Gender Differences in Fairness-related Policy Decisions

Rebecca J. Hannagan Department of Political Science Northern Illinois University

and

Douglas R. Oxley
Institute for Science, Technology and Public Policy
Bush School of Government and Public Service
Texas A&M University

Prepared for Presentation at the Association for Politics and the Life Sciences Annual Meeting, Bloomington, IN. October 14-16, 2010.

Working paper. Please do not cite without author's permission.

^{*} This research was approved by the Institutional Review Board at the participating university.

Abstract

In this paper we present a test of gender effects in contextually variant experiences of fairness on policy preferences, controlling for empathy. Participants experienced either personal, interpersonal, abstract, or social perspectives on fairness via the ultimatum game, and then had to answer questions regarding whether the policy of the game should be changed to (1) make the game fairer, (2) add bonuses to encourage fair offers, and/or (3) add fines to discourage unfair offers. Men and women differed not only in their preference for policy changes - with women more supportive of fines and men divided over bonuses versus fines - but women who were in the interpersonal condition were more supportive of policy change than men. Further investigation suggests empathy plays different roles for men and women on some policy considerations. Men who scored higher in empathic concern were more likely, as were women, to support fines.

Introduction

Mentalizing, or taking an intentional stance, plays a role in economic decision making and social exchange, to be sure, and likely underpins preferences for particular public policies. The ability to mentalize helps us assess what someone else's motivation may be, and thus help direct our next move. But when it comes to considerations of fairness, emotions play an important role as well (see Frith and Frith Frith 2003 for a review; and Singer 2008, p. 3879). Variation in responses to unfair offers in the ultimatum game, for example, depend on strong emotions linked to subjective feeling states such as "unpleasantness" or "disgust" (Craig 2002; Wicker et al. 2003), and there are reasons to believe there may be gender differences in mechanisms that give rise to behavioral responses based on emotions (see Cahill 2003, 2006). This stands in stark contrast to the "economic man" model of strategically striving for reputation in games to obtain the best monetary outcome, as well as the "social role theory" of gender differences in behavior. How we act in the face of perceived unfairness ultimately hinges on both mentalizing and emotional motivations such as empathy. Understanding both strategic and emotional motivations will aid in understanding why people - men and women - support the public policies they do.

Fairness as Basis for Ideology

Justice is, arguably, one of the main justifications for the formation of governments.

Judgments regarding the fairness of an event or situation are one way in which to measure justice (Rawls 1971; Rawls 2002). Haidt and Joseph (2004) posit that some ethical judgments are intuitive. They assert that five types of moral judgments are partly rooted in intuition. These include suffering / compassion, reciprocity / fairness and hierarchy / respect (Haidt and Joseph 2004, 58). Later, Haidt and Graham (2007) identified that these intuitive foundations of moral judgment differ for people of different ideologies. Haidt and Graham expanded the moral foundations to include harm/care, fairness/reciprocity, ingroup/loyalty, authority/respect, and purity/sanctity (2007, 99). They assert that both liberals and conservatives are associated with harm / care and fairness / reciprocity while only conservatives are associated with the other three moral foundations. As these differences in morality are intuitive, it suggests a physical basis for differences in ideology. Others have also established a physical basis for policy attitudes that act as components of ideology (Oxley et al 2008; Smith et al 2009).

Judgments related to fairness can arise from personal experience, experience with others or from an abstract sense of fairness (Oxley 2010a; Oxley 2010b). Empathy can play an important role, particularly in the interpersonal and the abstract perspectives on fairness. Frith and Singer (2008) note the significance of empathy in social cognition: "Successful social interaction very frequently also requires an understanding of the other's emotional and motivational states, i.e., our capacity to empathize with others" (p. 3877). They further suggest that empathic brain responses are not an automatic or "all or nothing" response. The presence as

well as the magnitude of such responses can be mediated by factors such as the affective link between people, the perceived fairness of the situation, and whether the pain someone experienced is justified (Frith and Singer 2008, p. 3877).

Men and women differ in their average ideology and in their average level of empathy. Is it possible that we can predict differences between men and women's preferences for public policies by considering their differences in fairness judgments?

Gender Differences

One of the most consistent and well-documented gender differences is the orientation of boys and girls toward other people - often measured in terms of eye contact duration, empathic responses to the distress of others, recognition of faces, time spent looking at faces, and other behaviors. In studies of very young children, girls show a greater orientation toward other people and tend to show greater sensitivity to social cues and later develop into an ability to better use social signaling of emotion to develop relationships (Geary 1998, pp. 218-220). These measurable differences in boys and girls are precursors to sex differences in social behaviors and motivations.

There is a consistent pattern of social sex differences – with women preferring altruistic, reciprocal relationships and men preferring competition and struggle (Geary 1998, p. 165). It is not that men attempt to control social interaction and women do not – although previous understandings of human behavior have focused on overt male behavior and thus made such assumptions regarding a link between dominance and desire to control – it is that men and women exert control via different strategies (Geary 1998, p. 164). Valuing "norms of fairness"

seem to be a human universal, but the form that such values take, and variation in contextual applications and preferences for punishing violations, may fall along gendered lines.

