



Public Opinion and Evolved Heuristics: The Role of Category-Based Inference

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Abstract

Extant research argues that public opinion on modern political issues is a by-product of evolved moral intuitions. However, the structure of modern political debates seems to clash with the input conditions of our moral inference systems. Especially, while we evolved to pass moral judgments on specific and well-known individuals, modern politics is about formulating general laws, applying to whole categories of anonymous strangers. Hence, it is argued that in order to produce opinion on political issues, moral heuristics are required to recruit cognitive systems designed for category-based inference. It is predicted and empirically demonstrated, first, that this interplay is conditioned by the extent to which an individual's stored category-level information (i.e., stereotypes) fit the input conditions of evolved heuristics. Second, that the category-oriented inferences are regulated by a scope syntax, which deactivates their role in public opinion formation to the extent the individual is faced with specific and ecologically valid information. Implications for understanding public opinion on modern political issues are discussed.

Keywords

Public opinion, evolutionary psychology, moral heuristics, stereotypes, criminal justice

The core issues of modern-day mass politics resemble a suite of recurrent ancestral problems relating to social living. These ancestral problems have selected for a range of evolved moral heuristics, i.e. “decision rules that quickly produce social and moral judgments, based on limited information” (Cosmides and Tooby, 2006: 182), and researchers have argued that public opinion on modern political issues is a by-product of the operations of these heuristics (see, e.g., Sidanius and Kurzban, 2003; Alford and Hibbing, 2004; Cosmides and Tooby, 2006; McDermott, 2007; Schreiber, 2007). However, important questions concerning the differences between modern and ancestral politics have been left unanswered. Most notably, while we evolved to pass moral judgments

on specific and well-known individuals, modern political debates are structured around the formation of general rules, i.e., laws, applying to whole categories of anonymous strangers (criminals, welfare recipients, immigrants, etc.) (Kuklinski and Quirk, 2000; Petersen and Kennair, 2009). How, then, can a moral psychology, designed to modulate reactions to detailed information available in repeated face-to-face interactions, guide the formation of general opinions in modern mass-level politics?

In this article, I offer one solution to this puzzle by demonstrating that evolved moral heuristics lock onto modern politics through the recruitment of cognitive systems designed for category-based inference. Specifically, it is argued that general political opinion can emerge through an interplay between moral inference systems and systems designed for representing stereotypical information about categories of individuals. Importantly, this interplay is expected to be conditioned in two ways: First of all, we should only expect category-based inference to facilitate the smooth deployment of moral heuristics in opinion formation to the extent the content of the stereotypes fits the input conditions of heuristics relevant to the issue at hand. Second, we should expect the category-oriented inferences to be regulated by a sophisticated scope syntax (Cosmides and Tooby, 2000; Klein et al., 2001), which deactivates their role in public opinion formation to the extent the individual is faced with specific and ecologically valid information.

Empirically, these predictions are tested through an examination of how and when evolved heuristics designed for counter-exploitation facilitate the formation of modern criminal justice opinions. Extant research has demonstrated that these heuristics are designed to extract information about the association (i.e., social) value of exploiters and, based on this information, trigger either punitive or conciliatory responses (de Waal, 1996; Lieberman and Linke, 2007; Petersen et al., in press). In a large-scale survey including both cross-sectional and experimental data it is demonstrated, first, that to the extent – and only to the extent – individuals represent the category ‘criminals’ in a way which fits the input conditions of the counter-exploitation heuristics are they able to form coherent general criminal justice opinions. Second, through an experimental design, it is demonstrated that these categorical representations do not condition the opinion formation process towards a specific crime case in which individuals are provided with detailed and ancestrally significant cues.

Ancestral and Modern Politics

Adaptive problems such as sharing, collective action, punishing free-riders and exploiters, managing intergroup relations and negotiating hierarchies carry

deep structural similarities to modern political issues such as welfare, tax payments, criminal sanctions, immigration, race relations, and redistribution. Thus, the course of human evolution has selected for a range of sophisticated moral heuristics directly applicable to the problems of modern politics. However, at the same time, the differences between the politics of now and then run deep.

Ancestral environments were information-dense and characterized by repeated face-to-face interactions. Hence, our moral heuristics evolved as context-sensitive systems, designed to modulate their motivational output to match the specifics of a social situation (Tooby and Cosmides, 1992; Ridley, 1996; Pinker, 1997). In contrast, modern politics are, first, characterized by information scarcity. Modern states comprise millions of people and each citizen will only know and ever meet a tiny fraction. Anonymous strangers constitute the larger part. In the words of public opinion theorist, John Zaller (1992: 6), “citizens in large societies are dependent on unseen and usually unknown others for most of their information about the larger world in which they live”. The implication is that our moral heuristics are unable to extract the detailed information necessary for their execution (such as facial expressions, knowledge of an individual’s past contributions, etc.) (Kuklinski and Quirk, 2000; Sønderskov, 2008).

Second – and even more importantly – the vastness of modern political systems impose a certain structure on modern political debates. As argued by the political scientist, Deborah Stone (1988: 231):

Rules of behavior are the essential form of social coordination. General rules are necessary because, in the words of H. L. A. Hart, “no society could support the number of officials necessary to secure that every member of society was officially and separately informed of every act he was required to do.” Still less could society apply inducement for every action it wanted to influence.

