

A Cross-Cultural Study of Noblesse Oblige in Economic Decision-Making

Laurence Fiddick · Denise Dellarosa Cummins ·
Maria Janicki · Sean Lee · Nicole Erlich

Published online: 9 June 2013
© Springer Science+Business Media New York 2013

Abstract A cornerstone of economic theory is that rational agents are self-interested, yet a decade of research in experimental economics has shown that economic decisions are frequently driven by concerns for fairness, equity, and reciprocity. One aspect of other-regarding behavior that has garnered attention is *noblesse oblige*, a social norm that obligates those of higher status to be generous in their dealings with those of lower status. The results of a cross-cultural study are reported in which marked noblesse oblige was observed on a reciprocal-contract decision-making task. Participants from seven countries that vary along hierarchical and individualist/collectivist social dimensions were more tolerant of non-reciprocation when they adopted a high-ranking perspective compared with a low-ranking perspective.

Keywords Economic decision-making · Noblesse oblige · Reciprocity · Cross-cultural analysis · Power distance · Individualism · Collectivism

Rational Choice, Altruism, and Reciprocity

A cornerstone of economic theory is that rational agents are self-interested. When making choices about allocations of resources, rational agents make choices that

L. Fiddick
Lakehead University, Orillia, ON, Canada

D. D. Cummins (✉)
Department of Psychology, University of Illinois at Urbana-Champaign, Urbana, IL 61821, USA
e-mail: dcummins@illinois.edu

M. Janicki
Douglas College, New Westminster, BC, Canada

S. Lee
University of Tokyo, Tokyo, Japan

N. Erlich
Mater Health Services, Mater Hospital, South Brisbane, Australia

maximize benefits to themselves. More than a decade of research in experimental economics, however, has challenged the legitimacy of the “rational agent” model as a descriptive model of human behavior. People do not always seek outcomes that maximize benefits to themselves. Instead, our choices appear to be equally motivated by concerns about fairness, equity, and reciprocity. In order to accommodate these results, normative theories have been proposed in which reciprocity (e.g., Rabin 1993), altruism/spite (Levine 1998), and inequity aversion (e.g., Bolton and Ockenfels 2000; Fehr and Schmidt 1999) play prominent roles.

What these theoretical perspectives have in common is the proposition that people evaluate choices with respect to outcomes not solely to themselves but to others as well. The ultimate other-regarding behavior is altruism, which is defined as incurring a cost on oneself in order to benefit another. Altruism can be distinguished from reciprocity in that the altruistic actor neither incurs present benefits nor anticipates future benefits from the altruistic act. In reciprocal exchanges, both parties are willing to incur costs with the expectation of immediate or future benefits. In evolutionary biology, this is expressed as fitness costs and benefits.

In experimental economics research, a standard measure of altruism is the amount given away in dictator games. In this type of economic game, dictators have full control over allocation of a windfall resource between themselves and another individual. Rational dictators will keep all of the resource for themselves. But results of dictator studies indicate that, on average, dictators freely give away about 15–35% of the resource to their partners (Camerer 2003). The incidence of altruism, however, is strongly influenced by social context. For example, Duffy and Kornienko (2010) found that dictators were far more generous when they competed in a generosity tournament (where performance is ranked based on the amount given away) than when they competed in an earnings tournament (where performance is ranked based on the amount kept).

Similar results have been observed with the ultimatum game. In this game, one party proposes how to divide a sum of money, and the other party chooses whether to accept or reject the proposed division. If the offer is rejected, the entire sum is forfeit. From a rational standpoint, any amount (no matter how small) should be accepted since something is always better than nothing. But ultimatum proposers tend to be more generous in their offers, with 40–50% comprising the modal range, and recipients tend to be choosy, with offers of less than 20% being routinely rejected. Here, proposers appear to behave strategically, taking into consideration which offers are likely to be acceptable to their partners. Recipients appear to base their decisions at least in part on norms of fairness (Rabin 1993) or inequity aversion (Bolton and Ockenfels 2000; Fehr and Schmidt 1999), which take into account the interests of others. More precisely, what is challenged is the assumption that people’s utility functions map monotonically to money. (Although technically if one values the welfare of others one could be said to be acting in one’s self-interest by advancing other’s interests, we will reserve the term “self-interest” for those models in which a person’s utility function is not influenced by other party’s welfare.) Like dictator decisions, however, ultimatum decisions also vary as a function of social context. When proposers make simultaneous offers to two respondents, the rate of rejected offers rises to about 50% because respondents demand more when they know other respondents are being offered more (e.g., Knez and Camerer 1995). Conversely, when there are two proposers and one recipient (and only one offer can be accepted), the amount offered rises significantly, sometimes resulting in divisions

that are highly disadvantageous to the proposers, a result that does in fact constitute a game-theoretical equilibrium (e.g., Roth et al. 1991).

Ethnographic Studies of Economic Games

While results such as these suggest that prosocial behavior might vary strongly as a function of sociocultural factors, ethnographic studies have yielded mixed results. Henrich et al. (2005) conducted a cross-cultural study of performance on dictator, ultimatum, and public goods games. The societies investigated were 15 small-scale horticultural, foraging, and pastoral cultures in Africa, South America, and Asia. Their results showed that the rational self-interest model of decision-making failed to a large degree in all of the societies studied.

Departures appeared to be due to two factors. The first was cultural variability in market integration: Higher levels of prosociality in economic games were associated with a higher degree of market integration and higher payoffs for cooperation in everyday life.

The second was the impact of relative status in decision-making outcomes. For example, the authors noted that among the Au and Gnau of Papua New Guinea, many ultimatum proposers offered more than half the pie, but they were frequently rejected. The behavior of both proposers and recipients therefore showed marked departures from game-theoretic predictions. The authors interpreted this pattern of behavior as a reflection of status-seeking through gift giving, which is common throughout Melanesia. In these societies, accepting gifts implies a strong obligation to reciprocate, and reciprocation often takes the form of political alliances. They further note that among the Achuar, higher-status men share meat more widely, and this is typically interpreted as an alliance-building strategy. In a response to this article, Sullivan and Lyle (2005) also point out that, based on field study of a hierarchical postcolonial “small-scale” society (Palau), social norms may prescribe that low-ranking individuals feel obliged to accept any offer from high-ranking individuals, and that high-ranking individuals reject any offer from a low-ranking individual simply because any such offer would be inappropriate. They state, “Given the difficulty in maintaining anonymity in ‘small-scale’ societies, it would seem necessary to control for status differences by matching the status of each protagonist, or letting it be known that each protagonist would be of approximately equal rank. There is no indication in the target article that any such consideration of the effects of relative rank and status were controlled during the study” (2005:836). Henrich et al. (2005) summarized the outcome of this large-scale cross-cultural study by concluding that economic behaviors emerge from “a set of basic human psychological mechanisms involving fairness and resource distribution, constrained in different ways by kinship, age, status, and other biologically meaningful variables” (2005:828).