Eckel and Grossman (1996) cite that the fairness-oriented behavior in the ultimatum game is well documented and deviates from any assumptions of payoff-maximization. The generosity of proposers in the game may be motivated by strategic considerations, but it is unknown the extent to which "other-regarding behavior" (altruism or fairness) affects observed outcomes (p. 182). Observed outcomes in the ultimatum game are suggestive of patterned differences based on gender. Eckel and Grossman (2001) find that women give more generous offers than men, offers made by women are more often accepted, and women paired with women almost never fail to reach agreement (p. 171). Empirical evidence from decision making games suggest that women tend to be more cooperative, empathetic, and generous than men in group situations (Aranoff and Tedeschi 1968; Ortmann and Tichy 1999). Further, groups of women contribute significantly more to public goods than mixed or all male groups (Nowell and Tinkler 1993). Further, Hannagan and Larimer (2010) find that women are consistent in their offers regardless of the gender composition of their decision making group, whereas men's behavior varies based on group placement. Linking patterned differences in behavioral outcomes based on gender to "other-regarding" motivations is the next challenge.

A brain region may be different for men and women in terms of its neurotransmitter function or its genetic or metabolic response to experiences (for an overview of the neural mechanisms behind sexual dimorphism of the brain see Arnold 2004; Cahill 2003; see also De Vries 2004). For example, women have larger orbital frontal cortices than men and the larger volume devoted to emotional modulation may relate to behavioral evidence for differences in

emotion processing (Gur et al. 2002). Another example is the neuropeptide oxytocin that is understood to be a mediator of prosocial behavior. Oxytocin acts on the amygdala to reduce fear, alleviate social stress, and modulate aggression. It has also been suggested that oxytocin eases the inference of the affective mental states of others to reduce ambiguity in social situations, thus encouraging social approach, affiliation and trust (Damasio 2005; Domes et al. 2007; see also Zak, Kurzban and Matzner 2004, 2005; Zak, Stanton and Ahmadi 2007). It may be that women's greater affiliative behaviors are due, in part, to oxytocin production. Emotional reactions provide feedback to the individual about the relative success and failure at acquiring and retaining the resources necessary for survival and reproduction. This feedback affects the individual's behavioral strategies that increase the likelihood of actually achieving these goals (Geary 1998, pp. 169-170). Regarding sex differences, it appears that women experience positive and negative emotions more intensely than do men.

It may be that both men and women respond with empathy to displays of fairness by others, but perceptions of who is fair and what fairness entails can change based on context and such contexts can affect men and women differently. For example, Singer et al. (2006) found that empathy related responses in an iterated prisoner's dilemma game were significantly reduced in males when they observed an unfair person receiving a painful punishment. In other words, empathy is more likely diminished among males in certain contexts. "How empathy enables the development of other-regarding motivation (empathic concern or compassion) with an associated helping behavior is still unclear" (Frith and Singer 2008, p. 3877) and clues are likely to come from work linking genetics, social endocrinology, personality, and social behavior. Such linkages are beyond the scope of this or any one paper, but we now present our test of

gender effects in contextually variant experiences of fairness on policy preferences, controlling for empathy.

Research Design and Method

One hundred two participants were recruited from the population of a medium-sized city on the Great Plains. Though not specifically the intended audience of the recruiting efforts, nearly all of the participants were undergraduate students at a large university located within the city. All participants were compensated with \$10. Some participants were also compensated with either extra credit or course credit in their courses. Their fee did not vary depending upon their relative success at the economic game in which some of them participated. The study was conducted under the oversight of the institutional review board of the sponsoring institution.

Participants arrived at a lab on campus at a scheduled time, and were briefed on the study. Those who chose to participate had skin conductance sensors attached to their non-dominant hand¹. Their other hand was free to move a mouse in order to complete a survey. All participants answered demographic questions and then they received instructions on how to play Ultimatum.

Ultimatum is a game where two players split a pot. The first player gets to decide how much to offer the second player. The second player then gets to decide whether to accept or reject this offer. If the second player accepts the offer, then they split the proceeds as proposed by the first player. If the second player rejects the offer, then both players get nothing. There are two aspects of Ultimatum that are interesting to researchers. First, players in Western industrialized nations normally split the pot evenly when acting as the first player. This goes

¹ The non-dominant hand was defined as the opposite hand from that which the participant normally uses a computer mouse. For most participants, this was their left hand, even when the participant normally writes with their left hand.

against their rational self-interest, but sharing is a cultural norm that often leads to an even split. Second, when a first player does make a low offer to the second player, the second player often becomes emotionally aroused and rejects a positive offer (Güth and Tietz 1990; Sanfey et al 2003; Knoch et al 2006; Pillutla and Murnighan 1996). This also goes against their rational self-interest as any positive offer would be better than nothing. Of particular interest is that there is a common threshold where many people begin to reject the offers from the first player, and this occurs when offers get below about 30% of the pot. These results generally hold for Western participants, but not necessarily for some small non-Western cultures. In other words, there is some evidence that the norms vary across cultures for what is fair and what is not fair in Ultimatum (Henrich et al 2001).

After participants received instructions on how to play Ultimatum, participants were randomly assigned into three groups. One group played the Ultimatum game for ten rounds against the computer and was asked to imagine that they were playing against a person. Another group read a story about an Ultimatum game being played between two players for ten rounds, and were asked about the fairness of the play between each round. The third group only had the instructions for playing Ultimatum presented to them but did not play the game nor observe the game being played.