Regulation of mass society is necessarily law-based. Hence, while ancestral politics revolved around the specific other, modern politics is about establishing general rules applying across specific cases. This affects the way politicians discuss political solutions in public debates. Specifically, the problems confronting citizens in these debates are not whether a specific criminal should be punished, whether a specific welfare recipient is deserving, or whether a specific immigrant should be allowed entry. Rather, debates turn on how to treat all criminals, all welfare recipients and all immigrants. Hence, political debates ask citizens to form *general* political opinions rather than opinions on specific cases.

This general nature of modern political debates clashes with the input conditions of evolved moral heuristics. Most notably, modern political debates

require citizens to think and respond in terms of whole categories of individuals, while we evolved to modulate our reactions according to within-category differences. For example: Ancestrally, the adaptive deployment of different sharing strategies depended on the effort of the specific individual in need and the systems designed for regulating sharing are designed to pick up and compute cues that correlated with a specific individual's effort and trigger motivations accordingly (Cosmides and Tooby, 1992). Sensibly, it has been argued that these moral inference systems are activated by modern debates about welfare recipients (Fong et al., 2005). However, welfare debates in modern politics are not about specific individuals in need, but about 'the needy' as a social category, and it is the whole category as such citizens are required to form a general opinion about (e.g., Larsen, 2006: 46).

Category-Based Inference as the Missing Link

A large literature has demonstrated that people have specialized inference mechanisms designed for reasoning in terms of categories or stereotypes. According to Bodenhausen and Macrae (1998: 4), "stereotypes consist of descriptive concepts that are associated with membership in a social category". Presumably, mechanisms for representing such categorical information evolved to allow efficient responses when processing capacity is constrained (Macrae et al., 1994) and to exploit acquired information in novel contexts (Cosmides and Tooby, 2000). In line with this, research documents that category-based inferences, i.e., stereotypes, indeed are activated in difficult processing environments (see, e.g., Macrae and Bodenhausen, 2001). These mechanisms, I argue, form a possible bridge through which moral heuristics are enabled to produce general political opinion. Thus, to the extent general political debates not only activate evolved moral inference mechanisms but also allow these mechanisms to recruit and process stereotyped information, these mechanisms will be provided with information at the appropriate level of conceptualization.

On the one hand, the correspondence between core modern political issues and the proper domains of moral heuristics should cause political debates to motivate citizens to form relevant opinions. For example: The existence of evolved mechanisms for cheater-detection should cause political debates on whether the homeless are victims of social injustice or just are lazy to arouse these mechanisms in the context of the political debate and induce citizens to scan for relevant information in order to arrive at a conclusion. On the other hand, the differences between modern politics and ecologically valid decision-making contexts should frustrate this motivation, and prompt the recruitment of relevant judgmental shortcuts that will relieve this frustration, i.e., category-

based inferences. Thus, it does seem likely that stereotyped information will be activated by general political debates.

Importantly, however, not all stereotyped information should be equally suited to produce unequivocal moral inferences. Thus, the forming of general political opinions differs in an important way from the situations that have preoccupied extant research on category-based inference. Extant research has focused on impression formation, i.e., how we form impressions of unacquainted others who belong to certain social categories, and have focused on the activation and application of category-level information in such situations (see, e.g., Macrae and Bodenhausen, 2001). In contrast, the task in general opinion formation is to use evolved moral heuristics to make inferences about the category as a whole. This requires us to turn the focus towards the content of activated stereotypes and, especially, to focus in detail on the fit between this content and the input conditions of evolved moral heuristics. Just like locks require a certain key to open, each moral heuristic is designed to produce inference from a narrow subset of recurrent ancestral cues only. It is the domain-specificity of a heuristic that ensured its ancestral adaptedness (Tooby and Cosmides, 1992). By implication, we can only expect the interplay between a relevant moral heuristic and category-based inference to form the basis of coherent political attitudes to the extent the categorical information fits the input conditions of the moral heuristic (Sperber, 1996; Boyer, 2001; Cosmides and Tooby, 2006). Or, in other words, opinion formation should only be facilitated by moral heuristics when citizens' stereotypes explicitly picture the relevant target group in an evolutionary significant way (e.g., as cheaters, exploiters or reciprocators).

In sum, then, the fit between a moral heuristic and the descriptive content of a relevant stereotype should constitute a powerful moderator of citizens' ability to reason coherently about politics in moral terms. This argument forms the basis of the first empirical prediction, the stereotype fit hypothesis: When citizens' issue-relevant stereotyped information fits the input conditions of issue-relevant evolved moral heuristics citizens should easily form coherent general opinions on a political issue. Citizens having more ambiguous stereotypes should be less able to utilize moral heuristics when forming their opinion and, hence, these citizens should have less coherent opinions.

The Scope Syntax of Category-Based Inference

In some cases, however, the operations of moral heuristics in politics should not be expected to be moderated by category-based inference. To understand why, we need to consider what can be called the scope syntax of category-based

inference, i.e., the evolved rules inhibiting the application of categorical information (*cf.*, Cosmides and Tooby, 2000), and consider if and when the structure of political debates allows these inhibitory processes to trigger.