Noblesse Oblige in Economic Games

This benevolent impact of status on economic choice behavior can be described as *noblesse oblige*, a social norm that obligates those of higher rank to be honorable and generous in their dealings with those of lower rank (Coleman 1990; Hechter and Opp

2001). This phenomenon has become a focus of economic and psychological research in recent years. Liebe and Tutic (2010) manipulated status effects in the dictator game using an ecologically realistic setting. Participants in the study were German pupils who were enrolled in one of four different types of schools that reflect the status hierarchy in the German educational system. Their results showed that pupils in the highest-ranking school (Privatgymnasium) displayed noblesse oblige toward all lower-ranking schools. The remaining pupils showed a combination of noblesse oblige and in-group bias. Similarly, Vanbeselaere et al. (2006) found that noblesse oblige resulted from power and group membership: Group members with complete control over both in-group and out-group members showed less in-group bias than did group members who shared control with an out-group. Importantly, group membership was determined arbitrarily (e.g., whether they preferred Klee or Kandinsky paintings), and power was operationalized as control over the evaluation of performance on a creativity test.

Noblesse oblige also has been observed in economic choice behavior that depends on reciprocal exchange. In a series of psychological studies involving a reciprocal carpool arrangement, Fiddick and Cummins (2007) reported that people were more tolerant of cheating (non-reciprocation) and felt being cheated was less unfair when they believed themselves to be of higher status (boss) than their carpooling partners (employees). This was true even when the lower-ranking partner was described as having a higher income than the higher-status partner. The effect was also found to be modified by group membership; people behaved generously toward employee partners who worked for them (in-group), but not for employees who worked at other organizations (out-group). These results indicated that status differences moderate tolerance for cheating and judgments of fairness in reciprocal contracts such that greater generosity is shown toward those of lower status.

The influence of culture on this noblesse oblige effect, however, has not been systematically investigated. Altruism and reciprocity constitute related but decidedly different social phenomena, and economic agents respond differently depending on whether or not reciprocity is possible. For example, in games based on repeated prisoner's dilemma, players must decide whether to trust the other individual and receive a moderate reward, or to play selfishly and obtain a large reward for themselves while imposing a cost on their partners. Although rational agents should always opt to play selfishly, the modal response is to trust with the expectation of reciprocity, and failures to reciprocate are met with retaliation in subsequent games (Fehr and Gächter 2000). In fact, players and observers are willing to pay a penalty for the opportunity to punish non-reciprocators (Fehr and Fischbacher 2004). These results make it apparent that not all other-regarding behavior is motivated by altruism, and that expectations of reciprocity changes the way in which other parties are perceived and treated. For this reason, it cannot be assumed that the noblesse oblige effect reported by Fiddick and Cummins would obtain in other cultures.

Goal of Present Work

The goal of the present work was to investigate the impact of status on reciprocal contracts across cultures. The results of economic games (such as dictator and

ultimatum) indicate that noblesse oblige is ubiquitous across different cultures. The question of interest is whether this applies to reciprocal contracts as well—that is, transactions that normatively entail a reciprocation of benefits.

The societies compared were Australia, Canada, Germany, Japan, Singapore, the United Kingdom, and the United States. These countries can be differentiated along two socially significant dimensions. The first dimension contrasts individualism and collectivism (Hofstede 1980, 2001). Individualists see themselves as independent from other people and value the expression of uniqueness and the achievement of personal goals. In contrast, in countries that are high on the collectivism scale, people view themselves as interconnected and are motivated to achieve group-defined goals and to maintain social harmony. Using a 100-point rating system (Hofstede 1980, 2001), the highest individualism ratings accrued to the US (91), Australia (90), UK (89), and Canada (80); Japan (46) and Singapore (20) accrued very low individualism ratings, and Germany (67) weighed in as moderate on this scale. A more recent study replicated these findings for the US and Singapore using a Country Individualism Index in which high scores on a 100-point scale indicate high levels of individualism (US=91, Singapore=20) (Triandis et al. 2001). Li et al. (2006) found that the profile of their Singaporean participants was closer to collectivist than to individualist countries' averages. Kitayama et al. (2009) measured individualism-collectivism and found Americans were most individualistic, Japanese were most collectivistic, and British and Germans were individualistic but to a lesser extent than Americans.

The second dimension is degree of social hierarchy. This has been expressed as *power distance* (Hofstede 1980, 2001) and as a contrast between vertical and horizontal social orientations (Singelis et al. 1995; Triandis 1995; Triandis and Gelfand 1998). Power distance expresses the degree to which the less powerful members of a society accept and expect that power is distributed unequally. People in societies exhibiting a large degree of power distance accept a hierarchical order in which everybody has a place which needs no further justification. In societies with low power distance, people strive to equalize the distribution of power and demand justification for inequalities of power. Similarly, people in vertically oriented cultures tend to believe in the hierarchy of social arrangements and willingly accept orders from an authority for the sake of achieving group goals; in horizontally oriented cultures, people believe in equality in the society and generally do not value submission to authorities.

Again using a 100-point scale, Hofstede (1980, 2001) found that Singapore (74) was the most hierarchically oriented, followed by Japan (54), while the remaining countries rated quite low on this dimension (US=40, Canada=39, Australia=36, UK and Germany=35). Kato and Kato (1992) and Brett and Okumura (1998) also found that Japanese are more hierarchically differentiated than Germans or Americans. Studies that have investigated the vertical/horizontal (V/H) dimension typically simultaneously measure the individual/collectivist (I/C) dimension as well, yielding a classification scheme with four categories: VI, VC, HI, and HC. This four-category typology fits with Fiske's (1991, 2002) categories of sociality: communal sharing (corresponding to collectivism), market pricing (corresponding to individualism), equality matching (horizontal relationships), and authority ranking (vertical relationships; Triandis and Gelfand 1998). VC countries typically include Japan (Chirkov et al. 2005) and Singapore (Kurman and Sriram 2002; Soh and Leong 2002), and HC

