



Wealth or generosity? People choose partners based on whichever is more variable

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ABSTRACT

Organisms benefit from choosing partners who are willing and able to provide them with benefits (e.g., choose based on warmth, competence, wealth). But which should they prefer in a partner – willingness or abilities? We tested the hypothesis that people will focus on whichever trait is more variable in others: the more variance there is in a trait, the greater the difference there is between the “best” and “worst”, so the more that trait will impact the chooser (all else equal). In two studies, participants saw a range of partners for a hypothetical money distribution task who either varied more in the amount of money they had to distribute (Unequal Wealth condition) or in the percent of their money they gave away (Unequal Generosity condition). Participants had a default preference to know about others’ generosity rather than their wealth; this preference was strengthened when others varied more in generosity and weakened when others varied more in wealth. Thus, our study shows that people are sensitive to the amount of population variance on a trait, and flexibly adjust their partner preferences to focus on traits which vary more among others.

1. Introduction

Partner choice is a driving force in the evolution of cooperation. When organisms can choose whom to interact with, the best cooperators benefit from assorting with each other, thus selecting for cooperation (reviewed by Barclay, 2016; Schino & Aureli, 2017). Organisms also benefit from signaling their cooperativeness, as this is one means of competing in the “biological market” over partners (e.g., Barclay, 2011, 2013; Barclay, 2020; Noë & Hammerstein, 1994, 1995; Roberts et al., 2021). This can result in an escalation of cooperation through a process of competitive altruism (Barclay, 2004; Barclay & Barker, 2020; Barclay & Willer, 2007; Sylwester & Roberts, 2010). But what exactly makes one a “good” partner?

The best partners are those who provide the most benefits while imposing the fewest costs. Thus, organisms should seek partners who are willing, able, and available to provide benefits (Barclay, 2013, 2015, 2016). These functional categories are then perceived as traits like warmth (willingness); competence, wealth or status (ability); and proximity (availability). Indeed, warmth and competence are two dimensions on which people universally assess others (reviewed by Fiske et al., 2007).

What’s more important in a partner: their willingness to provide benefits (e.g., warmth) or their ability to do so (e.g., competence, wealth, status)? How should people trade off these traits against each other? The answer depends on which trait contributes more to one’s benefits, and this varies across situations. Some traits have more impact in some environments, such as a mate’s attractiveness – a cue of pathogen resistance – being more valued in places with many pathogens (Gangestad & Buss, 1993). Also, the stability of the trait matters: Raihani and Barclay (2016) showed that people had weaker preferences for a partner’s wealth in an economic game when that wealth was unstable.

In particular, the variation in the population matters: the more that people vary on an important trait like willingness to give, the more that others should choose based on that trait. After all, it only pays to choose partners on traits that vary between individuals – if individuals do not vary on the trait, then there’s little point in expending energy to assess or value that trait. This is a general feature of signaling and partner choice: discriminating among individuals only pays off when individuals vary, whether in dyadic cooperation (e.g., McNamara et al., 2004, 2008; McNamara & Leimar, 2010; Sherratt & Roberts, 2001), mutualisms (Ferriere et al., 2002; Foster & Kokko, 2006), mating decisions (e.g., “lek paradox”, Kokko et al., 2003), assessments of fighting ability

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(McNamara & Leimar, 2010), partner choice (McNamara et al., 2008), costly signaling in general (Searcy & Nowicki, 2005), or cognition in general.

In the context of cooperation, the more that potential partners vary in willingness, then the bigger the difference between those who are highly willing versus unwilling, so the more impact that willingness has on a partner's payoff; a similar argument holds for ability. Recently, Eisenbruch and Krasnow (2022) supported this hypothesis using agent-based models: stronger preferences for warmth will evolve when warmth varies more in a population, and stronger preferences for competence will evolve when competence varies more. Eisenbruch and Krasnow (2022) also argue that warmth varied more in ancestral environments than competence, for example due to interpersonal conflicts, such that people have a default prioritization for a partner's warmth.