These three groups represent three different perspectives on public policy (Oxley 2010a; Oxley 2010b). The first group experienced fair and unfair outcomes in the Ultimatum game. This represents a personal perspective. The second group witnessed others experiencing fair and unfair outcomes in the game. This is an interpersonal perspective. Finally, the third group neither played the game, nor watched others playing it. For them the perspective on the fairness

of the game is abstract. Finally, there is another perspective on fairness: the social perspective. It is within this perspective that public policy decisions are theorized to be made. Therefore, following the experimental condition, all groups answered questions regarding whether the policy of the game should be changed to (1) make the game fairer, (2) to add bonuses to encourage fair offers in the game and (3) to add fines to discourage unfair offers in the game. Therefore, each individual participated in activities related to one experimental group (personal, interpersonal, or abstract) as well as the social / policy perspective questions.

Prior research arising from this experiment and survey demonstrates that the experience of a fairness norm violation in the Ultimatum game causes an increase in support for changing public policy rather than remaining with the status quo (Oxley 2010a; Oxley 2010b). Those who played the game, but did not experience fairness norm violations were very unsupportive of policy change. In addition, those with only an abstract notion of fairness were highly supportive of policy change that was designed to encourage fairness.

Following the questions about policy change, participants completed empathy and Machiavellianism scales. Following the questions for these scales, the participants watched neutral and fairness-related videos. These videos include two considered to be neutral with regards to fairness issues: (1) a pleasant scene with a bee flying about some flowers and (2) a common computer screensaver. Four videos told stories that had elements of fairness embedded in them. The first of these was a local news story about employees of a large electronics retailer selling spots in the checkout line on the day after Thanksgiving (also known as "Black Friday" because of the large number of customers shopping on that day). The second fairness-related video was a local news story about a man who was about to lose his business because of an

eminent domain claim by the local government. The third fairness-related video was a local news story about a man who was released from prison after many years following DNA evidence which exonerated him from an aggravated burglary charge. The fourth fairness-related video was a local news story about a man who fled on foot from police following a hold-up of a convenience store that the man did not commit. When the police tackled him, his head smacked into a wall and he was rendered comatose as a result. This video includes four close-up instances of the man's head snapping against the wall as taken from a surveillance video. In between each of the video segments, a fixation point was presented to the participants for 15 seconds. Following the presentation of all the videos, the participants were unhooked from the skin conductance sensors, debriefed and compensated.

Hypotheses

We posit the following four hypotheses:

H1: Following personal experience in the domain of the policy, men and women will not differ in their support for policy change, bonuses to ensure fairness, and fines to discourage unfairness.

H2: After witnessing others experiencing fair and unfair treatment, women are more likely than men to support policy change, bonuses to ensure fairness and fines to discourage unfairness.

H3: Provided only with an abstract notion of fairness in the game, men are more likely than women to support policy change, bonuses to ensure fairness and fines to discourage unfairness.

H4: Male and Female skin conductance response will not significantly differ while witnessing videos containing unfair treatment of others.

Results

Figures 1, 2, and 3 present the descriptive results arranged by gender for three key dependent variables: support for policy change, support for bonuses to ensure fairness, and support for fines to ensure fairness. They demonstrate that men were evenly split on supporting policy change, while women were very supportive of policy change. Men and women had similar distributions overall regarding bonuses with most participants being against bonuses. Finally, slightly more men were for fines than were against fines. However, women were very much in favor of fines to assure fairness. It should be noted that these results include participants from all three experimental conditions. It is interesting that these results indicate that there is something different about each gender's approach to fines, in particular.

[Figure 1, Figure 2, and Figure 3 about here]

The first hypothesis suggests that men and women will not differ in their support for policy change, bonuses to ensure fairness, and fines to discourage unfairness when they have recent experience in the domain of the policy. Table 1 has the means and the results of t-tests comparing the difference between the means for participants broken down by experimental group. The Personal experimental group personally experienced fair and unfair treatment in the Ultimatum game according to Western norms where offers greater than 30% are fair. When policy change is the dependent variable, men and women have very little difference in the mean support for policy change (pr(|T| > |t|) = 0.9687). When men and women are contrasted on the level of support for bonuses in the Personal condition, there is once again very little difference in means (pr(|T| > |t|) = 0.7550). The difference in support for fines also was small and not significantly different (pr(|T| > |t|) = 0.7255). While the number of participants is low for all three

experimental conditions, in the case of the Personal condition, all three dependent variables also had small differences between the means. This suggests that Hypothesis 1 is supported.

[Table 1 about here]

The second hypothesis suggests that women will be more supportive of policy change, bonuses and fines following the experience of witnessing fair and unfair treatment of others in the policy domain. The results in Table 1 for the Interpersonal experimental condition suggest that there are no significant differences in the mean results of men and women. However, the number of participants in each group is relatively low, and differences are relatively large for a dichotomous variable (differences were -.2353, -.1765 and .2353). Therefore, it would be hasty to come to an immediate conclusion on this hypothesis given this test. We can, however, examine this data descriptively. Women who were part of the Interpersonal experimental condition were more supportive of policy change than men. Women were also less supportive of bonuses than men, but more supportive of fines than men. Overall, though, this hypothesis must be considered to be undetermined given the results.

The third hypothesis suggests that without any immediate experience with this game (the Abstract experimental condition), men will be more supportive of policy change, bonuses and fines. The results in Table 1 indicate that the difference between men and women on policy change was small and insignificant. Women were more supportive of bonuses, but not significantly so. Women were very supportive of fines, while men were divided. The results regarding fines were significantly different based upon a t-test (Pr(|T|>|t|) = 0.0170).

