

The Social Roots of Contemporary Prejudice

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Abstract: *Background:* Evolutionary theory suggests prejudice may be a result of the evolution of human sociality. In this study, we investigate this claim by integrating theoretical insights of evolutionary theory with the well-established social psychological research on prejudice centering on Right Wing Authoritarianism (RWA) and Social Dominance Orientation (SDO) as the main predictors of prejudice.

Method: First, we developed two different signaling scales, probing respondents' propensity to signal group commitment in a genuine or deceptive way. We administered a questionnaire consisting of the two signaling measures, RWA, SDO and prejudice measures to 1380 students. Analysis of the data was done using structural equation modeling.

Results: Our results indicate that genuine signaling of one's commitment to the in-group is positively associated with RWA, and that deceptively signaling one's commitment to the in-group is positively associated with SDO. Both RWA and SDO are positively related to prejudice.

Conclusion: Our study is the first to empirically reveal the pro-social roots of prejudice using classical measurement instruments. The findings give rise to a new array of research questions.

Keywords: Prejudice, right wing authoritarianism, social dominance orientation, evolutionary theory.

THE EVOLUTION OF HUMAN SOCIALITY

It has been widely studied that evolution favors in-group cooperation (sociality), in the sense that helping others may benefit the transmission of genes to future generations, even if this happens at a cost to the helping or cooperating individual (e.g. Singer 1981). For, living in group and contributing to the common goals of the group may yield clear advantages in terms of chances of survival, *inter alia* through the facilitation of hunting large game and sharing food (e.g. Bowles and Gintis 2004).

However, the evolution of human sociality has a darker side as well insofar as the exclusion of out-groups is a side product thereof. This is referred to as *parochial altruism* (e.g. Bowles and Gintis 2011), and explained as follows. The living conditions humans faced in the Late Pleistocene were very hostile with large climatic fluctuations, destructive natural events such as volcanic eruptions, and a scarcity of resources. As a result, people would adopt a nomadic lifestyle, moving from one place to the other in search of both safety and resources (Bowles 2008, 2009; Bowles and Gintis 2004, 2011; Choi and Bowles 2007; Cosmides, Tooby, and Kurzban 2003; Kurzban, Tooby and Cosmides 2001). In such a context, in-group cooperation and out-group exclusion or even hostility is functionally adaptive: when encountering other groups in search of the same scarce resources, cooperation

(sociality) would increase the odds of winning a hostile, competitive encounter. One particular group would also benefit from excluding other group members from using the in-group's resources, as this might weaken the in-group's position. Further, when resources are scarce, the larger and stronger the group, the better it is able to reap off the resources of other groups, *inter alia* by means of violent actions such as raids. This mechanism is supported by a cognitive module allowing people to allocate individuals to their in-group, an allied out-group, or a hostile out-group, on the basis of visible markers or correlates of coalitional belonging. Kurzban and colleagues argue that such a module exists, and refer to it as *coalitional exploitation*. It is referred to as:

A suite of adaptations designed to cause one to exclude individuals from reaping the benefits of membership in one's group, particularly if it is a locally dominant one, and to exploit excluded individuals" (2001: 192).

This way, human sociality is, at least in part, rooted in inter-group conflict and competition.

Not all people are social towards the in-group however. Next to pro-social tendencies, people may also have selfish tendencies. Without regulating mechanisms, natural selection – essentially based on competition – would favor selfishness once in-group sociality emerges as it would enable the selfish to reap the benefits of cooperation without cooperating themselves. This phenomenon is called *cheating* or

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defecting. Therefore, cooperation cannot be unconditional as this would undermine it. As shown by Fischbacher and Gächter (2010), in a public goods game, when no regulating mechanisms are in place and cooperation is unconditional, all participants would soon behave as income-maximizing cheaters. The only way cooperation can be sustained is to make it conditional upon the cooperation of the receiver (Fischbacher and Gächter 2010: 541). As people are not perfect conditional cooperators (as they cannot exactly know what the other person will do), the risk of a decline of cooperation remains imminent when cheaters are present (e.g. Fehr and Fischbacher 2002: C17; Fischbacher and Gächter 2010: 554).