typically includes Israeli kibbutzim (Kurman and Sriram 2002). Considerable disagreement appears in this literature, however, for classification of VI and HI countries. For example, Sivadas et al. (2008) state in their introduction that “The U.S. is the quintessential VI culture in which people want to be ‘the best’ and strive for achievement.” Yet their results indicate that the “USA appears to be a HI country across three samples.” Similarly, Shavitt et al. (2006:326) identify the US, Great Britain, and France as examples of VI cultures. Yet Ayçiçeği-Dinn and Caldwell-Harris (2011), Chiou (2001), Triandis et al. (1998), Singelis et al. (1995), and Soh and Leong (2002) all found that the US rated higher on HI than on VI. More specifically, Soh and Leong (2002) reported that, in both the United States and Singapore, HC orientation was best predicted by benevolence values, VC by conformity values, VI by power values, and HI by self-direction values. As reported by Hofstede (1980, 2001), the US and UK rated quite low on power distance. This suggests that this four-category classification scheme should be interpreted with some caution as these descriptors might be better applied to specific relationships within a culture rather than to whole cultures more generally (Fiske 2002). Nonetheless, sufficient evidence exists that these countries differ in terms of the value placed on individualism and hierarchy. Most recently, Ralston et al. (2011) reported rankings on individualism and hierarchy for 50 countries using a different scaling instrument than Hofstede (1980, 2001), yet their results replicated Hofstede’s: On individualism, the countries’ rankings were Australia (1), UK (3), Canada (5), US (11), Germany (23), and Singapore (27). For hierarchy, the rankings were Singapore (11), Germany (26), UK (31), Canada (33), US (35), and Australia (48). (Japan was not included in the study.)

The task whose results are reported in this paper was the simple carpool arrangement reported by Fiddick and Cummins (2007). If noblesse oblige arises from a set of basic human psychological mechanisms regarding fairness in resource distribution, constrained by status, then the results of Fiddick and Cummins (2007) should be replicated regardless of cultural diversity.

Method

Participants

Three hundred and eighty-one participants took part in this study. They consisted of 43 Australian undergraduates recruited at James Cook University, Townsville campus; 48 Canadian undergraduates recruited at Simon Fraser University; 46 German students and staff recruited at the Free University Berlin; 62 Japanese undergraduates recruited at the University of Tokyo, Komaba campus; 69 Singaporean undergraduates recruited at James Cook University, Singapore campus; 50 UK participants recruited from the University College London community; and 63 US undergraduates recruited from the University of Denver. The demographics of the participants is given in Table 1. The Australian and German participants received a chocolate bar in compensation for their participation; the Canadian, Singaporean, and US participants received course credit for their participation; the Japanese participants received no compensation for their participation; and the UK participants received monetary compensation for their participation. The Canadian and US participants were tested

Table 1 Demographics and assignment of participants

Country	Mean age (in years)	Age range (in years)	% Female	% Boss
Australia	20.1	18–26	58	51
Canada	21.6 ^a	18–35	77	50
Germany	25.7	19–40	65	50
Japan	19.0	18–22	23	52
Singapore	24.8	18–49	73	54
UK	22.9	18–50	58	50
USA	20.4 ^a	18–26	73	51
Overall	22.1	18–50	61	51

^asome participants failed to report their age

in experimental labs, while the remaining participants were either tested in the public places where they were recruited or they were given a questionnaire to take and return at their convenience.

Materials and Procedure

The scenarios employed in this study were identical to those employed in Experiment 1 of Fiddick and Cummins (2007). Each participant was assigned to one of two versions of the scenario. In one version, the owner of a factory (Boss) in an unnamed third world country offered to drive one of his employees to work if the employee paid for the gas. In the second version of the scenario, it was the employee who offered to drive his boss to work provided the boss paid for the gas. The gas payments were to be made weekly and the weekly payments, or lack thereof, were indicated in a weekly ledger spanning 12 weeks. Each participant made their decisions with respect to four different ledgers that indicated 100%, 75%, 50%, and 25% compliance with the agreement on the part of the passenger. The order of these four ledgers was counterbalanced across participants.

In contrast to Fiddick and Cummins (2007), several changes were made to the task in which the carpooling scenario was embedded. First, participants were asked to make three judgments with respect to each ledger. As with the previous experiments (Fiddick and Cummins 2007), participants were asked to rate the likelihood that they would continue the carpooling arrangement (What is the likelihood that you will continue this carpooling arrangement?) on a five-point Likert scale ranging from 1=very likely to terminate the arrangement to 5=very likely to maintain the arrangement. They were also asked to indicate how they felt about their carpooling partner ([Considering the above ledger,] How would you feel about your employee/boss? [depending on the version]) on a five-point Likert scale ranging from 1=not at all happy/very upset to 5=very happy/not at all upset; and they were asked to rate how fairly they were treated (How fairly do you think you have been treated?) on a five-point Likert scale ranging from 1=very unfairly to 5=very fairly. These three questions appeared in the same order for all participants: likelihood of maintaining arrangement, feelings about other, and then fairness of treatment.

The ledger tasks were followed by a series of additional questions designed to assess the participants' estimations of the relative costs and benefits associated with the carpooling arrangement. The questions always appeared in the same order: factors influencing decision, benefit to other, cost to self, self-upset, other upset, and fairness of arrangement. The factors-influencing-decision question, which will not be analyzed here, was an open-ended request to "explain what factors influenced your decision to terminate or not terminate the carpooling arrangement."

The benefit-to-other question repeated the carpooling scenario and then asked participants: "How valuable do you believe the carpooling would be to your employee/boss? Please circle one number on the scale below to indicate the value of the carpooling to your employee/boss (do not think about repayments here, just rate how valuable you think getting a ride to work would be for your employee / boss in the above situation)." Their answers were indicated on a seven-point Likert scale ranging from 1=No value at all to 7=Extremely valuable.

The cost-to-self question stated: "Given the information in the scenario, please use the scale below to rate how costly you believe the carpooling would be to you, the driver. The cost of the carpooling should reflect not only the monetary costs, but all other costs you believe would be involved. Again, do not consider the level of repayment when answering this question." The seven-point scale for this question ranged from 1=No cost at all to 7=Extremely costly.

The self-upset question read: "From your perspective as the employee/boss, how upset would you be if your boss/employee did not pay for gas as per your agreement?" The other-upset question read: "If the situation were reversed, and your boss/employee was driving you to work in exchange for gas money, how upset do you think your boss/employee would be if you did not pay for gas as per your agreement?" Both questions were answered using seven-point scales ranging from 1=Not at all upset to 7=Extremely upset. Finally, the fairness of arrangement question read: "How would you evaluate the carpooling arrangement—I drive to work if you pay me \$10 per week—in terms of fairness to each person? (as long as both go along with the agreement)." The five options provided were: 1=The driver gets a much better deal; 2=The driver gets a better deal; 3=Both driver and passenger get a good deal; 4=The passenger gets a better deal; 5=The passenger gets a much better deal.