A key question regarding these results is why are women strongly supportive of fines as a policy to assure fairness? The difference might arise from differences between the sexes on

empathy. Table 2 presents the results of logistic regressions for all male and female participants with a four-part standard empathy scale (Davis 1996) and the experimental condition as the independent variables. The empathy scale has components that measure perspective taking, fantasy, empathic concern and personal distress. Davis describes perspective taking as, "...the tendency to spontaneously adopt the psychological point of view of others in everyday life..." (Davis 1996, 55-57). Empathic concern is described as, "...the tendency to experience feelings of sympathy and compassion for unfortunate others..." (Davis 1996, 57). Personal distress is the tendency to respond to strong personal distress in others. Finally, the fantasy scale measures the ability to insert oneself into fictional accounts.

[Table 2 about here]

Fairness situations can involve intense personal distress in others. However, the

Ultimatum game is unlikely to evoke the type of personal distress in others that witnessing some
activities would. Therefore the personal distress scale is unlikely to have an impact. The same
goes for the fantasy scale as the insertion into a story does not fit well with the activities involved
in witnessing or playing the Ultimatum game. However, it would be expected that empathic
concern and perspective taking might have an impact on support for policy change, bonuses, and
fines.

The results in Table 2 illustrate that the different types of empathy played different roles for women and men on some policy questions. For women, higher levels of empathic concern led to higher levels of support for policy change. Empathy played no significant role for either sex with regard to support for bonuses. Different types of empathy played different roles for the sexes in supporting Fines as a policy measure. In the case of Fines, men with higher levels of

empathic concern were more likely to support fines. Women who had higher scores on perspective taking were less likely to support fines.

These results, while tenuous because of the sample size and the overall levels of significance for some of the factors, do imply that empathy plays a different role for men than for women in how it affects policy decision-making. Empathic concern is of particular interest because it influenced women's decisions to make a policy change and men's support for fines as a policy choice but not for other decisions. On fines, perspective taking, and not empathic concern, is a more important factor for women. In other words, women and men are arriving at their policy decisions with different types of empathy affecting their decisions differently.

Gender Differences in Skin Conductance Level during Stories of Unfairness

Finally, the fourth hypothesis suggests that there will be no significant difference between men and women while they are watching both neutral videos and video presentations of unfair treatment of individuals. These results appear in Tables 3 and 4, and Figures 4 through 9. As expected, no significant difference was recorded for the neutral videos except for right at the end of the screensaver video². There were, however, three of the fairness videos with significant differences in the level of arousal as measured by skin conductance between men and women. Table 3 has the correlations between each of the events in the video and gender.

[Table 3 about here]

Each video was broken into segments, and the standardized SCL values are means of skin conductance levels for each of these segments. To create the segments, event markers are placed in the audio stream so that participants cannot hear them, but which mark a start and end point for a segment of video. Most of these segments were selected because of a cut to a new scene in

² This is likely caused by the switchover from the screensaver to the fixation point.

the news story. Others were selected to mark events in the story which were likely to generate higher levels of arousal. For the neutral videos, each segment lasted ten seconds regardless of the specific content at that time. Table 3's correlations provide an indicator of where in the data there might be significant differences between men and women at a 0.10 or 0.05 level, and those segments at a 0.05 level were verified to be significantly different with the ANOVA's presented in Table 4.

[Table 4 about here]

Of particular interest is the DNA Evidence video and the significant differences in the levels of arousal for men and women during that time. Figure 7 demonstrates this graphically. That many of the segments of this video are significantly different implies that something about the video caused men and women to be differently aroused while watching it. This nullifies Hypothesis 4 which suggested that there would be no significant differences between men and women witnessing stories involving fairness and unfairness. The question is why...

[Figure 7 about here]

Figure 7 shows men and women in the Interpersonal group at relatively the same level of skin conductance at the beginning of the video. Both rise at the beginning (the 65th event marker or DNA:00). This is likely explained by novelty of the new video. However, men remain at a higher level of arousal for the rest of the video and women habituate quickly. The decline in female standardized SCL levels begins almost immediately and lasts until about the 75th event marker (DNA 1:25) when women become more aroused and men stay about the same. While it is possible that either or both genders contributed to the significant difference, it is more likely that the men's level of arousal is the unusual one. If the male participants were not given some

reason for the autonomic nervous system to maintain their higher level of readiness, then normally there would be a slightly faster habituation to the stimulus like that seen with the female participants. Figure 8 demonstrates this nicely. In Figure 8, both sexes habituate until something later in the screensaver video triggers men to have an insignificantly different rise in SCL. For the DNA Evidence video, though (Figure 7), men do not habituate as quickly as women.

[Figure 8 about here]

One interpretation of these results is that men are associating themselves with the character in the story. ANOVA's run for these particular events which account for the various types of empathy mostly do not find any significant influence on male standardized SCL. In fact, these models do not provide a good fit to the SCL data and should not be relied upon.

Nonetheless, something about the presentation of the DNA Evidence video about the exoneration of an innocent man has a differential effect on men than on women.

Conclusion

In this paper we presented a test of gender effects in contextually variant experiences of fairness on policy preferences, controlling for empathy. Participants experienced either personal, interpersonal, abstract, or social perspectives on fairness via the ultimatum game, and then had to answer questions regarding whether the policy of the game should be changed to (1) make the game fairer, (2) add bonuses to encourage fair offers, and/or (3) add fines to discourage unfair offers. Men and women differed not only in their preference for policy changes - with women more supportive of fines and men divided over bonuses versus fines - but women who were in the interpersonal condition were more supportive of policy change than men. Further

investigation suggests empathy plays different roles for men and women on some policy considerations. Men who scored higher in empathic concern were more likely, as were women, to support fines. These findings are suggestive of the importance of empathy in the experience of fairness as well as the gendered implications for policy preferences.