There are two important mechanisms through which the problems associated with the conditionality of cooperation can be avoided: *reputation building* (signaling) and *punishment or exclusion of cheaters*. Often, people will try to build a reputation as a good cooperator, thus attracting more people to cooperate with. One such form is signaling one's commitment to the in-group by which one is able to build a reputation as a good reciprocator. By interacting with someone of good reputation, the problem of perfect conditionality is resolved as one does not need to estimate the exact amount of reciprocation to be expected. In a specific form, punishment of cheaters is a costly form of signaling. In this context, one invests energy in exposing cheaters, which makes them known to others, resulting in a rise of in-group sociality as less people will be inclined to interact with them after exposure, giving them the reputation of bad reciprocator. We will refer to this type of signaling as "genuine signaling of sociality" (the word *genuine* is used given that the proximal causes of evolutionarily acquired mechanisms are emotions, and these people genuinely *like* cooperation and investing their energy and means in the in-group).

However, cheaters also evolved strategies to avoid exclusion and punishment. One efficient strategy in this context is to *mimic cooperation*. This is a form of deceptive cooperation, inspired by self-interested motives, making it more difficult for genuine social actors to detect them (e.g. Trivers 1971). Thus, they signal sociality as well, but for very different reasons than do genuinely social people. Such behaviors can be considered to be pro-social as they may still benefit the group to some extent (which would not be the case for anti-social individuals), the basic motive is selfish. We will refer to this type of signaling sociality as "deceptive signaling of sociality". In the next sections,

we will relate both of these forms of signaling to RWA and SDO, which act as mediators between both forms of sociality and prejudice.

Right Wing Authoritarianism

Right Wing Authoritarianism (RWA) (e.g. Adorno 1950; Altemeyer 1981; Asbrock, Sibley and Duckitt 2010; Cohrs and Asbrock 2009; Norris 2011), refers to a belief in the world as a dangerous and threatening place, accompanied by a desire for strong leaders, clear norms, and an effective enforcement of these norms, in order to avoid the dissolution of group cohesion. RWA consists of three subscales, which have been theoretically brought into relationship with the evolution of group living (Kessler and Cohrs 2008). Even though RWA is always used as a composite measure (as is the case in the current study), the discussion thereon in terms of the three subscales it consists of allows for a more detailed exposition on how it may relate to the evolution of human sociality.

The first dimension, *authoritarian submission*, refers to the tendency to defer to legitimate authorities and their dictates. As indicated above, reciprocity and cooperation have evolved to become the *norm* in human group living, which has to be "policed" in order to maintain cooperation. RWA reflects this adherence to norms such as reciprocity strongly. Furthermore, Kessler and Cohrs (2008) indicate that group conventions (group-specific norms and habits) provide for a means to distinguish one's own group from other groups, which yields a clear advantage in the face of conflict or competition: when confronted with outside threats from competing groups, it is essential that one can discern the in-group from the out-group. In this sense, parochial altruism as described above, is dependent on a certain degree of submission to the in-group.

The second dimension is *authoritarian aggression*, and refers to the inclination to punish transgressions of group norms, another necessary condition to sustain group living (e.g. Boyd, Gintis and Bowles 2010). As discussed earlier, cheating would soon become the dominant strategy if in-group sociality is not conditional upon punishment of cheaters or, put differently, norm-transgressors (the norm being cooperation). Authoritarian aggression can thus be considered to reflect the evolved tendency to punish norm-violators in order to keep up group cohesion. This essentially is an in-group dynamic, but in the face of threat of competing or conflicting groups, and in combination with

authoritarian submission, it may easily lead to outright hostility towards out-groups. Today, indeed prejudiced discourse often includes elements reminiscent of cheating, such as “they exploit us”, “they will ruin our culture” or “threaten our values”. This way, the presence of threatening (at least so perceived) out-groups triggers the evolved mechanism aimed at dealing with cheaters.

The third dimension is *conventionalism*, and refers to the tendency to hold on to traditional norms and values. Such an attitude has been of great importance in order to facilitate indirect reciprocity, a key element in large scale cooperation, as it provides a clear way to deal with coordination problems. These can be compared to “rules of the game” when interacting with others. With regard to sociality or cooperation, conventionalism deals with the pressing problem of estimating whether or not one will reciprocate in the future, and if they will do so in full or only in part. A conventional rule of thumb may state that it is rude not to reciprocate, and this may facilitate the decision for the person in question. Additionally, knowledge on traditions may make it more difficult to cheat, as these are more difficult to fake by potential cheaters (Kessler and Cohrs 2008). In practice, these conventions are picked up by social learning mechanisms such as horizontal transmission, in which people pick up the habits and conventions of the majority of the in-group (e.g. Henrich and Boyd 1998; 2001).