While mechanisms designed for the application of categorical information allow us to make swift inferences about novel situations and unacquainted individuals by exploiting stored information, they will from time to time necessarily give rise to maladaptive misrepresentations of these situations and individuals. Accordingly, it has been argued that evolution have selected for sophisticated sets of higher-order mechanisms, scope syntaxes, which are designed to regulate the scope of the application of generalizations (Cosmides and Tooby, 2000; Klein et al., 2001). These mechanisms should respond to cues, which ancestrally have correlated with misapplication, and upon detection inhibit the use of category-based inferences. Due to the facultative nature of adaptive moral reasoning, this scope syntax can be expected to be especially fine-tuned in the domain of morality. Thus, it is conceivable that the detection of rich individuating information, which fits the input conditions of a moral heuristic, should in itself inhibit the application of category-oriented information. This scope syntax would allow inferences of moral heuristics to be based solely on the specific cues provided by the context rather than on a less adaptive combination of these cues and categorical information.

Research in stereotyping does seem to support this existence of this scope syntax. For example, Kunda and Sherman-Williams (1993) have shown that in the face of unambiguous and relevant specific information, people fully neglect categorical information (see also Kunda and Thagard, 1996; Bodenhausen et al., 1999; Yamagishi, 2001). Furthermore, this scope syntax seems to reveal itself in the very cognitive structure underlying category representation. Thus, rather than concepts with crisply defined boundaries, stereotypes are fuzzy natural kinds (Brown, 1986: 594). For example: The stereotype that welfare recipients are lazy is not equivalent to the representation that all welfare recipients are lazy, but to the representation that the likelihood of a welfare recipient being lazy is above average. Thus, because stereotypes in that sense have the same logical status as base rates (Locksley et al., 1982), the very structure of a stereotype automatically allows for exceptions to itself.

Importantly, although the bulk of modern political debates are general in nature, the input conditions of the just-described scope syntax are occasionally met. A common persuasion strategy among politicians is to use the cases of specific individuals to frame their more general arguments (Gross, 2008). Similarly, media research documents that specific cases and episodes do play an important role in the media's news reporting on topics such as crime, welfare and race relations, where specific examples are used as simplifying illustra-

tions of general themes, tendencies or arguments (Iyengar, 1991). On certain political issues such as crime, specific episodes (e.g., a murder) can even constitute news stories in themselves. In all these instances where modern citizens are confronted with and asked to judge specific individuals, we should expect, first, the scope syntax to inhibit category-based inferences and, second, moral heuristics to easily guide the formation of a specific opinion based on the available specific information. Again, the evolutionary framework draws our attention to the fit between the available information and the input conditions of moral heuristics: It is this fit that determines whether information is ambiguous or not. Hence, it is only when the specific information is ecologically valid and ancestrally significant that the scope syntax should be triggered and moral heuristics can produce clear inferences.

While the stereotype fit hypothesis underscored the role of stereotyped information in the operations of moral heuristics in modern politics, the discussion in this section stresses the boundary conditions of this role. The second empirical hypothesis, the specific information hypothesis, thus predicts: When political debates directly provide citizens with ancestrally recurrent and significant information about specific individuals, moral heuristics should easily produce inferences about these individuals without using issue-relevant stereotyped information. The implication is that while citizens' ability to form general opinions should be influenced by the content of their stereotypes, all citizens should be able to form specific opinions when presented with specific information.

The Empirical Case: Criminal Justice and Counter-Exploitation Heuristics

As a case for testing these predictions the issue of criminal justice is ideal. First, this issue provides us with valid contexts for investigating both general and specific political opinion formation. On the one hand: Content analyses of criminal justice debates across diverse countries demonstrate the general nature of the bulk of these debates at the political level. In both the US and Europe, debates juxtapose two basic policy goals, punishment and rehabilitation, and, depending on the ideological observance of the speaker, one or the other is put forth as a general solution to the problem of crime (Wilson and Herrnstein, 1985; Sasson, 1995; Laursen, 2001). Hence, criminal justice as a political issue asks modern citizens to form general opinions and prioritize either punishment or rehabilitation (e.g., in the form of bettering the opportunities of marginalized populations and providing condemned criminals with education, drug-treatment and cognitive therapy; see Cullen and Gendreau,

2000) as the overarching goal of criminal sentencing in modern society. On the other hand, media coverage of specific crime cases is intense (Surette, 2006) and provides citizens with a context for forming specific opinions.

Second, several authors have argued that modern criminal justice opinions should be formed as by-products of a special suite of evolved moral heuristics (e.g., Ellis and Hoffman, 1990; Price et al., 2002; Lieberman and Linke, 2007). Thus, modern crime can be expected to tap into moral heuristics designed to facilitate counter-exploitation, i.e., adaptive responses to demonstrations of deficient concern for the welfare of ourselves or significant others (Petersen et al., in press). The issue of criminal justice thus allows us to test if and how the output of these moral heuristics is conditioned by the fit of citizens' stereotypes and of the available specific information.