As cited above, our small sample size suggests we must interpret our results with caution. The direction of findings, however, is consistent with our hypotheses and require further investigation. Also, the skin conductance test during the DNA evidence video reinforces the notion that levels of autonomic arousal, particularly in response to the unfair treatment of others, is different for men and women. This is consistent with Singer's (2006) findings, but we are unable to substantively interpret the data. What we establish is an illustration of the physiological underpinning of responses to fairness that may differ by gender and empathy.

"How empathy enables the development of other-regarding motivation (empathic concern or compassion) with an associated helping behavior is still unclear" (Frith and Singer 2008, p. 3877) and clues are likely to come from work linking genetics, social endocrinology, personality, and social behavior. We believe this paper is another step in theory-building with an empirical test of the notion that fairness is intuitive, judgements about fairness vary based on context as well as empathic capacity, and both may hinge on differences between men and women.

References

- Alford, John R. and John R. Hibbing. 2004a. "Accepting Authoritative Decisions: Humans as Wary Cooperators." *American Journal of Political Science*, 48:1 (January), 62-76.
- Anderson, Charles W. 1979. "The Place of Principles in Policy Analysis." *The American Political Science Review* 73 (3): 711-23.

Aranoff and Tedeschi 1968

Arnold 2004

- Baird, Vanessa A. 2001. "Building Institutional Legitimacy: The Role of Procedural Justice" *Political Research Quarterly*, 54: 2 (June), 333-354.
- Baumgartner, Frank R., and Bryan Jones. 1993. *Agendas and Instability in American politics*. Chicago: University of Chicago Press.
- Bennett, S.E. 2010. "An Experimental Study of Opinion on Climate Change: Labile Causalities and Stable Realities." *Policy Studies Journal*, 38:1 (February), 182-197.

Cahill 2003 & 2006

- Cory, Jr., Gerald A. 2003. "Maclean's Evolutionary Neuroscience and the Conflict Systems Neurobehavioral Model: Some Clinical and Social Policy Implications" in *Human Nature and Public Policy: An Evolutionary Approach* ed. Albert Somit and Steven Peterson, New York: Palgrave MacMillan.
- Craig, A.D. 2002. "How do you feel? Interoception: the sense of the physiological condition of the body. *Nat. Rev. Neuroscience*, 3: 655-666.

Damasio 2005

- Davis, Mark H. 1996. *Empathy: A Social Psychological Approach*. Boulder, CO: Westview Press.
- Davis, Mark H., Carol Luce, and Stephen J. Kraus. 1994. "The Heritability of Characteristics Associated with Dispositional Empathy." *Journal of Personality* 62: 3 (September), 369-391.

- Dawson, Michael E., Anne M. Schell and Diane L. Filion. 2007. "The Electrodermal System" in *Handbook of Psychophysiology, Third Edition*, Cambridge, UK: Cambridge University Press.
- Dayan, Peter. 2008. "The Role of Value Systems in Decision Making." In *Strüngmann Forum Report: Better than Conscious? Decision Making, the Human Mind, and Implications for Institutions*, Christoph Engel and Wolf Singer, eds. Cambridge, MA: The MIT Press.
- Dayan, Peter, and Ben Seymour. 2009. "Values and Action in Aversion" in *Neuroeconomics:*Decision Making and the Brain ed. Paul W. Glimcher, Colin F. Camerer, Ernst Fehr and Russel A. Poldrack, London: Academic Press, 175-191.
- Decety, Jean, and Julie Grèzes. 2006. "The power of simulation: Imagining one's own and other's behavior." *Brain Research*, 1079: 1 (24 March), 4-14.

DeVries 2004

de Waal, Frans B.M. 2008. "Putting the Altruism Back into Altruism: The Evolution of Empathy." *Annual Review of Psychology*, 59: (), 279-300.

Domes et al. 2007

- Eckel, C. C., and P. J. Grossman. 2001. "Chivalry and Solidarity in Ultimatum Games." *Economic Inquiry*, 39: 171-188.
- Eckel, C. C., and P. J. Grossman. 1996. "Altruism in Anonymous Dictator Games." *Games and Economic Behavior*, 16: 181-191.
- Fleming, Stephen M., Charlotte L. Thomas, and Raymond J. Dolan. 2010. "Overcoming status quo bias in the human brain." *Proceedings of the National Academy of Sciences of the United States of America*, 107: 13 (March 30), 6005-6009.
- Freeman, Richard. 2006. "Learning in Public Policy." In *The Oxford Handbook of Public Policy*, Michael Moran, Martin Rein, and Robert E. Goodin, eds. Oxford, UK: Oxford University Press, 367-388.
- Frith, U., & C. D. Frith. 2003. "Development and neurophysiology of mentalizing." *Phil. Trans. R. Soc. B.*, 358: 459-473.
- Frith, C. D., & T. Singer. 2008. "The role of social cognition in decision making." *Phil. Trans. R. Soc. B.*, 363: 3875-3886.
- Geary, D.C. 1998. *Male, Female: The Evolution of Human Sex Differences*. Washington, DC: American Psychological Association.