Here we experimentally test whether people place more value on a partner's generosity when partners vary in generosity, and more value on a partner's ability to give when partners vary in their ability to give. In two studies, we present participants with a pool of hypothetical partners who vary in either their ability to split money with a partner (i.e., size of their monetary endowment; Unequal Wealth condition) or their willingness to split money with a partner (i.e., percent of endowment given to their partner; Unequal Generosity condition). We then ask participants which information they want about potential partners before choosing – their endowment or the percent they gave. We predicted that participants would seek wealth information in the Unequal Wealth condition and generosity information in the Unequal Generosity condition.

These studies were approved by the ethics committee of the Kobe University; All participants provided informed consent. Our preregistration can be accessed at: <https://osf.io/hwzd4> and <https://osf.io/8jt7s>. Data and R code can be found at <https://osf.io/274ej/>.

2. Study 1

2.1. Methods

2.1.1. Participants and study design

Three hundred and fifty US participants (186 men, 163 women, 1 other; $M_{\text{age}} = 39.98$, $SD_{\text{age}} = 12.28$; range: 19–78) were recruited in December 2020 from Amazon Mechanical Turk via CloudResearch. The study used a between-participants factorial design: each participant was randomly assigned to either the Unequal Generosity ($n = 175$) or

Unequal Wealth ($n = 175$) condition. No participants were excluded from the study. We ran a power analysis in G*Power (Faul et al., 2007) based on differences of proportions of 0.40 and 0.60; the required sample size was 167 per condition for 95 % power to detect an effect with $\alpha = 0.05$. Due to the word count limits, we report some of our preregistered analyses in the supplementary materials; these all support the results in the main text.

2.1.2. Procedure

Participants were asked to imagine a hypothetical situation where they choose a partner who will distribute money to them. Before choosing their partner, they were informed how 20 people in the set of potential partners had distributed money in the past in a similar task (Fig. 1). Although the distribution amounts were the same in the Unequal Wealth and Unequal Generosity conditions, the variance of endowments (i.e., wealth) and percent distributed (i.e., generosity) differed across conditions (Table 1); the endowments varied more in the Unequal Wealth condition, and the percent distributed varied more in the Unequal Generosity condition.

Before they chose their partner, participants could check either the

Table 1

Full list of potential partners shown to participants (order randomized).

Unequal Generosity	Unequal Wealth
James shared \$5 (3 %) of his \$151	James shared \$5 (31 %) of his \$16
Mary shared \$9 (6 %) of her \$151	Mary shared \$9 (30 %) of her \$30
John shared \$11 (7 %) of his \$150	John shared \$11 (30 %) of his \$37
Patricia shared \$12 (8 %) of her \$151	Patricia shared \$12 (29 %) of her \$41
Robert shared \$12 (8 %) of his \$150	Robert shared \$12 (29 %) of his \$41
Jennifer shared \$15 (10 %) of her \$150	Jennifer shared \$15 (30 %) of her \$50
Michael shared \$16 (11 %) of his \$151	Michael shared \$16 (31 %) of his \$52
Linda shared \$17 (11 %) of her \$150	Linda shared \$17 (30 %) of her \$57
William shared \$20 (13 %) of his \$150	William shared \$20 (30 %) of his \$67
Elizabeth shared \$26 (17 %) of her \$149	Elizabeth shared \$26 (29 %) of her \$90
David shared \$67 (45 %) of his \$150	David shared \$67 (31 %) of his \$216
Barbara shared \$73 (49 %) of her \$149	Barbara shared \$73 (30 %) of her \$243
Richard shared \$74 (49 %) of his \$150	Richard shared \$74 (30 %) of his \$247
Susan shared \$76 (51 %) of her \$150	Susan shared \$76 (31 %) of her \$245
Joseph shared \$76 (51 %) of his \$150	Joseph shared \$76 (30 %) of his \$253
Jessica shared \$79 (52 %) of her \$151	Jessica shared \$79 (29 %) of her \$272
Thomas shared \$81 (54 %) of his \$150	Thomas shared \$81 (31 %) of his \$261
Sarah shared \$82 (55 %) of her \$150	Sarah shared \$82 (30 %) of her \$273
Charles shared \$83 (55 %) of his \$150	Charles shared \$83 (30 %) of his \$277
Karen shared \$84 (56 %) of her \$150	Karen shared \$84 (30 %) of her \$280