To derive specific expectations about when and how evolved counter-exploitation heuristics guide opinion formation on modern criminal justice issues, we need to consider the heuristics' input conditions. When it comes to counter-exploitation, it is possible to specify two contradictory selection pressures (Trivers, 1971; Petersen et al., in press). On the one hand, protection is obviously a central concern, and punitive sentiments presumably evolved to ensure this protection. Punitive reactions will change the decision rules of the cheater by showing that one is able to impose costs (Sell, 2005), remove the extra benefits the exploiter has accumulated because of his act (Price et al., 2002) or, in extreme cases, directly eliminate the exploiter (see Daly and Wilson, 1988; Duntley and Buss, 2005). Furthermore, aggression will signal a reliable threat to other potential exploiters thereby facilitating cooperation more generally (Frank, 1988; Fehr and Gächter, 2000). On the other hand, it is important to notice that in an evolutionary perspective, social relations exist because they create reproductive benefits (de Waal, 1996; Tooby and Cosmides, 1996; Petersen et al., in press). Because of possible future benefits, it will under some circumstances be adaptive for the exploited party to avoid a breakdown of a cooperative relation – even in the face of single occurrences of exploitation. Given this selection pressure, it is likely that reparation is an evolved strategy (de Waal, 1996).

One key role of the psychological machinery designed to produce punitive and conciliatory motives is to process which of the two strategies is applicable in a specific situation. Evolutionary analysis suggests that the key decision element is the estimated net lifetime future value of maintaining interactions with the exploiter from the point of view of the decision-maker – in other words, the exploiter's association value (Tooby and Cosmides, 1996; Petersen et al., in press). Cues of high association values include lack of intentionality,

lack of prior exploitive behavior, past cooperative behavior, remorse, resourcefulness, sexual attractiveness and kinship. Low associations values should trigger punitive sentiments, while high association values should trigger conciliatory motives.

Returning to modern criminal justice debates and our empirical predictions: The stereotype fit hypothesis and the above discussion suggests, in tandem, that counter-exploitation heuristics can inform the choice between punishment and rehabilitation for those citizens having stored categorical representations of criminals, which either depicts this social category as having high or low association value. Hence, I expect that citizens who perceive criminals as *either* intentional 'evil' wrongdoers (with low association value) *or* as remorseful victims of social injustices (with high association value) can easily decide on criminal justice issues (see Claster, 1992; Sasson, 1995). In contrast, citizens who do not consistently picture criminals as being in general either intentional 'bad guys' or remorseful one-time offenders should experience greater difficulties. These more ambiguous stereotypes do not fit the input conditions of the appropriate inference mechanism and, hence, offers poor moral guidance when forming general criminal justice opinions. According to the specific information hypothesis, however, the content of citizens' stereotypes about criminals should only play a marginal role when citizens are asked to form opinions on specific crime cases (if, of course, these cases embody evolutionary recurrent and significant cues to the association value of the criminal). Here, moral heuristics should easily produce inferences about specific criminals without recruiting category-based inference mechanisms.

Overview of the Studies

The hypotheses are tested using a large-scale paper-and-pencil survey ($n > 3000$) on criminal justice attitudes collected among Danish adolescents attending general and vocational upper-secondary educational programs. The 45 schools from which the subjects were recruited were situated in different geographical locations, had different ethnic compositions and degrees of urbanization. All subjects are aged between 15 and 21 years and come from a wide range of different social backgrounds. Thus, approximately 85% of all Danish adolescents receive an upper secondary education.

The first study tests the stereotype fit hypothesis using correlational analysis (specifically, quadratic regression), while the second study uses an experimental design to test the specific information hypothesis.

Study 1: Testing the Stereotype Fit Hypothesis

The stereotype fit hypothesis posits that citizens whose stereotypes depict criminals as either having high or low association value are able to generate coherent criminal justice attitudes. Hence, in order to test the stereotype fit hypothesis, we, first, need a measure of the dependent variable: Subjects' level of attitudinal ambivalence on general criminal justice issues. Second, we need a measure of the independent variable: The content subjects' stereotypes about criminals.

Measures

A key dimension in relation to the dependent variable is whether subjects are able to consistently prioritize punishment over rehabilitation or vice versa as a generic response to crime or, reversely, whether the subjects' choice between punishment and rehabilitation produces ambivalence. In traditional public opinion theory, lack of ambivalence is described as a central feature of well-informed opinions (Converse, 1964; Zaller, 1992), and a range of scaling techniques have been developed to measure levels of ambivalence. Based on a detailed examination of the available measures, Riketta (2000) recommends the use of the Griffin measure (*cf.*, Thompson et al., 1995). Specifically, Steenbergen and Brewer's (2004) revised Griffin formula is used, which allows us to tap whether a subject's position on two separate attitude scales reflects ambivalence between the attitudinal objects of the two scales. It equals $(A + B)/2 - |A+B|$, where A is the one attitude scale and B is the other. Both scales are required to be scaled between -1 and 1 , where 1 implies that the object of the scale is strongly endorsed (*cf.*, Steenbergen and Brewer, 2004). The relevant objects for our purpose are punishment and rehabilitation, respectively, and, hence, a scale for the subjects' opinions towards punishment ($\alpha=0.70$) and a scale for the subjects' opinions towards rehabilitation ($\alpha=0.69$) are formed (see Appendix A for item wordings). Importantly, all items used ask general questions and are asked without reference to any specific criminal. Based on these scales and the Griffin formula, a measure of general criminal justice ambivalence is computed, which is rescaled to vary between 0 and 1 . A value of 0 implies a lack of ambivalence, which implies that a subject strongly endorse either punishment or rehabilitation as a generic solution to the problem of crime while fully rejects the other alternative. A value of 1 implies that a subject strongly endorses both punishment and rehabilitation or fully rejects both alternatives. This measure directly taps whether a subject is able to form a general political opinion, that is, to generally prioritize either punishment or rehabilitation as a general reaction to be used across specific cases.