Gur et al 2002

- Güth, Werner and Reinhard Tietz. 1990. "Ultimatum Bargaining Behavior: A Survey and Comparison of Experimental Results." *Journal of Economic Psychology*. 11: 417-499.
- Haidt, Jonathan. 2007a. "The New Synthesis in Moral Psychology." *Science*, 316: 5827 (18 May), 998-1002.
- Haidt, Jonathan. 2007b. "Response." Science, 317: 5838 (3 August), 596-597.
- Haidt, Jonathan and Jesse Graham. 2007. "When Morality Opposes Justice: Conservatives Have Moral Intuitions that Liberals may not Recognize." *Social Justice Research*, 20: 1(March), 98-116.
- Hannagan, Rebecca J., & Christopher W. Larimer. 2010. "Does Gender Composition Affect Group Decision Outcomes? Evidence from a Laboratory Experiment." *Political Behavior*, 32 (1): 51-67.
- Hayden, F. Gregory. 1995. "Instrumentalist Policymaking: Policy Criteria in a Transactional Context." *Journal of Economic Issues*, 29:2 (June), 360-384.
- Hayden, F. Gregory. 2006. Policymaking for a Good Society: The Social Fabric Matrix Approach to Policy Analysis and Program Evaluation. New York: Springer.
- Henrich, Joseph, Robert Boyd, Samuel Bowles, Colin Camerer, Ernst Fehr, Herbert Gintis, and Richard McElreath. 2001. "In Search of Homo Economicus: Behavioral Experiments in 15 Small-Scale Societies." *American Economic Review*, 91:2 (May), 73-78.
- Henrich, Joseph, Jean Ensminger, Richard McElreath, Abigail Barr, Clark Barrett, Alexander Bolyanatz, Juan Camilo Cardenas, Michael Gurven, Edwins Gwako, Natalie Henrich, Carolyn Lesorogol, Frank Marlowe, David Tracer, and John Ziker. 2010. "Markets, Religion, Community Size, and the Evolution of Fairness and Punishment." *Science*, 327:5972 (19 March), 1480-1484.
- Jones, Bryan D. 2001. *Politics and the Architecture of Choice: Bounded Rationality and Governance*. Chicago: The University of Chicago Press.
- Jones, Bryan D. and Frank R. Baumgartner. 2005a. *The Politics of Attention: How Government Prioritizes Problems*. Chicago: The University of Chicago Press.
- Jones, Bryan D. and Frank R. Baumgartner. 2005b. "A Model of Choice for Public Policy." Journal of Public Administration Research and Theory 15:3 (July), 325-351.
- Kingdon, John W. 1984. Agendas, Alternatives, and Public Policies. Boston: Little, Brown.

- Knoch, Daria, Alvaro Pascual-Leone, Kaspar Meyer, Valerie Treyer, and Ernst Fehr. 2006. "Diminishing Reciprocal Fairness by Disrupting the Right Prefrontal Cortex." *Science*, 314: 5800 (3 November), 829-832.
- Lau, Richard R. 2003. "Models of Decision-Making" in *Oxford Handbook of Political Psychology*, ed. David O. Sears, Leonie Huddy, and Robert Jervis. New York: Oxford University Press, 19-59.
- Liberman, Nira and Yaacov Trope. 2008. "The Psychology of Transcending the Here and Now." *Science*, 322:5905 (21 November), 1201-1205.
- Marcus, George E. 2003. "The Psychology of Emotion and Politics" in *Oxford Handbook of Political Psychology*, ed. David O. Sears, Leonie Huddy, and Robert Jervis. New York: Oxford University Press, 182-221.
- Marcus, George E., W. Russell Neuman, and Michael MacKuen. 2000. *Affective Intelligence and Political Judgment*, Chicago: University of Chicago Press.
- Marx, Sabine M., Elke U. Weber, Benjamin S. Orlove, Anthony Leiserowitz, David H. Krantz, Carla Roncoli, and Jennifer Phillips. 2007. "Communication and mental processes: Experiential and analytic processing of uncertain climate information." *Global Environmental Change*, 17: (), 47-58.
- Montague, P. Read, and Terry Lohrenz. 2007. "To Detect and Correct: Norm Violations and their Enforcement." *Neuron*, 56: (October 4), 14-18.
- Nowak, Martin A., Karen M. Page and Karl Sigmund. 2000. "Fairness versus Reason in the Ultimatum Game." *Science*, 289: 5485 (8 September), 1773-1775.

Nowell and Tinkler 1993

- Ortmann, A., & Tichy, L.K. (1999). Gender differences in the laboratory: Evidence from prisoner's dilemma games. *Journal of Economic Behavior and Organization*, 39, 327-339.
- Oxley, Douglas R. 2010a. "Fairness, Justice and an Individual Basis for Public Policy." PhD Dissertation, University of Nebraska Lincoln.
- Oxley, Douglas R. 2010b. "Fairness as a Policy Criterion: Emotions that Affect Policy Decisions and Attitutdes." Presented at the 2010 Midwest Political Science Association Annual Meeting, Chicago, IL, April 2010.
- Pillutla, M. M., & Murnighan, J. K. 1996. "Unfairness, anger, and spite: Emotional rejections of ultimatum offers." *Organizational Behavior and Human Decision Processes*, 68: 3 (December), 208–224.