On the basis of the foregoing, we formulate the first hypothesis of the study: there is a link between genuine signaling of in-group sociality and prejudice, which is fully mediated by RWA. This hypothesis is, in principle, the core hypothesis of the study. It is the most contra-intuitive one as it posits a link between genuine signaling of pro-sociality and prejudice, which is not a common way of thinking of prejudice. The hypothesis explicitly states that the effect of genuine signaling on prejudice is mediated, given that pro-social people will usually tend to uphold group norms, which include norms of tolerance and non-discrimination as well in this day and age. Therefore, the perception of threatening or dangerous out-groups as exemplified in the RWA ideology, is a *necessary condition* for this link to take hold. If such a perception is not present, people will presumably not score high on prejudice, given the prevalence of non-discriminatory norms. We do not expect a link between deceptive signaling of in-group sociality and RWA, as this mode of signaling refers to cheaters, which are by definition less concerned with the wellbeing of others in the group (*infra*). This stands

in contradiction with the RWA ideology, where a heavy thumb is put on in-group cohesion and concern for fellow group members.

Social Dominance Orientation

The second ideological attitude is Social Dominance Orientation (SDO) (e.g. Kteily, Sidanius and Levin 2011; Pratto, Sidanius and Levin 2006; Pratto, Sidanius, Stallworth and Malle 1994; Sidanius and Pratto 1999). This attitude refers to a belief in the world as a highly competitive “jungle” in which only the strong prevail, and power equals success (e.g. Perry, Sibley and Duckitt 2013; Sibley, Wilson and Duckitt 2007; Van Hiel, Cornelis and Roets 2007). SDO can be related to the evolution of sociality through the notion of group competition over scarce resources: once a perception of competition between groups exists, a desire for the in-group to be dominant over groups considered inferior may arise.

Contrary to RWA, social dominance does not reflect a desire for group cohesiveness, but rather a self-oriented desire for power. As Altemeyer put it:

they themselves are not really in it so much for the group or its cause, but more for themselves. It's all about them, not about a higher purpose. If trouble arises, don't be surprised if they start playing 'Every man for himself' and even sell out the group to save their own skin" (2006: 165).

This way, it reflects the “cheating-side” of pro-sociality, as gaining power and status depend on recognition thereof by other members of the group. Even though their motive may be selfish, they need to mimic pro-sociality in order not to be unmasked as cheaters, and to gain good reputation and power.

This gives rise to our second main hypothesis: there is a positive relationship between deceptive signaling of in-group sociality and prejudice, which is partly mediated by SDO. Given the more selfish orientation in SDO and deceptive signaling of sociality, we do not posit the mediation effect as necessary as we did in case of RWA, given that the inclination of cheaters to safeguard their (groups’) benefits from being used by other groups is inherent in the concept of cheating. That is, whilst mediation in case of genuine signaling is a necessary condition given that pro-social norms need to be neutralized, this is not the case for cheaters, who

are naturally less inclined to adhere to group norms. This way, we also expect direct effects between deceptive signaling of sociality and prejudice.

Hypotheses: Summary

On the basis of the above exposition, we expect positive associations between both forms of signaling and prejudice, mediated by RWA and SDO respectively. The first hypothesized mediated association is one between genuine signaling of sociality and prejudice, mediated by RWA. We do not hypothesize any direct links between genuine signaling of sociality and prejudice, given that it reflects a higher desire for group cohesion. This way, mediation by RWA is a necessary condition in that it provides the sense of threat that may lead to the exclusion of certain groups from reciprocal intergroup relations.

The second hypothesized mediated relationship is one between deceptive signaling of pro-sociality and prejudice, mediated by SDO. Given the fact that people high in SDO are less pro-social than people high in RWA to start with, we also expect a direct effect between deceptive signaling and prejudice.

METHOD

Participants and Design

We conducted a survey on a large sample of students enrolled in law, criminology and psychology at the Open University of Cataluña, the university of the Basque Country, the University of Barcelona, and the University of Malaga. We created an online survey using Limesurvey, which was mailed to the student mailing lists with an invitation to complete the survey (see Bethlehem and Biffignandi, 2011 for an overview of web surveys). After a month, we sent out a reminder in order to amplify the sample. We obtained a sample of 1380 completed questionnaires.