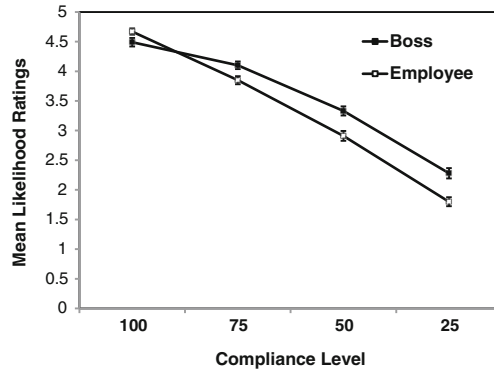
Results

Likelihood of Continuing Relationship

Mean ratings for likelihood of continuing the carpooling arrangement are shown in Fig. 1. The higher the rating, the more willing the individual was to continue the arrangement.

Because the 50% and 25% compliance conditions constitute significant non-reciprocation, these conditions were analyzed for evidence of noblesse oblige. A mixed ANOVA was conducted on these ratings using status perspective (Boss or Employee) and Country (AUS, CAN, GER, JAP, SING, UK, or USA) as between-subject variables and compliance rate (50% and 25%) as repeated measures. The

Fig. 1 Likelihood of continuing the arrangement as a function of perspective (Boss or Employee) and compliance. Error bars are standard error of the mean



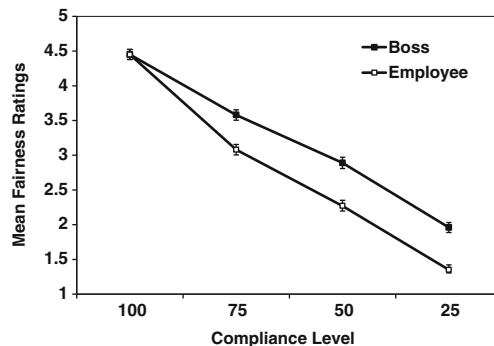
main effects of compliance and status perspective were significant ($F_{1,368}=411.54$, $MSE=0.52$, $P<0.001$, $\eta^2=0.53$ and $F_{1,368}=18.66$, $MSE=1.92$, $P<0.001$, $\eta^2=0.05$, respectively). No other effect was significant. Willingness to continue the arrangement dropped significantly as compliance declined from 50% ($M=3.11$) to 25% ($M=2.04$). Those who adopted the boss perspective gave higher mean ratings for likelihood of continuing the arrangement ($M=2.79$) than did those who adopted the employee perspective ($M=2.36$). This was a clear noblesse oblige effect; regardless of country, individuals were significantly more tolerant of cheating when they adopted a high-status perspective relative to their carpool partners.

Fairness Ratings

Mean fairness ratings are shown in Fig. 2. The higher the rating, the more fairly the individual believed he or she had been treated.

The same mixed ANOVA was conducted on these ratings as for likelihood to continue carpooling ratings. Again, only the main effects of compliance and status perspective were significant ($F_{1,368}=348.50$, $MSE=0.44$, $P<0.001$, $\eta^2=0.49$, and $F_{1,368}=54.33$, $MSE=1.33$, $P<0.001$, $\eta^2=0.13$, respectively). Fairness ratings dropped significantly as compliance declined from 50% ($M=2.57$) to 25% ($M=1.66$), and those who adopted the boss perspective felt they had been treated more fairly ($M=2.42$) than those who adopted an employee perspective ($M=1.81$). This, too, was a clear noblesse oblige effect; regardless of country, fairness ratings indicated that individuals were significantly

Fig. 2 Fairness ratings as a function of perspective (Boss or Employee) and compliance. Error bars are standard error of the mean



more tolerant of cheating when they adopted a high-status perspective relative to their carpool partners.

Feelings Ratings

Mean ratings of feelings toward the carpool partner are shown in Fig. 3. The higher the rating, the more positive the feelings toward the partner.

The same mixed ANOVA described above was conducted on ratings of feelings. The analysis again returned significant main effects of compliance ($F_{1,368}=292.48$, $MSE=0.35$, $P<0.001$, $\eta^2=0.44$) and status perspective ($F_{1,368}=44.33$, $MSE=1.21$, $P<0.001$, $\eta^2=0.11$). Participants felt more positive toward their carpool partners when reciprocation was 50% ($M=2.45$) than when it dropped to 25% ($M=1.71$). They also felt more positive toward their non-reciprocating partners when they adopted a boss perspective ($M=2.34$) than when they adopted an employee perspective ($M=1.81$). Here again, we found a clear noblesse oblige effect even with respect to emotional reactions to non-reciprocation.

It should be noted that the effect sizes for country in each analysis were quite small ($\eta^2=0.03$ for likelihood of continuing the relationship and for feelings toward the carpool partner; $\eta^2=0.02$ for fairness ratings). Adequate power was present to detect an effect with these samples sizes: The non-centrality parameters (an observed power statistic) for likelihood, fairness, and feeling were (respectively) 18.65 (0.99), 7.01 (0.46), and 12.49 (0.75). The most parsimonious interpretation of the entire pattern of results is that country differences accounted for very little observable variance. Means, samples sizes, and standard deviations broken down by country and status perspective are presented in Table 2.

Status and Utility

The responses to the questions concerning utility are shown in Table 3. Planned comparisons indicated the following: When taking the perspective of the driver, bosses believed more strongly that they got the better deal than employees did ($t_{380}=4.15$, $P<0.0001$; values less than 3 indicate that the rater believed the driver got the better deal). Bosses also felt the cost of the arrangement to themselves was lower than employees did ($t_{380}=2.04$, $P<0.05$). They also believed the arrangement had higher value for their employees than employees believed the arrangement had for their bosses ($t_{380}=8.11$, $P<$

Fig. 3 Feelings ratings as a function of perspective (Boss or Employee) and compliance. The higher the rating, the more positive the feelings toward the partner. Error bars are standard error of the mean

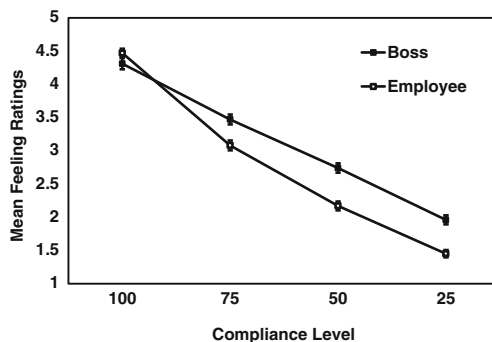


Table 2 Mean ratings for likelihood of continuing relationship, fairness, and feelings toward partner as a function of status and country

Status	Country	<i>n</i>	Likelihood		Fairness		Feeling	
			Mean	SD	Mean	SD	Mean	SD
Boss	Australia	23	2.89	.86	2.55	.96	2.45	.72
	Canada	24	2.52	.83	2.21	.71	2.04	.67
	Germany	23	3.25	1.15	2.89	1.08	2.75	.64
	Japan	32	2.67	1.19	2.20	.94	2.16	.98
	Singapore	36	2.63	.97	2.40	.93	2.60	.95
	UK	25	2.97	1.01	2.40	.95	2.24	.87
	USA	30	2.72	.96	2.36	.84	2.20	.71
	Employee	Australia	24	2.27	1.14	1.77	.59	1.83
Canada	24	2.54	1.04	1.78	.75	1.90	.87	
Germany	23	2.52	.87	1.78	.86	1.96	.78	
Japan	30	2.28	.93	1.73	.64	1.67	.75	
Singapore	32	2.20	.84	1.86	.69	1.76	.77	
UK	25	2.12	.89	1.94	.58	1.66	.45	
USA	23	2.35	.95	1.81	.72	1.91	.78	

0.0001). These results plainly show that status modifies cost/benefit ratios in the minds of contract partners.