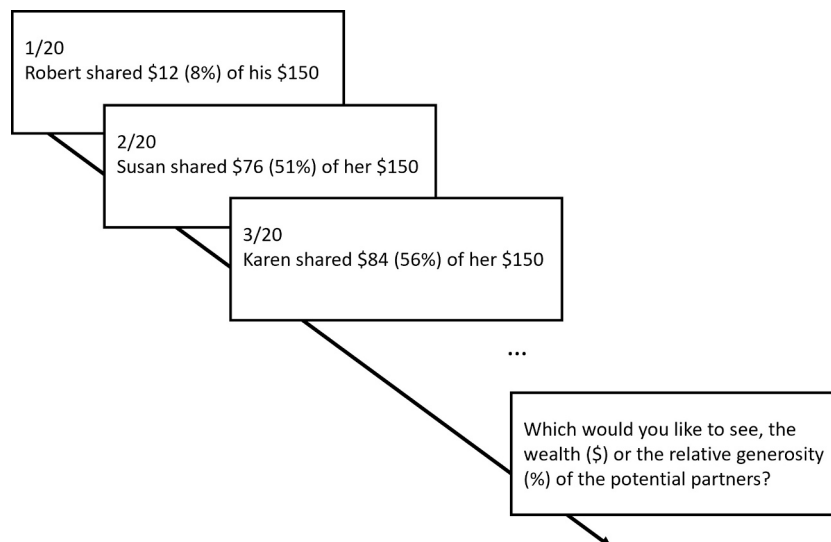


Fig. 1. Overview of the task in Study 1.

Notes. Participants viewed one piece of information per page (in random order). They clicked a button to proceed to the next page.

wealth or generosity of the potential partners, and were asked to choose which information they wanted to see: Wealth [i.e., \$ in their endowment] or Generosity [i.e., % of their endowment they shared]. Finally, as manipulation check questions, they rated the extent to which they agreed with the statements “Generosity may vary in the group” and “Wealth may vary in the group” on a 7-point scale (1 = *strongly disagree*, 7 = *strongly agree*). This manipulation check was successful: on average, participants in the Unequal Wealth condition agreed that wealth varied more in the group than did generosity, and vice versa in the Unequal Generosity condition (see Supplementary Material).

2.2. Results and discussion

For our main analysis, we used Fisher’s exact tests to compare the number of participants who preferred to see the generosity versus wealth of potential partners (Fig. 2A). As predicted, participants in the Unequal Generosity condition were more likely to seek generosity information than participants in the Unequal Wealth condition (143/175 (81.7 %) vs. 96/175 (54.9 %), respectively, odds ratio = 3.66 [2.21, 6.18], $p < .001$). Our results are even stronger if we do an exploratory analysis that splits participants into those who passed the manipulation check and those who failed it (see Supplementary Material).

Furthermore, we also conducted binomial tests within each condition. As predicted, participants in the Unequal Generosity condition were more likely to seek generosity than wealth information ($p < .001$, $h = 0.69$). Unexpectedly, however, participants in the Unequal Wealth condition were not more likely to prefer to seek wealth than generosity ($p = .226$, $h = 0.10$); rather, they were somewhat ambivalent, and if anything, sought generosity information.

Using the two manipulation check variables as continuous indices of participants’ perceived variance in generosity and wealth, we conducted an exploratory logistic regression to predict preferences for generosity information. Participants’ perceptions of the variance in generosity predicted a higher preference for the generosity information ($B = 0.33$, odds ratio = 1.39, $p < .001$), whereas their perceptions of the variance in wealth increased the likelihood of choosing wealth information ($B = -0.30$, odds ratio = 0.74, $p < .001$).

Given the default concern for generosity in Study 1 (see Supplementary), both the variance in generosity and wealth seem to have promoted people to seek generosity/wealth information. To confirm this possibility and to replicate the results of Study 1, we established a control condition in Study 2.