- Rawls, John. 1971. *A Theory of Justice: Revised Edition*. Cambridge, MA: The Belknap Press of Harvard University Press.
- Rawls, John. 2002. *Justice as Fairness: A Restatement*. Cambridge, MA: Harvard University Press.
- Rokeach, Milton. 1973. The Nature of Human Values. New York: Free Press.
- Sanfey, Alan G. 2007. "Social Decision-Making: Insights from Game Theory and Neuroscience." *Science*, 318: 5850 (26 October), 598-602.
- Sanfey, Alan G., James K. Rilling, Jessica A. Aronson, Leigh E. Nystrom, and Jonathan D. Cohen. 2003. "The Neural Basis of Economic Decision-Making in the Ultimatum Game." *Science* 300: 5626 (13 June), 1755-1758.
- Singer, Tania, Ben Seymour, John P. O'Doherty, Klaas E. Stephan, Raymond J. Dolan, and Chris D. Frith. 2006. "Empathic neural responses are modulated by the perceived fairness of others." *Nature*, 439: (26 January), 466-469.
- Smith, Kevin B. 2006. "Representational Altruism: The Wary Cooperator as Authoritative Decision Maker." *American Journal of Political Science*, 50: 4 (October), 1013-1022.
- Spitzer, Manfred, Urs Fischbacher, Bärbel Herrnberger, Georg Grön, and Ernst Fehr. 2007. "The Neural Signature of Social Norm Compliance." *Neuron*, 56:1 (October), 185-196.
- van 't Wout, Mascha, Rene S. Kahn, Alan G. Sanfey and Andre Aleman. 2006. "Affective State and Decision-making in the Ultimatum Game." *Experimental Brain Research*, 169: 4 (March), 564-568.
- van Winden, Frans. 2007. "Affect and Fairness in Economics." *Social Justice Research*, 20: 1 (March), 35-52.
- Wallace, Björn, David Cesarini, Paul Lichtenstein, and Magnus Johannesson. 2007. "Heritability of Ultimatum Game Responder Behavior." *Proceedings of the National Academy of Sciences of the United States of America*, 104: 40 (October 2), 15631-15634.
- White House, Office of the Press Secretary. 2006. "Fact Sheet: The Adam Walsh Child Protection And Safety Act Of 2006." Retrieved from http://www.whitehouse.gov/news/releases/2006/07/20060727-7.html on January 6, 2009.
- Wicker, B., C. Keysers, J. Plailly, J. P. Royet, V. Gallese, & G. Rizzolatte. 2003. "Both of us disgusted in my insula: the common neural basis of seeing and feeling disgust." *Neuron*, 40: 655-664.
- Zak, Kurzban and Matzner 2004, 2005;

Tables and Figures

Table 1

Condition	Male Mean	Female Mean	Difference	Pr(T > t)
Personal	0.4444	0.4375	0.0069	0.9687
Interpersonal	0.4118	0.6471	-0.2353	0.1796
Abstract	0.7333	0.7895	-0.0561	0.7119
Personal	0.4444	0.5000	-0.0555	0.7550
Interpersonal	0.5294	0.7059	-0.1765	0.3041
Abstract	0.7333	0.5789	0.1543	0.3648
Personal	0.5000	0.4375	0.0625	0.7255
Interpersonal	0.6471	0.4118	0.2353	0.1796
Abstract	0.4667	0.1053	0.3614	0.0170**
	Personal Interpersonal Abstract Personal Interpersonal Abstract Personal Interpersonal Interpersonal	Personal 0.4444 Interpersonal 0.4118 Abstract 0.7333 Personal 0.4444 Interpersonal 0.5294 Abstract 0.7333 Personal 0.5000 Interpersonal 0.6471	Personal 0.4444 0.4375 Interpersonal 0.4118 0.6471 Abstract 0.7333 0.7895 Personal 0.4444 0.5000 Interpersonal 0.5294 0.7059 Abstract 0.7333 0.5789 Personal 0.5000 0.4375 Interpersonal 0.6471 0.4118	Personal 0.4444 0.4375 0.0069 Interpersonal 0.4118 0.6471 -0.2353 Abstract 0.7333 0.7895 -0.0561 Personal 0.4444 0.5000 -0.0555 Interpersonal 0.5294 0.7059 -0.1765 Abstract 0.7333 0.5789 0.1543 Personal 0.5000 0.4375 0.0625 Interpersonal 0.6471 0.4118 0.2353

^{** &}lt; 0.05;

Personal: Male n=18, Female n=16; Interpersonal: Male n=17, Female n=17; Abstract: Male n=15, Female n=19

0 = Against Policy Change; 1 = For Policy Change

0 = For Fines / Bonuses; 1 = Against Fines / Bonuses

Table 2 – Logit regression coefficients on the addition of rules to the game.

			<u> </u>			
Exp(B)	Male - For Policy	For Policy	Male - Against	Female - Against	Male – Against	Female - Against
	Change	Change	Bonuses	Bonuses	Fines	Fines
Experimental Condition	2.2481*	2.0164*	1.7066	1.1558	0.5801	0.3536**
Empathy - Fantasy	1.0146	1.0072	0.9528	1.0239	0.9746	0.9239
Empathy - Perspective Taking	1.0766	0.9216	0.9737	1.0579	1.0357	1.2210*
Emapthy - Empathic Concern	1.0570	1.2405*	1.1273	0.9676	0.7015***	0.8244
Empathy - Personal Distress	1.0178	0.8978	0.9583	0.9729	0.8948	1.0507
Constant	0.0063*	0.0664	0.2616	0.6294	72811***	10.3534
N	50	52	50	52	50	52
Prob > χ^2	0.3433	0.0766*	0.3835	0.9576	0.0034***	0.0255**
Psuedo R ²	0.0814	0.1458	0.0769	0.0151	0.2556	0.1992
1						

^{* &}lt; 0.10; ** < 0.05; *** < 0.01; 0 = Against Policy Change; 1 = For Policy Change