The contributions of status, utility, sex, and power distance on likelihood to continue carpooling, fairness, and feelings ratings were assessed via stepwise regressions were conducted on ratings at the lowest compliance level (25%). This level of compliance was selected because it constitutes the most extreme level of cheating and hence should strongest evidence of noblesse oblige.

The predictors evaluated were status (Boss=1, Employee=0), Sex (Male=1, Female=0), Cost to You ratings, Value to Other ratings, Better Deal ratings, and Power Distance (scores taken from Hofstede 2001). Power distance and individualism were significantly and negatively correlated ($r=-0.96$) in the countries sampled here, so (a) they could not be entered into the regression together and (b) they would have returned virtually identical results. Because power distance is a measure of hierarchy within a culture, this variable was chosen over individualism to assess noblesse oblige.

Only status was predictive of ratings for willingness to continue the arrangement ($F_{1, 380}=15.84$, $MSE=1.26$, $P<0.001$, adjusted $R^2=0.04$, $\beta=0.20$, $t_{380}=3.98$, $P<0.001$).

Table 3 Mean ratings (and standard errors) for other questions

Status	Better deal	Cost to you	Value to other
Boss ($n=193$)	1.92 (.06)	3.96 (.10)	5.78 (.10)
Employee ($n=189$)	2.30 (.07)	4.25 (.10)	4.60 (.11)

Ratings of fairness and feelings were predicted by status and by sex (fairness: $F_{2,379}=28.11$, $MSE=0.66$, $P<0.001$, adjusted $R^2=0.13$; feeling: $F_{2,379}=19.25$, $MSE=0.71$, $P<0.001$, adjusted $R^2=0.09$). For fairness ratings, $\beta_{\text{status}}=0.34$, $t_{379}=7.03$, $P<0.001$; $\beta_{\text{sex}}=0.10$, $t_{379}=2.14$, $P<0.05$, respectively. For feelings ratings, $\beta_{\text{status}}=0.28$, $t_{379}=5.71$, $P<0.001$; $\beta_{\text{sex}}=0.10$, $t_{379}=2.04$, $P<0.05$, respectively. These results indicate that male participants and participants who adopted the boss perspective gave higher ratings of fairness and positive feelings for marked non-reciprocation than did female participants or those who adopted the employee perspective. The gender differences may reflect a greater propensity on the part of males to use costly signaling or prestige status competition in order to achieve status (see Discussion below).

Finally, a causal path analysis was undertaken to test the hypothesis that status differences impacted fairness and feeling ratings, which in turn influenced likelihood of continuing the arrangement. The results are depicted in Fig. 4. The first equation regressed status onto fairness ratings. The standardized regression coefficient was significant ($\beta=0.35$, $t_{380}=7.15$, $P<0.001$). The second equation regressed status onto feelings ($\beta=0.29$, $t_{379}=5.80$, $P<0.001$). The third equation regressed fairness and feelings ratings onto likelihood to continue ratings; both regression coefficients were significant ($\beta_{\text{fairness}}=0.30$, $t_{379}=5.88$, $P<0.001$; $\beta_{\text{feeling}}=0.35$, $t_{379}=6.24$, $P<0.001$).

Discussion

The results of this seven-country, cross-cultural study provide strong and converging evidence of noblesse oblige in all countries. Compared with participants who adopted an employee perspective, those who adopted a boss perspective were far more willing to continue the arrangement despite significant noncompliance, were more likely to feel they had been treated fairly, felt less animosity toward their cheating partners, and believed they got the better deal because they felt they bore less cost and received higher value from the arrangement. Another way to put this is that status has social utility—that is, high status confers greater satisfaction than low status, which shifts the balance of cost/benefit ratios accordingly. Moreover, these results obtained despite marked differences in social values among the countries studied. Countries that score high on power distance (Japan and Singapore) were as likely to exhibit noblesse oblige as those that score low on this measure of social hierarchy (Australia, Canada, Germany, UK, and US). The results therefore suggest that it might be advantageous to take a relationship-specific approach to fairness rather than a broader, culture-specific approach (Fiske 1991, 2002). The results are also consistent with Henrich et al.'s (2005) ethnographic study of small-scale horticultural, foraging, and pastoral cultures where status-based norms also were implicated in economic decision-making. The importance of status-related effects in human decision-making

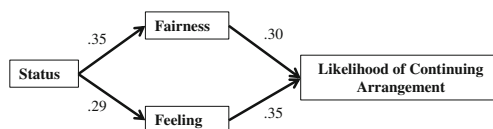


Fig. 4 The causal paths by which status, fairness, and feelings influence likelihood of continuing a reciprocal arrangement with only 25% compliance

is perhaps best exemplified by the observation that food sharing is used to negotiate status in virtually all human societies (see Wiessner and Schiefelhoevel 1997 for a collection of papers devoted to this topic). The ubiquity of noblesse oblige in human societies may be the result of several distinct factors, including those discussed below.

The Rational Actor Model

Participants may simply be evaluating the marginal value of a fixed amount of money as different for the two individuals and then comparing the relative utility of that much money to the cost of sacrificing a relationship. If asymmetries in perceived utilities were a factor contributing to noblesse oblige, then one would expect that the utility measures (Cost to You ratings, Value to Other ratings, Better Deal ratings), which did show significant status differences, would have been significant predictors of participants' willingness to continue the carpool, their judgments of fairness, or their feelings toward their carpool partners. However, in none of the regression analyses into which they were entered were they significant predictors of participants' responses, casting doubt on the ability of the rational actor model to account for our results.

Alternatively, it might be argued that there are important externalities that are not assessed by the followup questions employed in this study. Although sacrificing a fixed quantity of a resource (i.e., gas money) is relatively more costly to lower-status individuals, they stand to gain a much greater benefit external to the focal interaction through the acquisition of a powerful and well-resourced exchange partner. However, if this were the case, then presumably it is the employee and not the boss who has the most to gain, leading to the prediction that the employee, not the boss, would be more willing to trade off present utility for the potential future benefits beyond the carpooling agreement. Yet, the observed noblesse oblige runs contrary to this analysis. Moreover, participants were free to factor such benefits into their utility judgments, and as noted above, these cost-utility factors failed to account for any of the variance in participants' ratings of likelihood to continue, fairness, or feelings.

