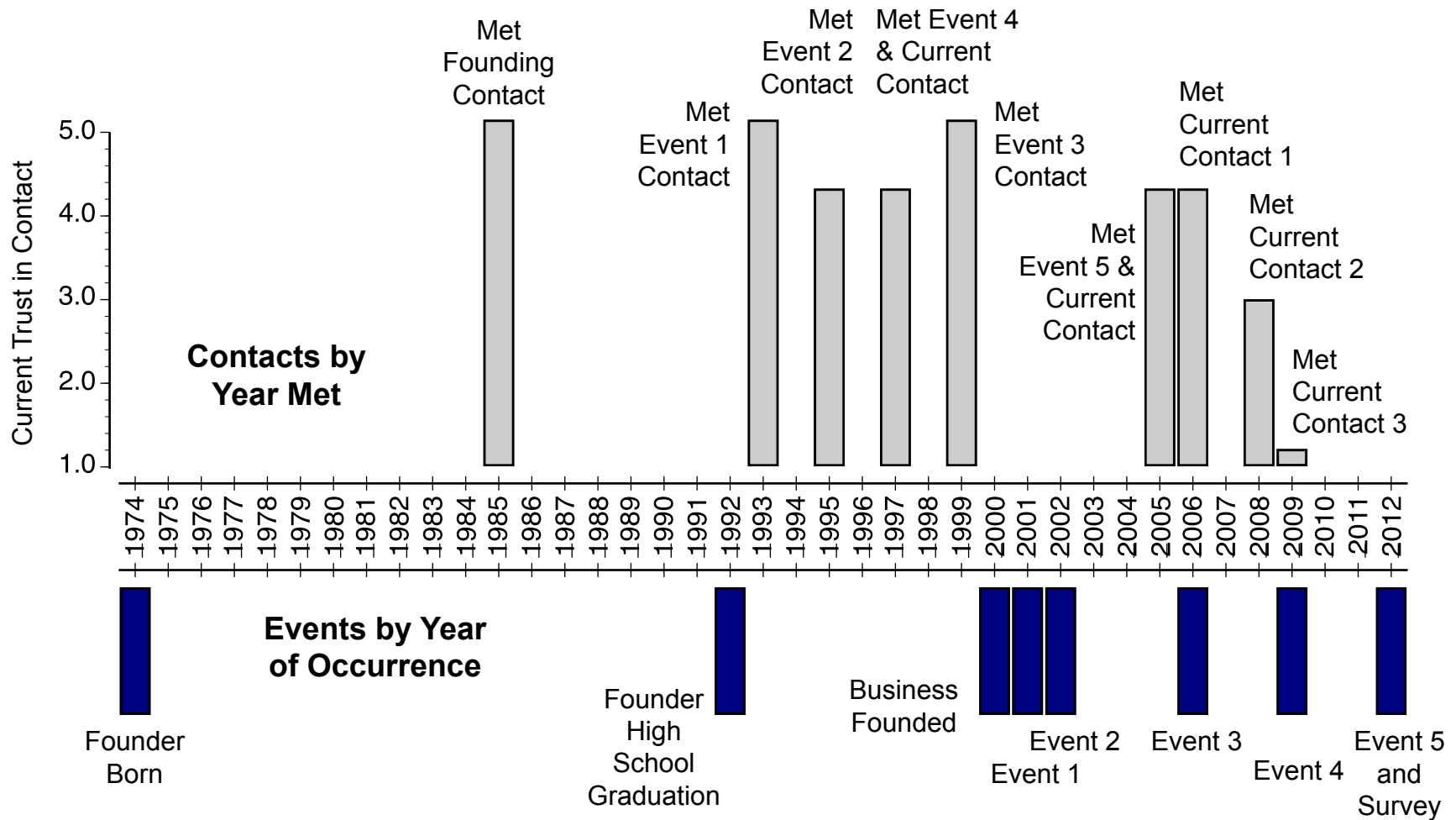


Figure 2. Event Sequence for an Example Respondent

NOTE — Dark bars below show when events occurred. Bars above indicate when each of the respondent's nine contacts were met, and the respondent's level of trust in each.