3. Study 2

3.1. Methods

3.1.1. Participants and study design

We recruited new 600 participants (329 men, 268 women, 3 others; $M_{\text{age}} = 41.57$, $SD_{\text{age}} = 12.89$; range: 18–78) in December 2020 from Amazon Mechanical Turk via CloudResearch. Each participant was randomly assigned to either Unequal Generosity ($n = 202$), Unequal Wealth ($n = 201$), or Control ($n = 197$) condition. No participants were excluded from the study. We ran a power analysis using G*Power (Faul et al., 2007) based on 90.4 % versus 73 % of participants seeking generosity information in the Unequal Generosity and Control conditions, respectively (see Supplementary Material for details); the power analysis indicated we would need 188 participants per condition to detect an effect with $\alpha = 0.05$ with 95 % power.

3.1.2. Procedure

All procedures were identical to Study 1, except that we added a Control condition where participants were not shown the distributions made by potential partners before choosing their preferred information. As in Study 1, the manipulation check was successful: participants in the Unequal Wealth condition agreed that wealth varied more in the group than did generosity, and vice versa in the Unequal Generosity condition, with no difference in the Control condition (see Supplementary).

3.2. Results and discussion

For our main analysis, a Chi-square test revealed that the people preferred generosity information at different rates across conditions ($\chi^2(2) = 63.18$, $p < .001$, Fig. 2B). Replicating the results of Study 1, Fisher’s exact tests showed that participants sought generosity information more often in the Unequal Generosity condition than in the Unequal Wealth Condition (182/202 (90.1 %) vs. 122/201 (60.7 %), respectively, odds ratio = 5.87 [3.35, 10.67], $p < .001$). Participants were more likely to seek generosity information in the Control Condition than the Unequal Wealth condition (171/197 (86.8 %) vs. 122/201 (60.7 %), respectively, odds ratio = 4.24 [2.52, 7.32], $p < .001$), suggesting that people attend more to wealth when wealth is known to vary. However, the Control and Unequal Generosity conditions did not differ (171/197 (86.8 %) vs. 182/202 (90.1 %), respectively, odds ratio 0.72 [0.37, 1.40], $p = .348$), suggesting that when our participants didn’t know whether wealth varies more than generosity, they defaulted to preferring to know about others’ generosity (consistent with the arguments in Eisenbruch & Krasnow, 2022). Our results are even stronger in

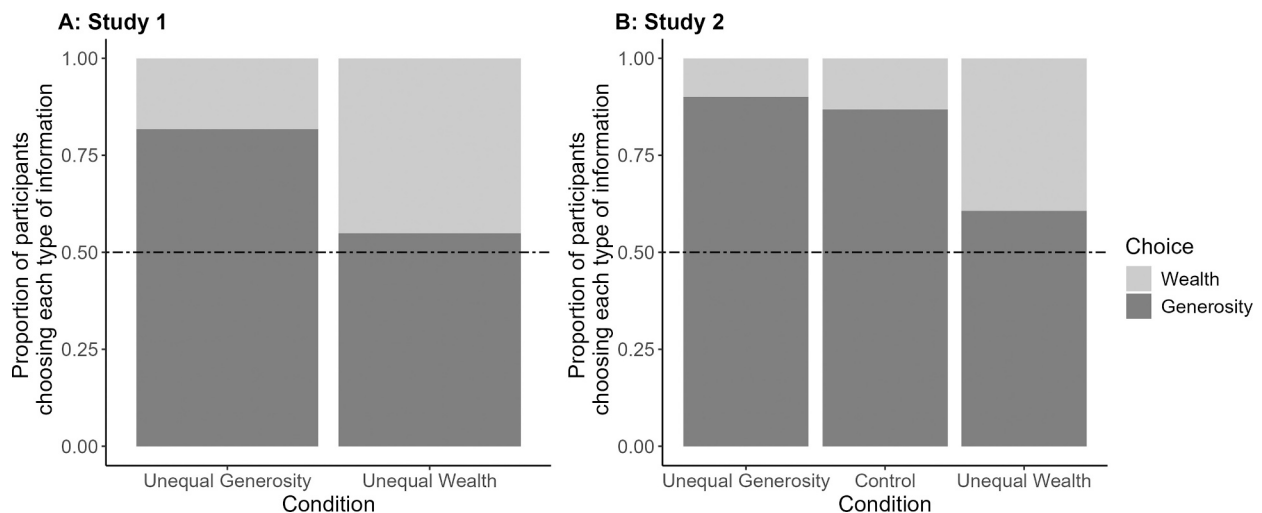


Fig. 2. Proportion of Participants who Seek Wealth or Generosity Information of Potential Partners in Each Condition in Study 1 ($N = 350$) and Study 2 ($N = 600$).