Turning towards the measurement of the independent variable, the content of subjects' stereotypical beliefs about criminals. Specifically, based on four items (see Appendix A), I construct a measure of the association value ascribed to the category 'criminals' by subjects. This measure is scaled from 0 (low association value) to 1 (high association value). Importantly, the stereotype fit hypothesis posits that the level of general criminal justice ambivalence is influenced by the degree of fit between subjects' representations of the category 'criminals' and the input conditions of mechanisms regulating the activation of punitive and conciliatory motives. Hence, we should expect extreme stereotypes in either direction, i.e., stereotypes that either ascribe high or low association value to the category 'criminals', to allow moral inference and, by implication, the formation of a coherent general opinion. In contrast, subjects who have no clear representation of the association value of criminals as such should not be able to form general opinions by recruiting mechanisms for category-based inference. In other words, the stereotype fit hypothesis predicts a curvilinear relationship between the stereotype measure and the ambivalence measure. Statistically, to detect this type of relationship the use of quadratic regression models is required (Agresti and Finaly, 1997).

To assure that the findings are robust and non-trivial, I include a final measure of the subjects' political sophistication. Hence, in the public opinion literature, an important argument is that political sophisticates have less ambivalent attitudes due to their capacity for engaging in systematic political reasoning (Converse, 1964; Zaller, 1992). The inclusion of political sophistication serves as both an ordinary control variable and as a baseline for evaluating the power of our alternative explanation focusing on the fit between stereotypes and evolved heuristics. Political sophistication is measured by combining information about the subjects' political interest (scaled from 0–1) and their educational level (general upper-secondary education programs are scored as 1, vocational programs are scored as 0). The final measure is rescaled to vary between 0 and 1.

Results

The results of the stereotype fit hypothesis test are shown in Table 1. In Model 1, general criminal justice ambivalence is regressed on the traditional explanatory factor, political sophistication. The effect of political sophistication on ambivalence is negative and highly significant but of marginal strength. When political sophistication increases, ambivalence decreases as predicted by traditional theories. In Model 2 information about the subjects' stereotypes about criminals are included. To test for the predicted curvilinear relationship between these stereotypes and ambivalence a quadratic term is computed,

Table 1

How political sophistication and the content of stereotypes about criminals predict ambivalence when choosing between punishment and rehabilitation as a general solution to the problem of crime

	Model 1	Model 2
Intercept	0.59*** (0.01)	0.25*** (0.02)
Political sophistication	-0.12*** (0.01)	-0.09*** (0.01)
Stereotype:	–	1.50***
Association value of ‘criminals’		(0.09)
Quadratic effect:	–	-1.52***
Stereotype×Stereotype		(0.09)
R^2 (adj.)	0.03	0.13

Coefficients are unstandardized OLS-regression coefficients. Standard errors in parentheses. All variables vary between 0 and 1. $n = 3160$. *** $P < 0.001$.

which is simply the regular term multiplied by itself (Agresti and Finlay, 1997: 544). As can be seen, the inclusion of subjects’ stereotypes boosts the explanatory power considerably. Furthermore, the quadratic term is highly significant, which implies that there is indeed the expected curvilinear relationship between the content of the subjects’ stereotypes and their level of general criminal justice ambivalence.

To ease the interpretation of this quadratic effect, the predicted values have been graphically displayed in Fig. 1. We see a very strong curvilinear pattern, where ambivalent opinions become much more widespread as one moves from the endpoints of the stereotype scale towards the middle. Importantly, the level of ambivalence tops almost exactly at the middle of the stereotype scale, and, hence, it is the representations associated with this very position, which to the least extent enables citizens to produce coherent general political opinions. As predicted, this marked pattern implies that the ease with which moral heuristics can produce coherent opinions on general political issues is dependent on the fit between the input conditions of these heuristics and citizens’ category-level representations. Subjects placed on the endpoints of the stereotype scale view criminals in general as either having low (left endpoint) or high (right endpoint) association values, and these representations provide clear inputs to the systems designed to regulate the activation of