Figure 3.

Trust Increase with Years Known

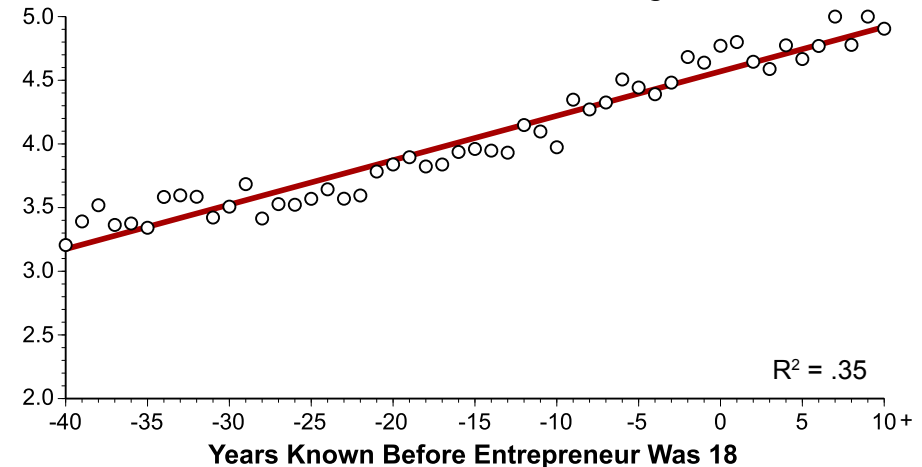
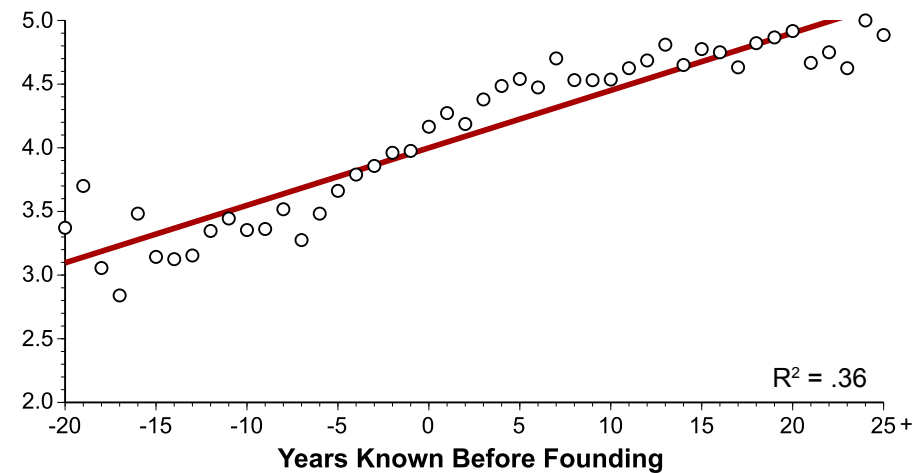
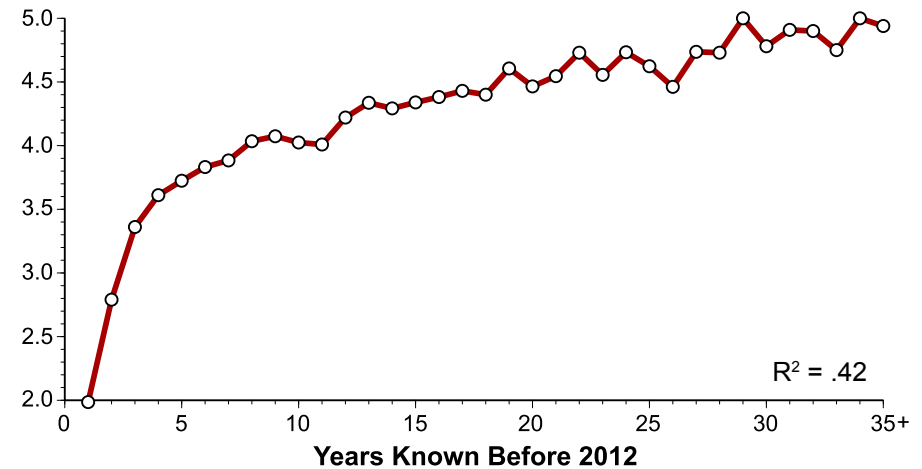
(4,464 relations)

The graphs show how trust increases with alternative temporal frames of reference. The top graph is physical years known, which is used as log years to predict trust in Table 1.