Our general approach to testing the theoretical model is a latent variable approach assuming that the scores respondents give on items of measurement scales reflect their position on the unobservable latent construct this particular scale probes (e.g. Kline 2011). We proceeded in two stages. First, we assessed the adequacy of measurement using confirmatory factor analysis. Only items with a sufficiently high factor loading on the latent construct were retained (i.e. > 0.4). Then, all the items were parceled (e.g. Little, Rhemtulla, Gibson and Schoemann 2013) in order to present the model in a comprehensive way. In a

second step, we used these parcels to define the latent constructs in our structural model. In the structural model, both direct and indirect effects between the latent constructs can be estimated, making it an ideal tool to test our theoretical expectations. To evaluate the model, we first tested the hypothesized model as presented above.

Instruments

To measure the two types of signaling, we developed our own scale using items that are typical of student life yet capture the underlying idea of cooperation for different motives well. The signaling scales were constructed using existing peer pressure and cooperativeness scales as a basis. After qualitative exploration and pretesting, we constructed a measure consisting of 14 items, 7 items for quality signaling and 7 for signaling group membership. We inspected the structure of this composite scale preliminarily to confirmatory factor analysis using principal component analysis with promax rotation, forcing the items to load on two components. This yielded the following solution (Table 1)¹. After this exploratory analysis, 7 items were retained for deceptive signaling of in-group sociality, and 5 items were retained for genuine signaling of in-group sociality.

As Table 1 shows, component loadings are sufficiently high on one of the two components, after omission of two items with a low loading on the components. Component one represents deceptive signaling of sociality, and has a Cronbach's alpha of .60. Component two represents genuine signaling of sociality, and has a Cronbach's alpha of .64. The rather low internal consistency of both scales may be explained by the fact that they are not crisp attitudinal scales, but probe behaviors as well. In addition, Cronbach alpha is only a minimal internal consistency, not the only measure of internal consistency. This, in combination with the good component structure, justifies the usage of the scales in the analysis.

To measure RWA, we used an abridged Spanish version of the scale developed by Cárdenas and Parra (2010). The scale used consisted of six items (alpha = 0.69). Example items are "our country desperately needs a strong leader who will do what has to be done to destroy the radical news ways and sinfulness that are ruining us" and "once our government leaders give

¹The items are translated into English from the original Spanish questionnaire.

Table 1: Component Loadings of the Signaling Scales. Loadings in bold represent the loading on the component the item was used for. Two clearly distinct components emerged. Component loadings < 0.30 are omitted from the table

	Deceptive pro-sociality	genuine pro-sociality
I want to be the best in my group	---	.64
Working in group gives me the opportunity to show my value as a person	---	.63
For me it's very important not to be regarded as a loser	---	.60
In group work, I tend to take the lead if this helps my group to win	---	.62
The best of working in group is that it allows me to show my value for the group	---	.60
I only work with other if I get something in return, otherwise I don't like to do it	.53	---
Sometimes I took part in bullying someone even though I have nothing against him or her	.53	---
Sometimes I do things I actually don't like, simply to show I'm part of the group	.47	---
Sometimes I excluded others for the sole reason they were not popular with my friends	.66	---
I sometimes gossip about people with my friends, even though I don't really know the person in question	.52	---
I only like to work in group if it serves my own purposes, the objectives of the group are irrelevant to me	.59	---
If my friends are bullying someone, I usually intervene to make them stop (reverse coded)	.50	---
Cronbach's alpha	0.60	0.64

us the go ahead, it will be the duty of every patriotic citizen to help stomp out the rot that is poisoning our country from within". To measure SDO, we used an abridged version of the SDO scale as developed by Cárdenas, Meza, Lagues and Yañez (2009), which consisted of nine items ($\alpha = 0.79$). Sample items are "to get ahead, it is sometimes necessary to use force against other groups" and "inferior groups should stay in their position". The prejudice scale was composed of a combination of Pettigrew and Meertens' (1995) blatant and subtle prejudice scale (9 items, $\alpha = .86$). Sample items are "immigrants have jobs that should belong to US citizens" and "the immigrants living here teach their children different values than those needed to be successful in this country".