Costly Signaling Theory, Reputation and Noblesse Oblige

The most important externality might not be acquisition of a powerful and well-resourced exchange partner, but the acquisition and/or maintenance of social rank as suggested by Costly Signaling Theory (Bliege Bird et al. 2001; Hawkes and Bird 2002; Smith and Bliege Bird 2000; Zahavi 1975). In brief, this theory states that costly, altruistic acts may benefit an altruist indirectly by establishing a "reputation" that enhances mating opportunities or alliance formation. According to Smith and Bliege Bird (2000), in order for behavior to count as costly signaling, it must be (1) beneficial to others, (2) observable by others, (3) costly to the signaler in ways that cannot be reciprocated, and (4) associated with signaler fitness. The costliness of the signal is crucial because signaling honesty is guaranteed when only individuals of high quality can pay the high costs to generate the signal. When signaling costs are high, it is not possible for low-quality individuals to fake the signal and thereby fool potential receivers (Bliege Bird et al. 2001; Hawkes and Bird 2002; Zahavi 1975). This is plainly the case for noblesse oblige, wherein high-status signalers willingly bear a greater cost to confer a benefit to low-status receivers. When viewed in this

light, seemingly “wasteful” altruistic behaviors are seen as other-regarding behavior that benefit the actor as well (Getty 1998; Grafen 1990; Johnstone 1995, 1997; Smith and Bliege Bird 2000; Zahavi 1975, 1977; Zahavi and Zahavi 1997).

Support for costly signaling theory comes from a variety of ethnographic studies of food sharing among hunting, fishing, and foraging groups; each of these activities can be considered a reliable signal of phenotypic quality because they are costly to undertake and can be readily broadcasted to the rest of the community (Hawkes 1991, 1993; Marlowe 2010; Bliege Bird et al. 2001; Smith and Bliege Bird 2000). Among the Meriam of the Torres Strait of Australia, successful turtle hunters and spear fishers exhibit greater reproductive success (and other social benefits) than less skilled hunters (Smith et al. 2002). Importantly, food sharing typically does not entail direct reciprocity. Among Kalahari foraging groups, food is frequently shared with recipients who have little to offer in return. Such food sharing is associated with greater success in obtaining a first wife, co-wife, or extramarital liaison (Lee 1993; Shostak 1981). Hawkes (1991, 1993) has shown that Hadza men target large game and publicly share meat in order to garner favorable social attention or to “show off.” This favorable attention improves a hunter’s reputation and enhances his success in acquiring mates and allies. Similar outcomes have been observed for wasteful foraging displays (Hawkes et al. 2001).

Prestige Status Striving

Costly signaling theory suggests the need to distinguish between social status (or social power) that derives from the ability to impose costs (associated with dominance) and that which derives from the ability to dispense benefits (associated with prestige) (Boone 1998). It is prestige and not dominance, so defined, that the costly signaler stands to gain. Individuals gain prestige through their capacity to dispense benefits to subordinates, such as imparting useful knowledge, protection or security, access to social mobility, employment, etc. Competition for followers may develop between prestigious individuals, such that a market develops in which more generous patrons are more successful in gaining clients. Indeed, Duffy and Kornienko (2010) found that dictators were far more generous when they competed in a generosity tournament (where performance was publicly ranked based on the amount given away) than when they competed in an earnings tournament (where performance was publicly ranked based on the amount kept.) This suggests that noblesse oblige may be driven by factors other than a propensity toward equality or fairness (Boone 1992; van Rueden et al. 2011). Instead, generosity toward others may be deployed strategically in order to acquire status within a group.

Prestige can be contrasted with other types of status that are based on a sense of acquired or conferred entitlement. Hoffman and colleagues found that dictators and proposers were willing to exploit their advantageous positions in economic games when they were told they had earned the right to be the dictator or proposer based on their performance on a trivia test; when roles were arbitrarily assigned, they behaved fairly—but not overly generously—toward their transaction partners (Hoffman et al. 1994; Hoffman et al. 1996; Hoffman and Spitzer 1985). Ball and Eckel (1996) divided people into two groups based on their quiz performance and then had them play the ultimatum game. They found that high-scoring quiz performers earned

significantly more, meaning that low-status partners were offered less, made higher offers to high-status partners, and were willing to accept lower offers. These results were later replicated with variations in procedure and payoffs (Ball and Eckel 1996, 1998; Ball et al. 2001; Eckel and Wilson 2007). Results such as these suggest that status leads people to behave exploitatively toward losers in ranked competitions, neutrally toward others when status is arbitrarily conferred, and generously toward lower-ranking individuals when doing so will increase prestige.

One of the assumptions of costly signaling theory and recent treatments of prestige is that it is high-status individuals who are the drivers of these phenomena. However, it is possible that low-status individuals play a more active role. There is evidence in both humans (Dalmaso et al. 2012; Foulsham et al. 2010) and nonhuman primates (McNelis and Boatright-Horowitz 1998; Pannozzo et al. 2007) that low-status individuals pay more attention to high-status individuals than vice versa. This suggests that if reputational concerns weigh heavily in the evolution and maintenance of reciprocity, then it is the high-status individuals, who are more intensely monitored, that have the most to lose. Hence, high status individuals might be more altruistic not because of costly signaling, per se, but because their reputations are more easily damaged owing to more intensive scrutiny.

Cognitive Dissonance

Dissonance theory suggests that noblesse oblige may become more pronounced under conditions of low reciprocation when the individual tries to reduce negative emotional arousal such as regret or self-threat by justifying the offer. According to previous cross-cultural studies on cognitive dissonance (e.g., Kitayama et al. 2004), in Japan the justification is likely to happen when others are watching, suggesting that the individual worries about potentially negative evaluations by others and, consequently, is motivated to justify the behavior. Given the findings on cognitive dissonance, the extent of tolerance for cheating may vary across cultures when social cues such as the presence or absence of onlookers are included in the carpooling arrangement scenario.

In summary, noblesse oblige appears to be a cross-cultural norm whose function may be to honestly signal phenotypic quality through costly displays. The outcome of this behavior may be enhanced reproductive success, successful alliance formation, and/or enhanced feelings of internal satisfaction (utility).