The middle graph is years known before founding, showing a smooth increase in trust before and after founding.

The bottom graph is years known before the respondent came of age to enter college, showing a smooth increase in trust before and after the respondent came of age.

Squared multiple correlations are estimated across all 4,464 cited relations with respondent fixed effects, using only time on the horizontal axis as a predictor (log years in top graph).



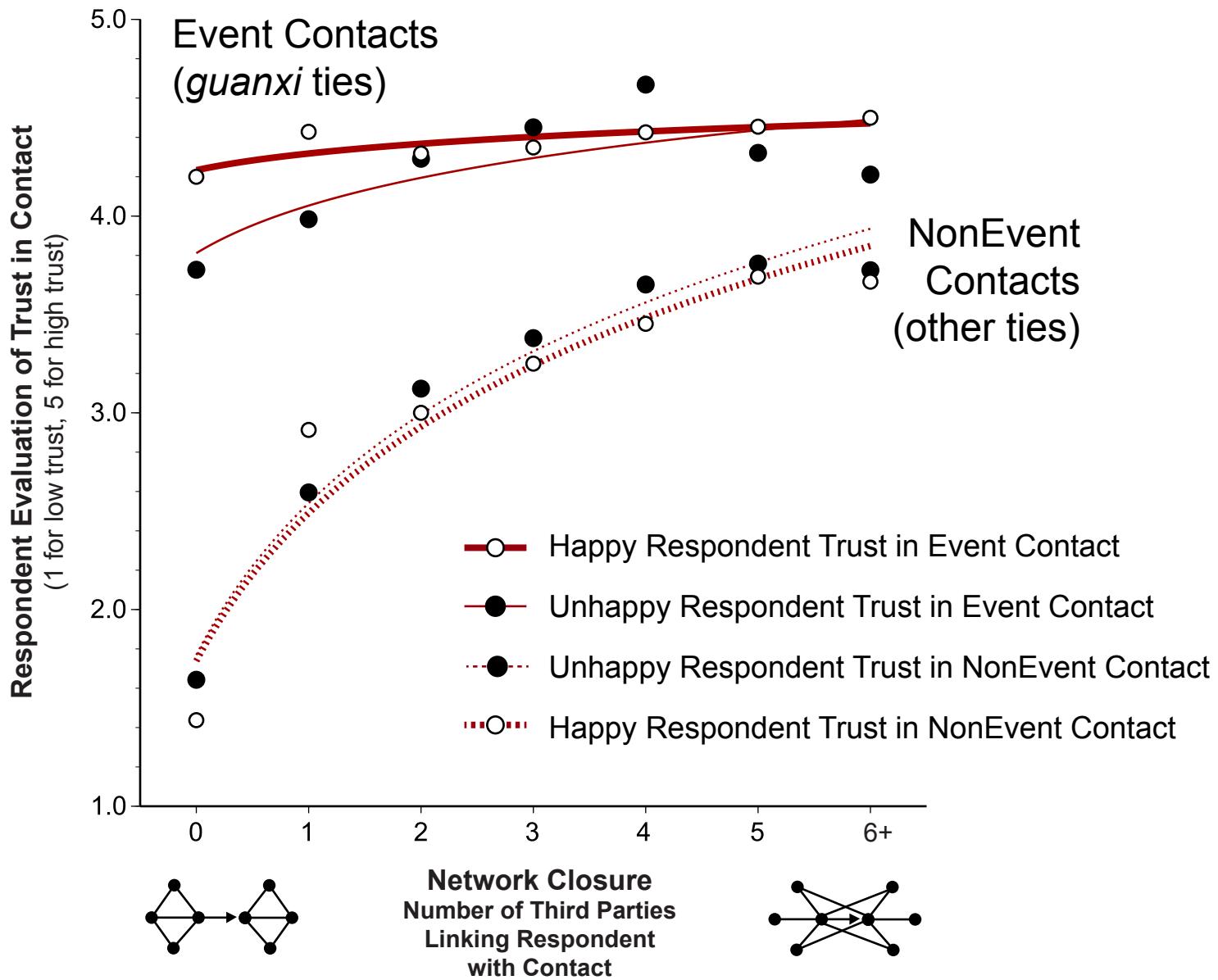


Figure 4.
***Guanxi* More Distinct for Happy People**

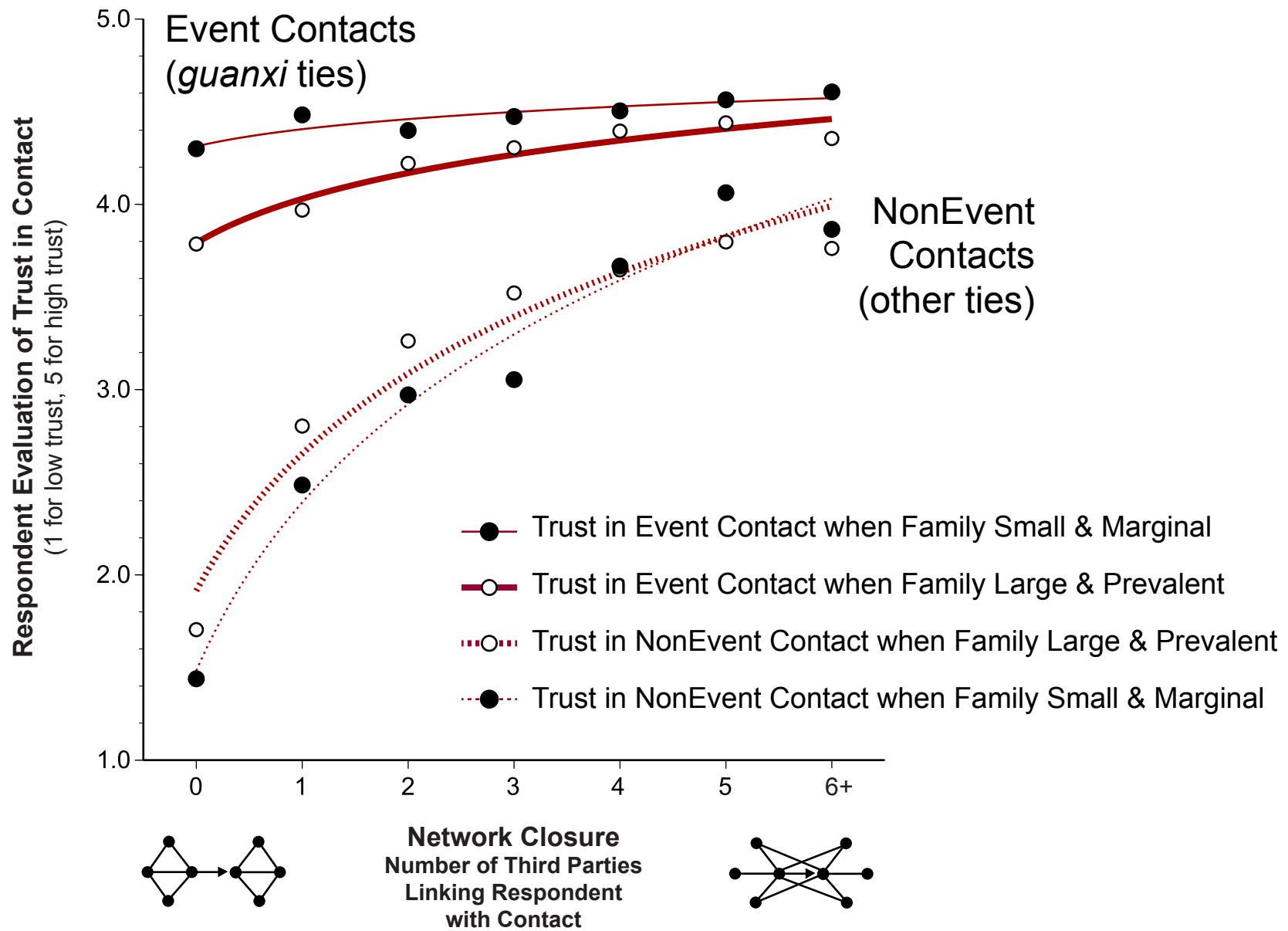


Figure 5.