our pre-registered analysis of just the participants who passed the manipulation check: these participants preferred generosity information significantly more in the Unequal Generosity condition than in the Control condition (105/111 (94.6 %) vs. 171/197 (86.8 %), respectively, odds ratio = 2.65 [1.02, 8.15], $p = .033$), which in turn had higher generosity preferences than the Unequal Wealth condition (171/197 (86.8 %) vs. 71/131 (54.20 %), respectively, odds ratio = 5.53 [3.15, 9.91], $p < .001$; see Supplementary for full analyses.)

Binomial tests showed that participants sought generosity information more than wealth information in all three conditions, suggesting that there was a general tendency to seek generosity information (Unequal Generosity: 90.1 %, $p < .001$, $h = 0.93$; Control: 86.8 %, $p < .001$, $h = 0.83$; Unequal Wealth: 60.7 %, $p = .002$, $h = 0.22$).

We also conducted a logistic regression: participants' perceptions of the variance in generosity predicted their preference for the generosity information ($B = 0.40$, odds ratio = 1.49, $p < .001$), whereas their perceptions of the variance in wealth predicted their preference for the wealth information ($B = -0.36$, odds ratio = 0.70, $p < .001$).

4. General discussion

In two studies, participants sought information about the trait that varied more among partners relative to a control condition: generosity information when generosity was more variable, and wealth information when wealth was more variable – although generosity remained the overall preferred trait. Participants had a default preference for information on others' generosity, as shown by both the Control condition (Study 2) and the participants who failed the manipulation check (Studies 1 & 2). However, as predicted, this default preference was strengthened when partners varied greatly in generosity, and was weakened when partners varied more in wealth. This supports the hypothesis that people will attend more to traits that vary among potential partners, because more variable traits will have bigger differences between those “high” and “low” on that trait, and thus more impact on benefits received (all else equal).

Why would our participants have a default preference for generosity information? Eisenbruch and Krasnow (2022) suggest that warmth varies more than competence, particularly in ancestral environments, because kin and friends value your welfare whereas enemies and competitors value your demise (see also fitness interdependence: Aktipis et al., 2018; stake: Barclay, 2020). However, another non-mutually exclusive explanation is that there is signaling value in preferring warmth over competence – in a mathematical model and nine experiments, Dhaliwal et al. (2022) show that people prefer others who prioritize generous partners over able partners, because partners who prioritize generosity tend to be more cooperative, moral, and future-oriented. Either way, our results show that this default preference can be strengthened or weakened according to the population variation in different traits – and the default could even be reversed in populations with much more variation in wealth or ability (see below).

Our results lead to novel predictions about what traits people will prefer in partners. We should predict stronger preferences for wealth in places where wealth is highly unequal (e.g., high GINI index), stronger preferences for ability or competence in domains where ability is highly variable (e.g., sports, hunting), and stronger preferences for warmth or generosity when potential partners vary more in cooperativeness toward us, for example during coalitional conflict where people can either help or harm us. Conversely, we should predict lower preferences for generous partners in environments where (almost) everyone cooperates, such as food sharing in some hunter-gatherer societies. (e.g., Smith & Apicella, 2020). Partner preferences should change as people experience more homogeneity or heterogeneity on a trait, such as Hadza hunter-gatherers starting to value generous partners more after having more exposure with outgroups who lack norms of group-wide sharing (Smith & Apicella, 2020). These preferences should hold for all long-term relationships: spouses, friends, allies, business partners, and so on. People

do not automatically know the population variation in a trait: they must infer it from people they have previously encountered, and from environmental cues of future variation (e.g., visual cues of physical variability, cues of imminent conflict causing variation in warmth). We would not expect a single exposure to override a default that is evolved or learned through a lifetime of experience, but a lifetime of experience may well produce a different default. Future research should test how people weigh these sources of information – defaults, experience, and cues of future variation – how flexibly they do so, and on what timescales.