References

- Ayçiçeği-Dinn, A., & Caldwell-Harris, C. (2011). Individualism-collectivism among Americans, Turks and Turkish immigrants to the U.S. *International Journal of Intercultural Relations*, 35, 9–16.
- Ball, S. B., & Eckel, C. C. (1996). Buying status: experimental evidence on status in negotiation. *Psychology and Marketing*, 13, 381–405.
- Ball, S. B., & Eckel, C. C. (1998). The economic value of status. *Journal of Socio-Economics*, 27, 495–514.
- Ball, S. B., Eckel, C. C., Grossman, P. J., & Zame, W. (2001). Status in markets. *Quarterly Journal of Economics*, 116, 161–188.

- Bliege Bird, R., Smith, E., & Bird, D. (2001). The hunting handicap: costly signaling in human foraging strategies. *Behavioral Ecology and Sociobiology*, *50*, 9–19.
- Bolton, G. E., & Ockenfels, A. (2000). ERC: a theory of equity, reciprocity, and competition. *American Economic Review*, *90*, 166–193.
- Boone, J. L. (1992). Competition, cooperation and the development of social hierarchies. In E.A. Smith and B. Winterhalder (eds.), *Ecology, Evolution and Social Behavior* (pp. 301–337). New York: Aldine de Gruyter.
- Boone, J. L. (1998). The evolution of magnanimity: when is it better to give than to receive? *Human Nature*, *9*, 1–21.
- Brett, J. M., & Okumura, T. (1998). Inter- and intracultural negotiation: U.S. and Japanese negotiators. *Academy of Management Journal*, *41*, 495–510.
- Camerer, C. F. (2003). Behavioural studies of strategic thinking in games. *Trends in Cognitive Sciences*, *7*, 225–231.
- Chiou, J.-S. (2001). Horizontal and vertical individualism and collectivism among college students in the United States, Taiwan, and Argentina. *Journal of Social Psychology*, *141*, 667–678.
- Chirkov, V., Lynch, M., & Niwa, S. (2005). Application of the scenario questionnaire of horizontal and vertical individualism and collectivism to the assessment of cultural distance and cultural fit. *International Journal of Intercultural Relations*, *29*, 469–490.
- Coleman, J. S. (1990). *Foundations of social theory*. New York: Belknap.
- Dalmaso, M., Pavan, G., Castelli, L., & Galfano, G. (2012). Social status gates social attention in humans. *Biological Letters*, *8*, 450–452.
- Duffy, J., & Kormienko, T. (2010). Does competition affect giving? *Journal of Economic Behavior & Organization*, *74*, 82–103.
- Eckel, C. C., & Wilson, R. W. (2007). Social learning in coordination games: does status matter? *Experimental Economics*, *10*, 317–329.
- Fehr, E., & Fischbacher, U. (2004). Third party punishment and social norms. *Evolution and Human Behavior*, *25*, 63–87.
- Fehr, E., & Gächter, S. (2000). Fairness and retaliation: the economics of reciprocity. *Journal of Economic Perspectives*, *14*, 159–181.
- Fehr, E., & Schmidt, K. M. (1999). A theory of fairness, competition, and cooperation. *Quarterly Journal of Economics*, *114*, 817–868.
- Fiddick, L., & Cummins, D. D. (2007). Are perceptions of fairness relationship specific? The case of noblesse oblige. *Quarterly Journal of Experimental Psychology*, *60*, 6–31.
- Fiske, A. (1991). *Structures of social life: the four elementary forms of human relations*. New York: Free Press.
- Fiske, A. (2002). Using individualism and collectivism to compare cultures—A critique of the validity and measurement of the constructs: comment on Oyserman et al. (2002). *Psychological Bulletin*, *128*, 78–88.
- Foulsham, T., Cheng, J. T., Tracy, J. L., Henrich, J., & Kingstone, A. (2010). Gaze allocation in a dynamic situation: effects of social status and speaking. *Cognition*, *117*, 319–331.
- Getty, T. (1998). Handicap signaling: when fecundity and viability do not add up. *Animal Behavior*, *56*, 127–130.
- Grafen, A. (1990). Biological signals as handicaps. *Journal of Theoretical Biology*, *144*, 517–546.
- Hawkes, K. (1991). Showing off: tests of another hypothesis about men's foraging goals. *Ethology and Sociobiology*, *12*, 29–54.
- Hawkes, K. (1993). Why hunter-gatherers work. *Current Anthropology*, *34*, 341–362.
- Hawkes, K., O'Connell, J. F., & Blurton Jones, N. G. (2001). Hadza meat sharing. *Evolution and Human Behavior*, *22*, 113–142.
- Hawkes, K., & Bird, R. (2002). Showing off, handicap signaling, and the evolution of men's work. *Evolutionary Anthropology*, *11*, 58–67.
- Hechter, M., & Opp, K.-D. (2001). *Social norms*. New York: Russell Sage.
- Henrich, J., Boyd, R., Bowles, S., Camerer, C., et al. (2005). "Economic man" in cross-cultural perspective: behavioral experiments in 15 small-scale societies. *The Behavioral and Brain Sciences*, *28*, 795–855.
- Hoffman, E., McCabe, K., Shachat, K., & Smith, V. (1994). Preferences, property rights, and anonymity in bargaining games. *Games & Economic Behavior*, *7*, 346–380.
- Hoffman, E., McCabe, K., & Smith, V. (1996). Social distance and other-regarding behavior in dictator games. *American Economic Review*, *86*, 653–660.
- Hoffman, E., & Spitzer, M. (1985). Entitlements, rights, and fairness: an experimental examination of subjects' concepts of distributive justice. *The Journal of Legal Studies*, *15*, 254–297.
- Hofstede, G. (1980). *Culture's consequences: International differences in work-related values*. Newbury Park: Sage.
- Hofstede, G. (2001). *Culture's Consequences: Comparing values, behaviors, institutions, and organizations across nations* (2nd ed.). Thousand Oaks: Sage.