***Guanxi* More Distinct for People with Small, Marginal Families**

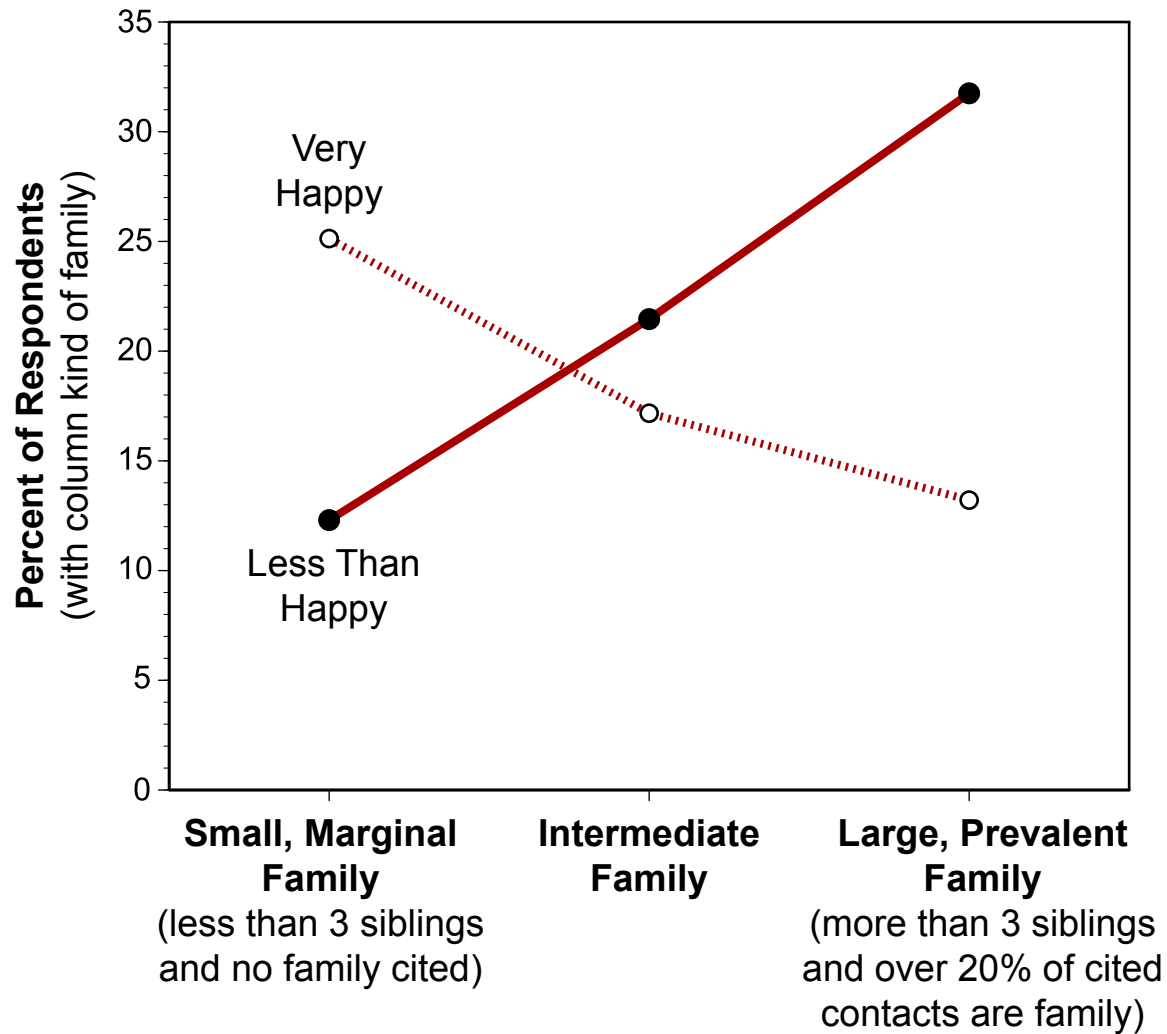


Figure 6.