Before running the structural equation model, we created parcels for all indicators of latent constructs, to retain three indicators for each latent construct. Confirmatory factor analysis indicates a good model fit ($\chi^2_{80} = 259,481$, $p = 0.000$; AGFI = 0.963; CFI = 0.969; RMSEA = 0.04)². The measurement model is not displayed here, as the full structural model including the measurement model will be presented later. In any

case, the good CFA fit values indicate the measurement model fits well with the data.

RESULTS

The results of our analysis are presented in Figure 1.

As appears from the fit indices, the model fits well with the data ($\chi^2_{82} = 259.86$, $p = 0.00$; AGFI = 0.96; CFI = 0.97; RMSEA = 0.04). The significant chi-square value is normal in larger samples (Kline, 2011). In general, our expectations were confirmed. The first mediated path runs from genuine signaling of sociality ("genuine sociality" in the figure) to Right Wing Authoritarianism ($\beta = 0.39$), followed by prejudice ($\beta = 0.43$). The second path shown in the model, runs from deceptively signaling group membership ("deceptive sociality" in the figure) to Social Dominance Orientation ($\beta = 0.22$), followed by prejudice ($\beta = 0.34$), as we theoretically expected.

Contrary to RWA, we also found a direct effect between deceptive signaling and prejudice ($\beta = 0.11$), which was explained in terms of an overall more antisocial attitude for those high in SDO (Altemeyer, 2006): their primary concern is their own interest, which may incline them to exploit and exclude both in- and

²In large samples, chi-square is almost always significant. We did report it for the sake of completeness.

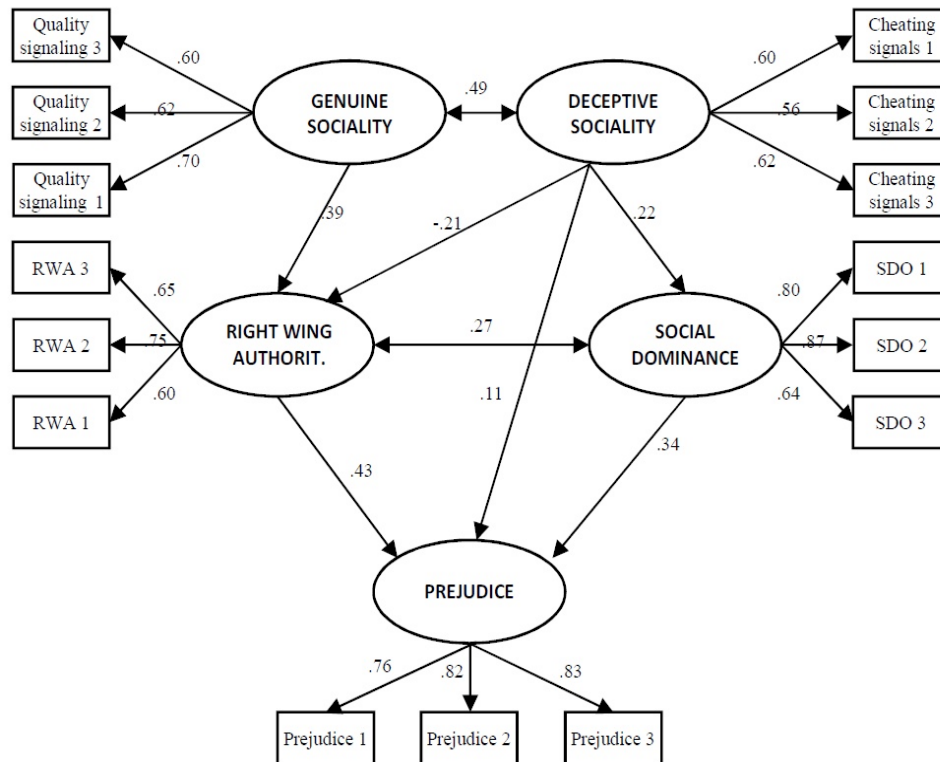


Figure 1: Measurement and structural model. All significant paths are shown. Insignificant paths are omitted from the figure.

out-group members without having to resort to a certain ideology to justify their behavior as is the case for RWA.