- Johnstone, R. A. (1995). Sexual selection, honest advertisement and the handicap principle: reviewing the evidence. *Biological Review*, *70*, 1–65.
- Johnstone, R. A. (1997). The evolution of animal signals. In J. R. Krebs & N. B. Davies (Eds.), *Behavioural ecology: An evolutionary approach* (pp. 155–178). Oxford: Blackwell.
- Kato, H., & Kato, J. (1992). *Understanding and working with the Japanese business world*. Englewood Cliffs: Prentice Hall.
- Kitayama, S., Snibbe, A. C., Markus, H. R., & Suzuki, T. (2004). Is there any “free” choice? Self and dissonance in two cultures. *Psychological Science*, *14*, 527–533.
- Kitayama, S., Park, H., Sevincer, A. T., Karasawa, M., & Uskul, A. K. (2009). A cultural task analysis of implicit independence: comparing North America, Western Europe, and East Asia. *Journal of Personality and Social Psychology*, *97*, 236–255.
- Knez, M. J., & Camerer, C. F. (1995). Outside options and social comparison in three-player Ultimatum game experiments. *Games and Economic Behavior*, *10*, 65–94.
- Kurman, J., & Sriram, N. (2002). Interrelationships among vertical and horizontal Collectivism, modesty, and self-enhancement. *Journal of Cross-Cultural Psychology*, *33*, 71–86.
- Lee, R. (1993). *The Dobe Ju/'hoansi*. New York: Harcourt Brace.
- Levine, D. (1998). Modeling altruism and spitefulness in experiments. *Review of Economic Dynamics*, *1*, 593–622.
- Li, S., Triandis, H. C., & Yao, Y. (2006). Cultural orientation and corruption. *Ethics & Behavior*, *16*, 199–215.
- Liebe, U., & Tutic, A. (2010). Status groups and altruistic behaviour in dictator games. *Rationality and Society*, *22*, 353–380.
- Marlowe, F. W. (2010). *The Hadza: Hunter-gatherers of Tanzania*. Berkeley: University of California Press.
- McNelis, N. L., & Boatright-Horowitz, S. L. (1998). Social monitoring in a primate group: the relationship between visual attention and hierarchical ranks. *Animal Cognition*, *1*, 65–69.
- Pannozzo, P. L., Phillips, K. A., Haas, M. E., & Mintz, E. M. (2007). Social monitoring reflects dominance relationships in a small captive group of brown capuchin monkeys (*Cebus apella*). *Ethology*, *113*, 881–888.
- Rabin, M. (1993). Incorporating fairness into game theory and economics. *American Economic Review*, *83*, 1281–1302.
- Ralston, D. A., Egri, C. P., Reynaud, E., Srinivasan, N., et al. (2011). A twenty-first century assessment of values across the global workforce. *Journal of Business Ethics*, *104*, 1–31.
- Roth, A. E., Prasnikar, V., Okuno-Fujiwara, M., & Zamir, S. (1991). Bargaining and market behavior in Jerusalem, Ljubljana, Pittsburgh and Tokyo: an experimental study. *American Economic Review*, *81*, 1068–1095.
- Shavitt, S., Lalwani, A. K., Zhang, J., & Torelli, C. J. (2006). The horizontal/vertical distinction in cross-cultural consumer research. *Journal of Consumer Psychology*, *16*(4), 325–342.
- Shostak, M. (1981). *Nisa: The life and words of a !Kung woman*. Cambridge: Harvard University Press.
- Singelis, T. M., Triandis, H. C., Bhawuk, D., & Gelfand, M. J. (1995). Horizontal and vertical dimensions of individualism and collectivism: a theoretical and measurement refinement. *Cross-Cultural Research*, *29*, 240–275.
- Sivadas, E., Bruvold, N. T., & Nelson, M. R. (2008). A reduced version of the horizontal and vertical individualism and collectivism scale: a four-country assessment. *Journal of Business Research*, *61*, 201–210.
- Smith, E. A., & Bliege Bird, R. (2000). Turtle hunting and tombstone opening: public generosity as costly signaling. *Evolution and Human Behavior*, *21*, 245–261.
- Smith, E., Bliege Bird, R., & Bird, D. (2002). The benefits of costly signaling: Meriam turtle hunters. *Behavioral Ecology*, *14*, 116–126.
- Soh, S., & Leong, F. T. L. (2002). Validity of vertical and horizontal individualism and collectivism in Singapore: relationships with values and interests. *Journal of Cross-Cultural Psychology*, *33*, 3–15.
- Sullivan, R. J., & Lyle, H. F. (2005). Economic models are not evolutionary models. *The Behavioral and Brain Sciences*, *28*, 836.
- Triandis, H. C. (1995). *Individualism and collectivism*. Boulder: Westview Press.
- Triandis, H. C., Carnevale, P., Gelfand, M., Robert, C., et al. (2001). Culture and deception in business negotiations: a multilevel analysis. *International Journal of Cross-Cultural Management*, *1*, 73–90.
- Triandis, H. C., Chen, X. P., & Chan, D. K.-S. (1998). Scenarios for the measurement of collectivism and individualism. *Journal of Cross-Cultural Psychology*, *29*, 275–289.
- Triandis, H. C., & Gelfand, M. J. (1998). Converging measurement of horizontal and vertical individualism and collectivism. *Journal of Personality and Social Psychology*, *74*, 118–128.
- Vanbeselaere, N., Boen, F., van Avermaet, E., & Buelens, H. (2006). The Janus face of power in intergroup contexts: a further exploration of the noblesse oblige effect. *Journal of Social Psychology*, *146*, 685–699.

- van Rueden, C., Gurven, M., & Kaplan, H. (2011). Why do men seek status? Fitness payoffs to dominance and prestige. *Proceedings of the Royal Society B*, 278, 2223–2232.
- Wiessner, P., & Schiefenovel, W. (eds). (1997). *Food and the status quest: an interdisciplinary perspective*. New York: Berghahn Books.
- Zahavi, A. (1975). Mate selection - selection for a handicap. *Journal of Theoretical Biology*, 53, 205–214.
- Zahavi, A. (1977). The cost of honesty (Further remarks on the handicap principle). *Journal of Theoretical Biology*, 67, 603–605.
- Zahavi, A. & Zahavi, A. (1997). *The handicap principle*. Oxford: Oxford University Press.

Laurence Fiddick PhD is an associate professor in psychology and interdisciplinary studies at Lakehead University, Orillia Campus, CA. His research interests include the modularity of mind, moral and deontic reasoning, the psychology of safety and anxiety, and the psychology of status.

Denise Dellarosa Cummins PhD is retired adjunct professor of psychology and philosophy, University of Illinois at Urbana-Champaign. Her research interests and publications concern the evolution and development of higher cognition in artificial and biological systems. She is also the author of *Good Thinking* (Cambridge University Press), and co-editor of *Evolution of Mind* (Oxford University Press) and *Minds, Brains, and Computers* (Blackwell Publishers).

Maria Janicki PhD is at the Faculty of Humanities and Social Sciences, Douglas College, New Westminster, British Columbia, CA.

Sean Lee is a PhD candidate in cognitive and behavioural science at the University of Tokyo. His research interests include cognition, language, and evolution.

Nicole Erlich received her PhD from the University of Queensland in 2010. She currently works in the Child and Youth Mental Health Research Unit at the Mater Hospital in South Brisbane, AU. Her research interests include developmental evolutionary psychology, phobia development, and treatment of developmental aggression.

Copyright of Human Nature is the property of Springer Science & Business Media B.V. and its content may not be copied or emailed to multiple sites or posted to a listserv without the copyright holder's express written permission. However, users may print, download, or email articles for individual use.