Entrepreneurs with Small, Marginal Families Are Happier

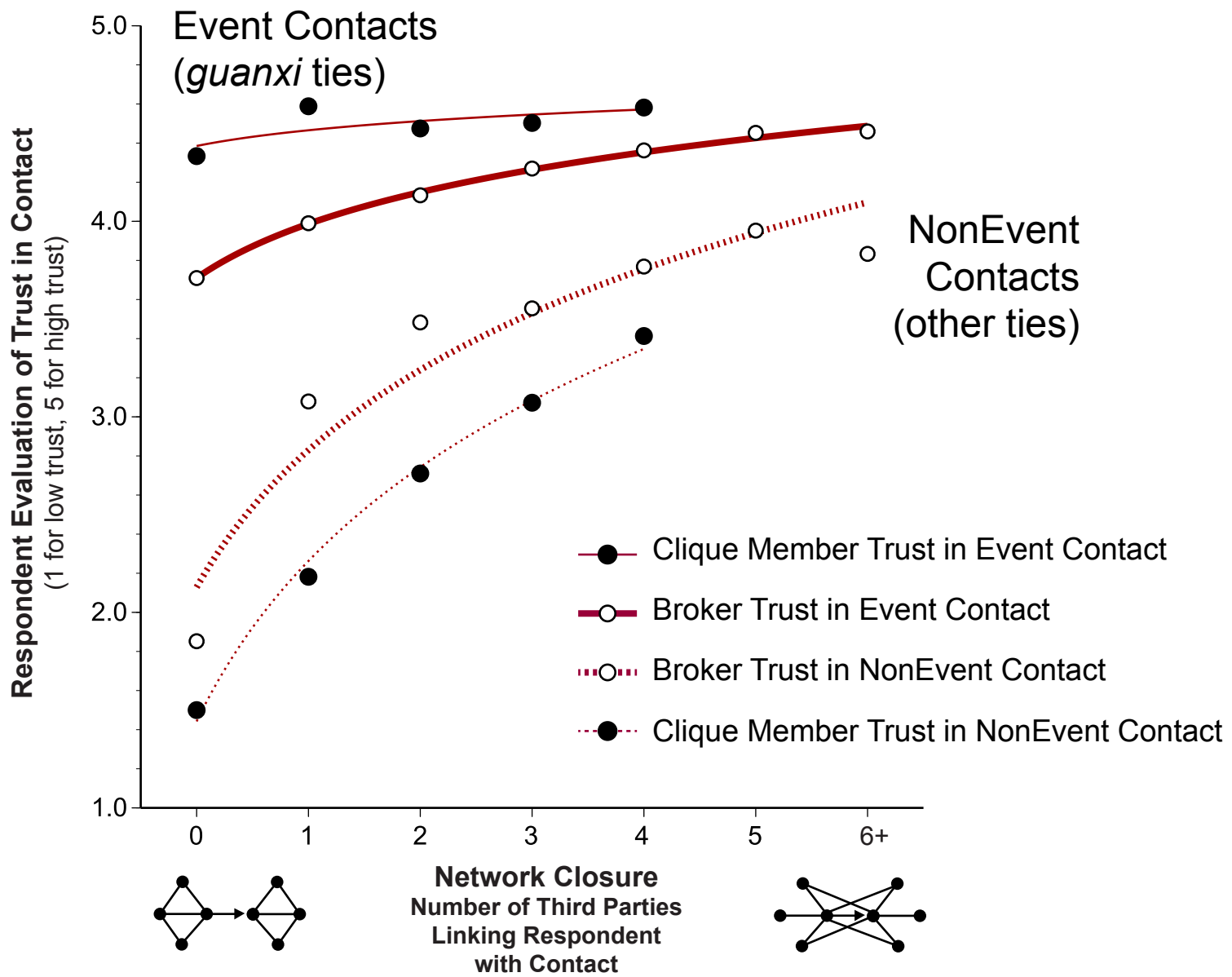
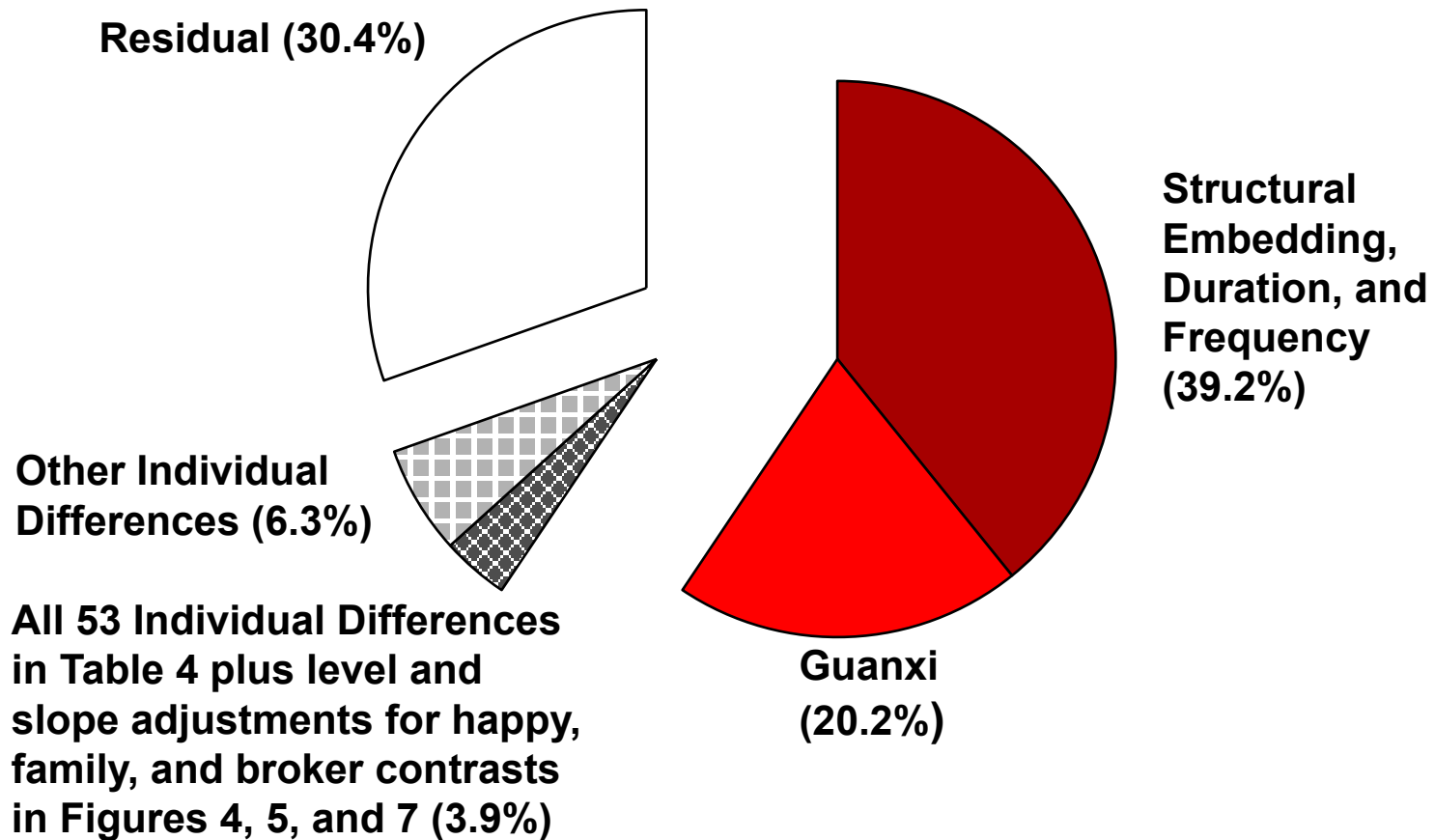


Figure 7.

***Guanxi* More Distinct for People in Small, Closed Networks**



**Figure 8. Trust Variance:
At Least 59.4% Network, Up To 10.2% Individual Differences**