Our results do have some limitations. First, the questions were hypothetical – participants did not actually choose partners to distribute money. However, this still gives us insight into what information people want. Indeed, this method is just as valid as mate-preference studies that ask hypothetical questions about what traits people want in romantic partners. Second, the results were conducted in one culture, and the default preference for generosity may not generalize to other cultures. But this is not a limitation, and is in fact explicitly predicted by our results: people will focus less on others' generosity in cultures where there is less variance in generosity (see also Eisenbruch & Krasnow, 2022).

Overall, our results suggest that, although information about generosity was generally the most sought after, participants shifted their attention toward whichever trait displayed greater variability among potential partners. In other words, partner preferences are flexible, and are affected by how variable a trait is in a local population. We look forward to future work on how people trade off different partner traits depending on those traits' variability, stability, and net impact on fitness.

CRedit authorship contribution statement

Yuta Kawamura: Writing – original draft, Resources, Methodology, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Pat Barclay:** Writing – review & editing, Supervision, Resources, Project administration, Funding acquisition, Conceptualization.

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Declaration of competing interest

None.

Data availability

The data associated with this research are available at <https://osf.io/274ej/>.

References

- Aktipis, A., Cronk, L., Alcock, J., Ayers, J. D., Baciú, C., Balliet, D., Boddy, A. M., Curry, O. S., Krems, J. A., Muñoz, A., Sullivan, D., Sznycer, D., Wilkinson, G. S., & Winfrey, P. (2018). Understanding cooperation through fitness interdependence. *Nature Human Behaviour*, 2, 429–431. <https://doi.org/10.1038/s41562-018-0378-4>
- Barclay, P. (2004). Trustworthiness and competitive altruism can also solve the “tragedy of the commons”. *Evolution and Human Behavior*, 25(4), 209–220. <https://doi.org/10.1016/j.evolhumbehav.2004.04.002>
- Barclay, P. (2011). Competitive helping increases with the size of biological markets and invades defection. *Journal of Theoretical Biology*, 281, 47–55. <https://doi.org/10.1016/j.jtbi.2011.04.023>
- Barclay, P. (2013). Strategies for cooperation in biological markets, especially for humans. *Evolution and Human Behavior*, 34(3), 164–175. <https://doi.org/10.1016/j.evolhumbehav.2013.02.002>
- Barclay, P. (2015). Reputation. In D. Buss (Ed.), *Handbook of evolutionary psychology* (2nd ed., pp. 810–828). Hoboken, NJ: J. Wiley & Sons.