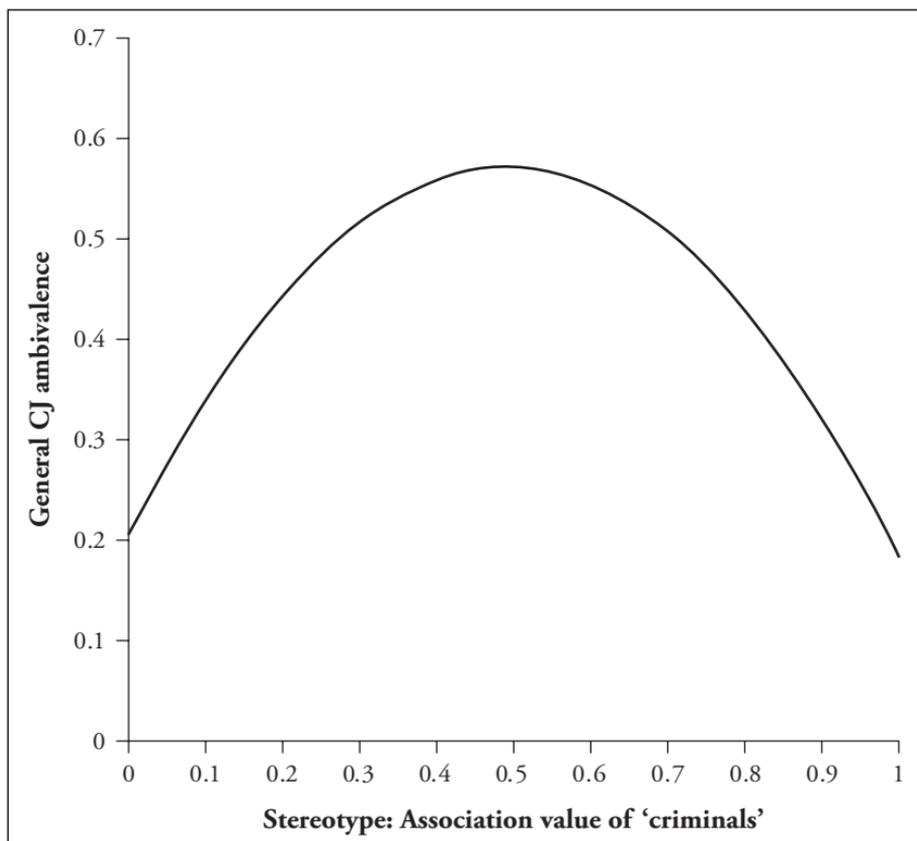


Figure 1. The effect of the content of stereotypes about criminals on general criminal justice ambivalence. Predicted values, computed based on Table 1, Model 2. Political sophistication is held constant at 0.5. Low score on stereotype measure equals low association value, high score equals high association value.

punitive and conciliatory sentiments. The results confirm that these subjects can easily make the either-or choice they are asked to make in many modern political debates about criminal justice. In contrast, subjects placed at the middle of the scale have highly mixed representations of criminals as a whole category and, hence, the evolved heuristics are provided with few if any usable inputs. In line with this, the analysis demonstrates that these subjects show high levels of uncertainty when forced to choose between punishment and rehabilitation. In addition, it should be noted that the data support the basic assertion that subjects who ascribe high association value to criminals support rehabilitation, while subjects who ascribe low association value to criminals

support punishment. Thus, the stereotype scale correlates positively with the scale measuring support for rehabilitation ($r=0.5$, $P<0.000$) and negatively with the scale measuring support for punishment ($r=-0.5$, $P<0.000$).

This test clearly supports the stereotype fit hypothesis, and compared to the traditional explanatory factor, political sophistication, the predicted effects turned out to be quite strong. Hence, moral intuitions do not in any straightforward way transform themselves into political attitudes. Coherent general political attitudes can only emerge as by-products of evolved moral heuristics to the extent, first, citizens engage in category-based inference and, second, the content of citizens' category-level representations fit the input conditions of the heuristics.

Study 2: Testing the Specific Information Hypothesis

According to my argument, the importance of the fit of citizens' stereotypes with the basic cognitive architecture arises from, first, the lack of detailed inputs in modern mass-level society and, second, from the general nature of political debates. Thus, the effect is created by the difference between the modern political systems and the small-scale environment in which our moral heuristics were designed to operate in. However, sometimes political debates do foster a more ecologically valid decision-making context. In relation to criminal justice, this occurs when citizens are asked to form opinions on specific crime cases. According to the specific information hypothesis, when citizens are confronted with specific information, which fits the input conditions of moral heuristics, category-based inference is unnecessary for the operations of our moral heuristics.

Measures

In study 1, we saw a massive importance of stereotypes when the subjects formed general criminal justice opinions. In study 2, we investigate whether subjects disregard their stereotypes when presented with specific information in accordance with the specific information hypothesis. In order to test the specific information hypothesis, we need to investigate whether opinions on a specific crime case is caused by the case's circumstances or by subject's general stereotypes about criminals. Hence, we need to operationalize two independent variables: First, we again need the above-described measure of subject's general stereotypical beliefs about criminals. Second, we need a measure of the specific circumstances confronting to the subjects. This measure is based on an experiment with two conditions, where subjects were presented with a

specific case of vandalism and asked to form opinions on it (see Appendix A for the precise wording of the conditions and the related measures). By experimentally manipulating information about the past behavior of the criminal (presumably, an ecologically valid type of information), the two conditions depicted the criminal as having either relatively low or high association value. In one condition the criminal had no criminal record (higher association value), while in the other condition the criminal had committed similar crimes three times before (lower association value). Hence, the measure of the available specific information simply taps whether subjects were presented with one or the other experimental condition.

Finally, we need to operationalize the dependent variable. To investigate whether subjects rely on available specific information or on category-level information, when making inferences about a specific criminal, they were asked about an important dimension of the perceived association value of the criminal, namely, whether they thought the criminal would commit a similar crime again in the future or not. The specific information hypothesis specifies that this impression is strongly related to the experimental manipulation of the specific circumstances but not to the subjects' general stereotype.