Finally, we also found a path between deceptive signaling of sociality and RWA, which was not theoretically expected. Given the fact that the coefficient is negative, however, this does confirm our hypothesis of two distinct paths leading towards prejudice and further corroborates the substantial differences in the psychometric properties of genuine signaling of sociality and deceptively signaling of sociality.

We then inspected the total effects of both signaling measures on prejudice. This analysis revealed a significant mediated effect of genuine signaling of prosociality on prejudice of 0.17 ($p = 0.01$), a significant total effect of deceptive signaling of sociality on prejudice of 0.09 ($p = 0.03$). The latter effect is composed of a mediated effect of -0.18 which is not significant ($p = 0.54$), and a direct effect of 0.11 ($p = 0.01$). Thus, whilst deceptive signaling of sociality is indeed related to SDO and prejudice, the mediation hypothesis can be falsified: SDO is not a necessary mediator for deceptive signaling of sociality to lead to prejudice.

DISCUSSION

This is the first empirical study to integrate evolutionary psychological and more classical psychological approaches to prejudice. It is also among the first to explore the theoretically claimed connections that may exist between RWA and pro-sociality, next to existing studies that claim that authoritarianism may have positive effects on people in more general terms (A. Van Hiel and De Clercq 2009). In our study, genuine signaling of sociality is positively related to prejudice, but only when RWA is present as a mediator. This provides the first empirical support for the theoretical Claim that RWA and prejudice may be a result of the evolution of human sociality.

The second path originates in deceptively signaling one's commitment to the group, in order not to be exposed as a cheater. Even though the strongest connection was found with SDO, a direct path existed as well, indicating that people high in SDO have a greater propensity to prejudice than do genuinely pro-social people. Further, deceptive signaling was negatively associated with RWA, further bolstering the difference between both types of signaling.

Our results have considerable implications for combating prejudice. One such implication relates to

the fact that in both cases, it regards forms of *signaling*. As a signal is stronger as the cost of it increases, retributive punishment may not result in the desired effect of abstinence, as it increases the cost of the signal. Other ways of dealing with prejudice thus need to be explored. However, by doing so, it must be borne in mind that the social phenomenon prejudice is codetermined by two distinct processes, one social and one selfish. It is very well possible that strategies that yield a positive result in one of these processes, does not yield results in the other process. This remains, however, in need of further research.

Further, our study is only a first step in unraveling the relationships between pro-sociality and prejudice. Future research has yet to point out how these concepts relate to other forms of pro-sociality, such as empathic concern, and what the role of other known predictors of prejudice, such as group relative deprivation, are within the evolutionary framework. Still other avenues for future research may include the study of how different emotions such as disgust are related to prejudice and pro-sociality, as these have been proven to be evoked when shared norms are violated (e.g. Navarrete and Fessler 2006). In this sense, it would be sensible to hypothesize that emotions such as disgust and fear will be present in the case of the pro-social path to prejudice, but not in the selfish path thereto. As more selfish oriented people are supposedly less concerned with group well-being and cohesion, it is likely that emotions such as disgust play a minor role as a mediator to prejudice. On the other hand, emotions such as anger and jealousy may provide to be viable mediators for selfish-oriented people, whereas we hypothesize they play a smaller role for pro-social people. Our findings, and the speculations they give rise to, may thus generate a set of new and refreshing hypotheses in the study of pro-sociality, selfishness, and prejudice.

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REFERENCES

Adorno, T. L. Wiesengrund. 1950. *The Authoritarian Personality* (1st ed.). New York: Harper.