- Barclay, P. (2016). Biological markets and the effects of partner choice on cooperation and friendship. *Current Opinion in Psychology*, 7, 33–38. <https://doi.org/10.1016/j.copsyc.2015.07.012>
- Barclay, P. (2020). Reciprocity creates a stake in one's partner, or why you should cooperate even when anonymous. *Proceedings of the Royal Society of London B*, 287, 20200819. <https://doi.org/10.1098/rspb.2020.0819>
- Barclay, P., & Barker, J. L. (2020). Greener than thou: People who protect the environment are more cooperative, compete to be environmental, and benefit from reputation. *Journal of Environmental Psychology*, 72, Article 101441. <https://doi.org/10.1016/j.jenvp.2020.101441>
- Barclay, P., & Willer, R. (2007). Partner choice creates competitive altruism in humans. *Proceedings of the Royal Society of London Series B*, 274, 749–753. <https://doi.org/10.1098/rspb.2006.0209>
- Dhaliwal, N. A., Martin, J. W., Barclay, P., & Young, L. L. (2022). Signaling benefits of partner choice decisions. *Journal of Experimental Psychology: General*, 151(6), 1446–1472. <https://doi.org/10.1037/xge0001137>
- Eisenbruch, A., & Krasnow, M. (2022). Why warmth matters more than competence: A new evolutionary approach. *Perspectives on Psychological Science*, 17(6), 1604–1623. <https://doi.org/10.1177/17456916211071087>
- Faul, F., Erdfelder, E., Lang, A. G., & Buchner, A. (2007). G* power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods*, 39(2), 175–191. <https://doi.org/10.3758/BF03193146>
- Ferriere, R., Bronstein, J. L., Rinaldi, S., Law, R., & Gauduchon, M. (2002). Cheating and the evolutionary stability of mutualisms. *Proceedings of the Royal Society of London B*, 269, 773–780. <https://doi.org/10.1098/rspb.2001.1900>
- Fiske, S. T., Cuddy, A. J. C., & Glick, P. (2007). Universal dimensions of social cognition: Warmth and competence. *Trends in Cognitive Sciences*, 11(2), 77–83. <https://doi.org/10.1016/j.tics.2006.11.005>
- Foster, K. R., & Kokko, H. (2006). Cheating can stabilize cooperation in mutualisms. *Proceedings of the Royal Society of London B*, 273, 2233–2239. <https://doi.org/10.1098/rspb.2006.3571>
- Gangestad, S. W., & Buss, D. M. (1993). Pathogen prevalence and human mate preferences. *Ethology and Sociobiology*, 14, 89–96. [https://doi.org/10.1016/0162-3095\(93\)90009-7](https://doi.org/10.1016/0162-3095(93)90009-7)
- Kokko, H., Brooks, R., Jennions, M. D., & Morley, J. (2003). The evolution of mate choice and mating biases. *Proceedings of the Biological Sciences*, 270, 653–664. <https://doi.org/10.1098/rspb.2002.2235>
- McNamara, J. J., Barta, Z., & Houston, A. I. (2004). Variation in behaviour promotes cooperation in the prisoner's dilemma. *Nature*, 428, 745–748. <https://www.nature.com/articles/nature02432>
- McNamara, J. J., & Leimar, O. (2010). Variation and the response to variation as a basis for successful cooperation. *Philosophical Transactions of the Royal Society of London B*, 365, 2627–2633. <https://doi.org/10.1098/rstb.2010.0159>
- McNamara, J. M., Barta, Z., Frohman, L., & Houston, A. I. (2008). The coevolution of choosiness and cooperation. *Nature*, 451, 189–192. <https://doi.org/10.1038/nature06455>
- Noë, R., & Hammerstein, P. (1994). Biological markets: Supply and demand determine the effect of partner choice in cooperation, mutualism and mating. *Behavioral Ecology and Sociobiology*, 35, 1–11. <https://doi.org/10.1007/BF00167053>
- Noë, R., & Hammerstein, P. (1995). Biological markets. *Trends in Ecology & Evolution*, 10, 336–339. [https://doi.org/10.1016/S0169-5347\(00\)89123-5](https://doi.org/10.1016/S0169-5347(00)89123-5)
- Raihani, N., & Barclay, P. (2016). Exploring the trade-off between quality and fairness in human partner choice. *Royal Society Open Science*, 3, Article 160510. <https://doi.org/10.1098/rsos.160510>
- Roberts, G., Raihani, N., Bshary, R., Manrique, H., Farina, A., Samu, F., & Barclay, P. (2021). The benefits of being seen to help others: Indirect reciprocity and reputation-based partner choice. *Philosophical Transactions of the Royal Society B*, 376, 20200290. <https://doi.org/10.1098/rstb.2020.0290>
- Schino, G., & Aureli, F. (2017). Reciprocity in group-living animals: Partner control versus partner choice. *Biological Reviews*, 92, 665–672. <https://doi.org/10.1111/brv.12248>
- Searcy, W. A., & Nowicki, S. (2005). *The evolution of animal communication: Reliability and deception in signaling systems*. Princeton, NJ: Princeton University Press.
- Sherratt, T. N., & Roberts, G. (2001). The importance of phenotypic defectors in stabilizing reciprocal altruism. *Behavioral Ecology*, 12(3), 313–317. <https://doi.org/10.1093/beheco/12.3.313>
- Smith, K. M., & Apicella, C. L. (2020). Partner choice in human evolution: The role of cooperation, foraging ability, and culture in Hadza campmate preferences. *Evolution and Human Behavior*, 41, 354–366. <https://doi.org/10.1016/j.evolhumbehav.2020.07.009>
- Sylwester, K., & Roberts, G. (2010). Cooperators benefit through reputation-based partner choice in economic games. *Biology Letters*, 6, 659–662. <https://doi.org/10.1098/rsbl.2010.0209>