Results

To test whether the availability of specific information in political debates enable moral heuristics to produce political inferences without relying on category-level information, we compare the effect of the experimental manipulation on the criminal's perceived future behavior with the effect of the subjects' general stereotype of criminals. The effect sizes of these two correlations are displayed in Fig. 2 and the results produce strong support of the specific information hypothesis. When subjects form impressions of specific criminals their stereotypical beliefs about criminals only have a marginal effect, while the effect of the specific circumstances of the crime is massive. The difference between the two effect sizes is highly significant ($P < 0.000$). Hence, when asked to produce opinions on a specific crime case containing ancestrally recurrent cues, citizens, first, make intensive use of the available specific information and, second, actively avoid using categorical-information.

To further validate these results, we can investigate whether subjects' impression of the specific criminal's association value influence their opinion on their preferred sanction in the specific case. Hence, as an additional measure, subjects were asked whether it was most important that the criminal was punished or rehabilitated. Importantly, the perceived future behavior of the specific criminal does indeed strongly predict whether punishment or rehabilitation is prioritized in the specific case ($r = -0.47$, $P < 0.000$). When

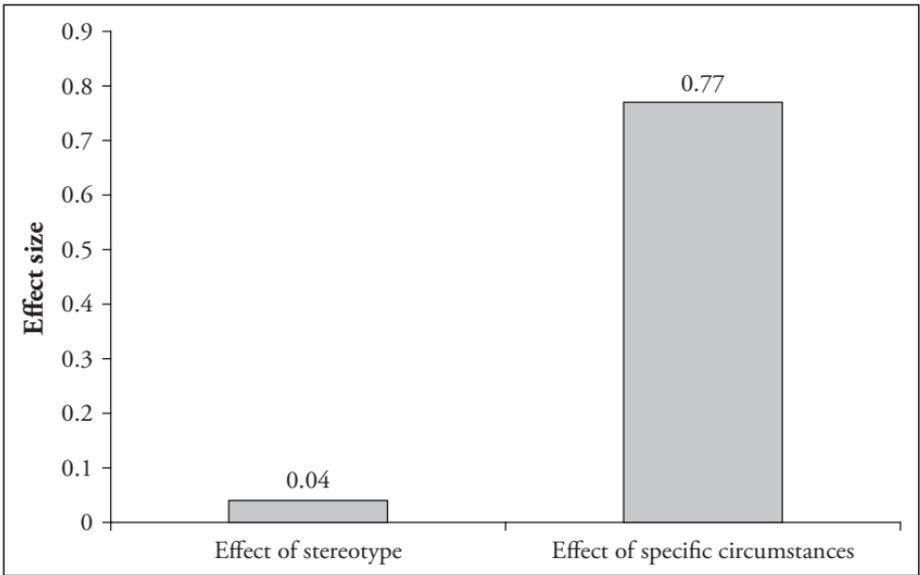


Figure 2. Correlations (Pearson's r) between stereotype about criminals and specific criminal's past behavior (specific circumstances), respectively, and perceived future behavior of a specific criminal ($n = 3310$). Levels of significance: correlation between category information and specific perception: $P = 0.025$; correlation between specific information and specific perception: $P < 0.000$.

subjects believe that the criminal is likely to recommit crime, they give priority to punishment; when they believe that it was a one-time mistake, they give priority to a conciliatory reaction. This is in line with the proposed structure of the counter-exploitation heuristic.

Hence, when political debates ask citizens to form opinions about a specific criminal described in ecologically valid terms, moral heuristics can easily produce these opinions based on the available specific information. In this context, category-based inference is seemingly actively suppressed. This lack of importance of citizens' stereotypes for specific opinions relative to their high importance for general opinions, demonstrate the existence of a sophisticated scope syntax, which regulate the activation and application of category-level information based on whether more adequate information is available. Hence, while the content of citizens' stereotypes conditions how our evolved psychology translates itself into the formulation of general political opinions, all citizens can form specific opinions. In the context of specific political debates, political opinions can indeed arise as by-products of evolved heuristics in a straightforward fashion.

Conclusion

Conceptually integrating evolutionary psychology and political science requires one to focus on how modern politics resembles ancestral politics as well as on how modern politics differ from its ancestral equivalent (Kuklinski and Quirk, 2000; Petersen and Kennair, 2009). The similarities are obvious, and as argued by evolutionary psychologists modern political debates tap into evolved heuristics for dealing with such adaptive problems as cooperation, punishment and coalitional conflict. Indeed, this similarity might be the very explanation of why core political issues such as crime, welfare and immigration are able to arouse the minds of otherwise politically disinterested citizens (see, e.g., Converse, 1964; Carpini and Keeter, 1996). For example: political scientists have demonstrated that while only the most politically engaged are able to vote based on their attitudes towards technical issues, all segments of the public are able to place their vote based on symbolic and moral issues that arouse gut feelings (Carmines and Stimson, 1980).

The differences between ancestral social environments and modern mass politics are equally strong. In this article, two differences have been stressed. First, the scales of the social systems are almost incommensurable and modern society comprises millions of unknown strangers, while ancestral hunter/gatherer-groups comprised a dozen well-known others. Second (and perhaps less obvious), while our moral intuitions are designed to produce inferences about specific others, the goal of formulating general laws in mass politics force modern political debates to take place at a higher level of conceptualization and refer to whole categories of individuals.