- Altemeyer, Bob. 1981. *Right-wing Authoritarianism*. Winnipeg: University of Manitoba Press.
- Altemeyer, Bob. 2006. *The Authoritarians*: Available online at <http://home.cc.umanitoba.ca/~altemey/>
- Asbrock, Frank, Chris Sibley and John Duckitt. 2010. "Right-Wing Authoritarianism and Social Dominance Orientation and the Dimensions of Generalized Prejudice: A Longitudinal Test." *European Journal of Personality* 24(4): 324-340.
- Bethlehem, Jelke and Silvia Biffignandi. 2011. *Handbook of Web Surveys*. Hoboken, New Jersey: John Wiley and Sons. <http://dx.doi.org/10.1002/9781118121757>
- Bowles, Samuel. 2008. "Being Human: Conflict: Altruism's Midwife." *Nature* 456(7220): 326-327. <http://dx.doi.org/10.1038/456326a>
- Bowles, Samuel. 2009. "Did Warfare Among Ancestral Hunter-Gatherers Affect the Evolution of Human Social Behaviors?" *Science* 324(5932): 1293-1298. <http://dx.doi.org/10.1126/science.1168112>
- Bowles, Samuel and Herbert Gintis. 2004. "The evolution of strong reciprocity: cooperation in heterogeneous populations." *Theor. Popul. Biol.* 65(1): 17-28. <http://dx.doi.org/10.1016/j.tpb.2003.07.001>
- Bowles, Samuel and Herbert Gintis. 2011. *A Cooperative Species: Human Reciprocity and its Evolution*. Princeton: Princeton University Press. <http://dx.doi.org/10.1515/9781400838837>
- Boyd, Rob, Herbert Gintis and Samuel Bowles. 2010. "Coordinated Punishment of Defectors Sustains Cooperation and Can Proliferate When Rare." *Science* 328(5978): 617-620. <http://dx.doi.org/10.1126/science.1183665>
- Cárdenas, Manuel, Patricio Meza, Karen Lagunes and Susan Yañez. 2009. "Adaptación y Validación de la Escala de Orientación a la Dominancia Social (SDO) en una Muestra Chilena." *Univ. Psychol.* 9(1): 161.
- Cárdenas, Manuel and Louis Parra. 2010. "Adaptación y Validación de la Versión Abreviada de la Escala de Autoritarismos de Derechas (RWA) en una Muestra Chilena." *Revista de Psicología* XVII(1): 61.
- Choi, Jung-Kyoo and Samuel Bowles. (2007). "The Coevolution of Parochial Altruism and War." *Science* 318(5850): 636-640. <http://dx.doi.org/10.1126/science.1144237>
- Cohrs, Christopher J. and Frank Asbrock. 2009. "Right-wing Authoritarianism, Social Dominance Orientation and Prejudice Against Threatening and Competitive Ethnic Groups." *European Journal of Social Psychology* 39(2), 270-289. <http://dx.doi.org/10.1002/ejsp.545>
- Cosmides, Leda, John Tooby and Robert Kurzban. 2003. "Perceptions of Race." *Trends in Cognitive Sciences* 7(4): 173-179. [http://dx.doi.org/10.1016/S1364-6613\(03\)00057-3](http://dx.doi.org/10.1016/S1364-6613(03)00057-3)
- Fehr, Ernst and Urs Fischbacher. 2002. "Why Social Preferences Matter - The Impact of Non-selfish Motives on Competition, Cooperation and Incentives." *Economic Journal* 112(478): C1-C33. <http://dx.doi.org/10.1111/1468-0297.00027>
- Fischbacher, Urs and Simon Gächter. 2010. "Social Preferences, Beliefs, and the Dynamics of Free Riding in Public Goods Experiments." *American Economic Review* 100(1): 541-556. <http://dx.doi.org/10.1257/aer.100.1.541>
- Henrich, Joe and Rob Boyd. 1998. "The Evolution of Conformist Transmission and the Emergence of Between-group Differences." *Evolution and Human Behavior* 19(4): 215-241. [http://dx.doi.org/10.1016/S1090-5138\(98\)00018-X](http://dx.doi.org/10.1016/S1090-5138(98)00018-X)
- Henrich, Joe and Rob Boyd. 2001. "Why People Punish Defectors - Weak Conformist Transmission Can Stabilize Costly Enforcement of Norms in Cooperative Dilemmas." *Journal of Theoretical Biology* 208(1): 79-89. <http://dx.doi.org/10.1006/jtbi.2000.2202>