While modern political debates trigger evolved moral heuristics due to similarities between the debated issue and the domain of these heuristics, the two differences distort the heuristics' operations in producing straightforward intuitions on the issues. It is imperative to stress that this distortion does not reduce the importance of moral heuristics in public opinion formation. Rather this clash between the input conditions of our moral inference mechanisms and modern politics provides an immediate explanation of one of the most frequent observations on public opinion, namely that citizens' attitudes on political issues can best be described as ambivalent (Zaller and Feldman, 1992; Craig and Martinez, 2005). Politically, most citizens are torn between different solutions such as the market *vs.* the state and punishment *vs.* rehabilitation. This ambivalence could be the very product of a decision-making environment that, on the one hand, arouse our evolved moral psychology but, on the other hand, does not provide it with ecologically valid information for producing unequivocal inferences.

Ambivalence, however, is not all there is to public opinion, and I have demonstrated two ways in which coherent political beliefs can emerge as by-products of evolved moral heuristics. First, because general political debates require citizens to make moral inferences about whole categories of individuals, moral heuristics can produce coherent political attitudes by recruiting category-based inference mechanisms if and only if the relevant category-level representations fit the input conditions of evolved heuristics. Using moral inference mechanisms to make political inferences requires citizens to simplify the complexities of modern societies into a format that can be processed by these mechanisms. Second, to the extent political debates take on a more specific character and focus on how to treat specific well-described individuals, moral heuristics can easily produce political inferences based on the available information (at least, to the extent this information is ecologically valid). In that context, the evolved scope syntax regulating the use of category-based inference actively suppresses such inferences. The operations of this scope syntax implies that citizens' opinions in the general and the specific case are quite detached from one another and that political consensus much more easily emerges on the fate of specific individuals.

This last observation encourages us to consider one final way in which modern and ancestral politics differ. The vastness of modern society makes citizens fully dependent on elite sources of political information such as the media, politicians and commentators (Kinder, 2003; Zaller, 1992). By implication, the cues available to citizens when they form their political opinions have been intentionally selected by others guided by a given strategic goal. In the case of politicians, this goal is of course to win support for their policies. One especially powerful strategy for achieving this would be to surround their policies with cues that, first, prompt the scope syntax to deactivate any category-based inference and, second, fit the input conditions of an evolved moral heuristics in a way triggering motives that are in accordance with the policy. This could be achieved by using specific exemplar to illustrate more general policies such as promoting increased punishment by making specific criminals with low association value salient to citizens (Iyengar, 1991; Gross, 2008). By transforming a general opinion formation context into a specific in this way (i.e., by deactivating citizens' stereotypes) and at the same time strategically feed citizens' evolved inference mechanisms with certain cues, politicians can induce citizens across the political spectrum to make exactly those moral inferences conducive to their own policy position.

Hence, the existence of evolved inference systems with automated processes for transforming valid information into moral motivation not only facilitates opinion formation but also leaves citizens vulnerable to political manipula-

tion. Again, this conclusion illustrates how the power of evolutionary psychology to inform our understanding of politics also hinges on the extent to which one considers how ancestral and modern politics differs from one another. It is through such dissections of how a Stone Age mind navigates in the novel environment of modern politics that a truly evolutionary political science can emerge.

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Appendix A

The precise wordings of opinion questions and experimental manipulations are presented below. The scaling items are based on a traditional five-point Likert answer-format ranging from “agree completely” to “disagree completely”. The items in the experiment use five-point answering scales ranging from “agree completely with A” to “agree completely with B”.

Scales

Punishment scale

1. “The punishment for criminality should be so harsh that other people are deterred from committing similar crimes”
2. “Criminals deserve to be punished, because they have caused damage”
3. “Criminals should be sent to boot camps learning the hard way how to behave”
4. “No matter the crime’s circumstances, it is always morally right to punish criminals harshly”

Rehabilitation scale

1. “We should try to help criminals realize that they hurt others”
2. “We should help criminals, so they can become good citizens again”
3. “Criminals have the right to be properly treated, while they serve their sentence”
4. “No matter the crime’s circumstances it is always morally right to help criminals get back on their feet again”

Stereotype scale

1. “Most criminals commit crimes because they know they can get away with it” (reversed)
2. “Most criminals are psychopaths who do not care about others at all” (reversed)
3. “Many criminals are deep down regular people like you and me”
4. “Criminals are victims of a hard upbringing”

Experiment

Wording of conditions:

1. “A man has been arrested for breaking a shop window during a night out. He was very drunk and could not really remember anything. He has no criminal record.”

2. “A man has been arrested for breaking a shop window during a night out. He was very drunk and could not really remember anything. He has been found guilty of similar offences three times before.”

Perceived future behavior of specific criminal:

“A says ‘I believe that the man can realize his mistake, so that he won’t do it again.’ B says: ‘When the man does something like that, he will surely do it again’. Do you agree most with A or most with B?”

Specific opinion about punishment and rehabilitation:

“A says: ‘The important thing is that the man is being punished for his deeds’. B says: ‘It is more important that the man is being helped to realize that he has caused harm’. Do you agree most with A or most with B?”