- Kessler, Thomas and Christopher J. Cohrs. 2008. The Evolution of Authoritarian Processes: Fostering Cooperation in Large-scale Groups." *Group Dynamics-Theory Research and Practice* 12(1): 73-84.
<http://dx.doi.org/10.1037/1089-2699.12.1.73>
- Kline, Rex. B. 2011. *Principles and Practice of Structural Equation Modeling*. New York: The Guilford Press.
- Kteily, Nour S., Jim Sidanius and Shana Levin. 2011. "Social Dominance Orientation: Cause or 'Mere Effect'? Evidence for SDO as a Causal Predictor of Prejudice and Discrimination Against Ethnic and Racial Outgroups." *Journal of Experimental Social Psychology* 47(1): 208-214.
<http://dx.doi.org/10.1016/j.jesp.2010.09.009>
- Kurzban, Robert, John Tooby and Leda Cosmides. 2001. "Can Race Be Erased? Coalitional Computation and Social Categorization." *Proceedings of the National Academy of Sciences of the United States of America* 98(26): 15387-15392.
<http://dx.doi.org/10.1073/pnas.251541498>
- Little, Todd D., Mijke Rhemtulla, Kimberly Gibson and Alexander M. Schoemann. 2013. "Why the Items Versus Parcels Controversy Needn't Be One." *Psychol. Methods* 18(3): 285-300.
<http://dx.doi.org/10.1037/a0033266>
- Navarrete, Carlos D. and Daniel T.M. Fessler. 2006. "Disease Avoidance and Ethnocentrism: The Effects of Disease Vulnerability and Disgust Sensitivity on Intergroup Attitudes." *Evolution and Human Behavior* 27(4): 270-282.
<http://dx.doi.org/10.1016/j.evolhumbehav.2005.12.001>
- Norris, Gareth. 2011. *The Developing Idea of the Authoritarian Personality: an Historical Review of the Scholarly Debate, 1950-2011*. Lewiston: Edwin Mellen Press.
- Perry, Ryan, Chris G. Sibley and John Duckitt. 2013. "Dangerous and Competitive Worldviews: A Meta-analysis of their Associations with Social Dominance Orientation and Right-Wing Authoritarianism." *Journal of Research in Personality* 47(1): 116-127.
<http://dx.doi.org/10.1016/j.jrp.2012.10.004>
- Pettigrew, Thomas F. and Roel W. Meertens. 1995. "Subtle and Blatant Prejudice in Western-Europe." *European Journal of Social Psychology* 25(1): 57-75.
<http://dx.doi.org/10.1002/ejsp.2420250106>
- Pratto, Felicia, Jim Sidanius and Shana Levin. 2006. "Social Dominance Theory and the Dynamics of Intergroup Relations: Taking Stock and Looking Forward." *European Review of Social Psychology* 17: 271-320.
<http://dx.doi.org/10.1080/10463280601055772>
- Pratto, Felicia, Jim Sidanius, Lisa M. Stallworth and Bertram F. Malle. 1994. "Social Dominance Orientation. A Personality Variable Predicting Social and Political Attitudes." *Journal of Personality and Social Psychology* 67(4): 741-763.
<http://dx.doi.org/10.1037/0022-3514.67.4.741>
- Sibley, Chris G., Marc S. Wilson and John Duckitt. 2007. "Effects of Dangerous and Competitive Worldviews on Right-Wing Authoritarianism and Social Dominance Orientation over a five-month period". *Political Psychology* 28(3): 357-371.
<http://dx.doi.org/10.1111/j.1467-9221.2007.00572.x>
- Sidanius, Jim and Felicia Pratto. 1999. *Social Dominance : an Intergroup Theory of Social Hierarchy and Oppression*. New York: Cambridge University Press.
<http://dx.doi.org/10.1017/CBO9781139175043>
- Sijtsma, Klaas. 2009. "On the Use, the Misuse, and the Very Limited Usefulness of Cronbach's Alpha." *Psychometrika* 74(1): 107-120.
<http://dx.doi.org/10.1007/s11336-008-9101-0>
- Singer, Peter. 1981. *The Expanding Circle: Ethics, Evolution and Moral Progress*. Princeton: Princeton University Press.
- Trivers, Robert L. 1971. "Evolution of Reciprocal Altruism." *Quarterly Review of Biology* 46(1): 35-57.
<http://dx.doi.org/10.1086/406755>
- Van Hiel, Alain, Ilse Cornelis and Arne Roets. 2007. "The Intervening Role of Social Worldviews in the Relationship Between the Five-factor Model of Personality and Social Attitudes." *European Journal of Personality* 21(2): 131-148.
<http://dx.doi.org/10.1002/per.618>
- Van Hiel, Alain and Barbara De Clercq. 2009. "Authoritarianism is Good for You: Right-wing Authoritarianism as a Buffering Factor for Mental Distress." *European Journal of Personality* 23(1): 33-50.
<http://dx.doi.org/10.1002/per.702>

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