^{0 =} For Fines / Bonuses; 1 = Against Fines / Bonuses

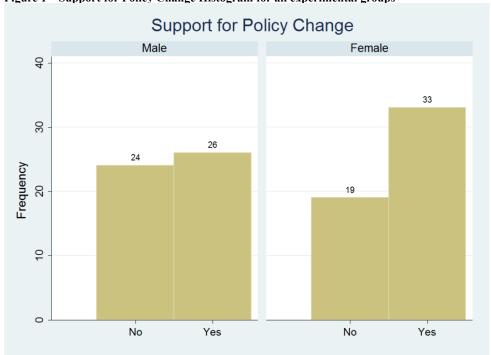
Table 3 – Pairwise correlation values between Gender and the variables listed

		values between Gender a					
Fixation 1	0.0773	Fixation 2	0.0611	Fixation 3	-0.1266	Fixation 4	-0.0775
Frys :00	0.0929	Eminent Domain :00	0.0280	Flowers :00	-0.1097	DNA :00	-0.1385
Frys :04	-0.0325	Eminent Domain :26	0.0522	Flowers :10	-0.0491	DNA :14	-0.1934*
Frys :12	-0.0294	Eminent Domain :30	0.0498	Flowers :20	-0.0748	DNA :24	-0.2449**
Frys :20	-0.0068	Eminent Domain :49	-0.0101	Flowers :30	-0.0488	DNA :28	-0.2055**
Frys :29	-0.0157	Eminent Domain :52	-0.0021	Flowers :40	-0.0625	DNA :31	-0.1936*
Frys :33	-0.0623	Eminent Domain 1:03	-0.0538	Flowers :50	-0.0645	DNA :39	-0.2191**
Frys :38	-0.0485	Eminent Domain 1:14	0.0553	Flowers 1:00	-0.0154	DNA :45	-0.1980*
Frys :46	-0.0609	Eminent Domain 1:26	-0.0250	Flowers 1:10	-0.0191	DNA :52	-0.1691*
Frys :51	-0.0571	Eminent Domain 1:35	-0.1155	Flowers end	-0.0917	DNA 1:11	-0.2253**
Frys :55		Eminent Domain 1:43	-0.1167			DNA 1:15	-0.2489**
Frys 1:01		Eminent Domain 1:49	-0.1760*			DNA 1:25	-0.2491**
Frys 1:10		Eminent Domain end	-0.2069**			DNA 1:40	-0.1047
Frys 1:22	0.0671					DNA 1:52	-0.0634
Frys 1:38	-0.0054					DNA :205	-0.0503
Frys 1:49	-0.0247					DNA end	-0.1411
Frys End	0.0473						
Fixation 5	-0.1111	Fixation 6	-0.1390				
Screensaver :00	-0.0676	Cops :00	-0.1442				
Screensaver :10	-0.0571	Cops :13	-0.1597				
Screensaver :20	-0.1011	Cops :29	-0.1430				
Screensaver :30	-0.0620	Cops :43	-0.1234				
Screensaver :40	-0.0795	Cops :50	-0.1099				
Screensaver :50	-0.0825	Cops :59	-0.1460				
Screensaver 1:00	-0.1000	Cops 1:05	-0.1498				
Screensaver 1:10	-0.1083	Cops 1:15	-0.1746*				
Screensaver 1:20	-0.1653	Cops 1:30	-0.1822*				
Screensaver end		Cops 1:34	-0.1616				
		Cops 1:41	-0.1290				
		Cops end	-0.1342				
** p<0.05; * p<0	** p<0.05; * p<0.10; Data come from all experimental groups.						

Table 4 - One-way ANOVA's on Standardized SCL and Gender

	Male Mean Standardized SCL	Female Mean Standardized SCL	Prob > F		
Eminent Domain End	0.1878	-0.1026	0.0443**		
DNA Evidence :24	0.5339	0.1500	0.0162**		
DNA Evidence :28	0.4819	0.1546	0.0446**		
DNA Evidence :39	0.4532	0.1111	0.0320**		
DNA Evidence 1:11	0.3958	0.0416	0.0273**		
DNA Evidence 1:15	0.3728	-0.0138	0.0145**		
DNA Evidence 1:25	0.4286	0.0439	0.0144**		
** < 0.05; Data come from all experimental groups.					

Figure 1 – Support for Policy Change Histogram for all experimental groups



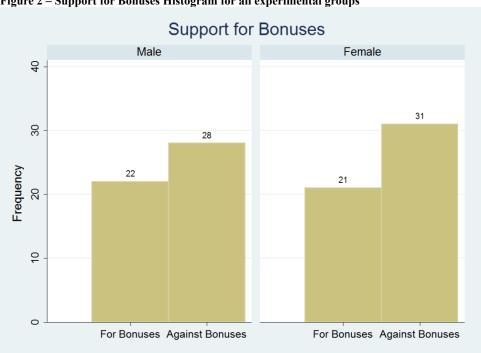


Figure 2 – Support for Bonuses Histogram for all experimental groups





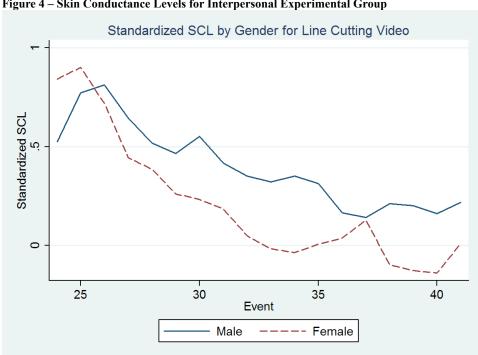
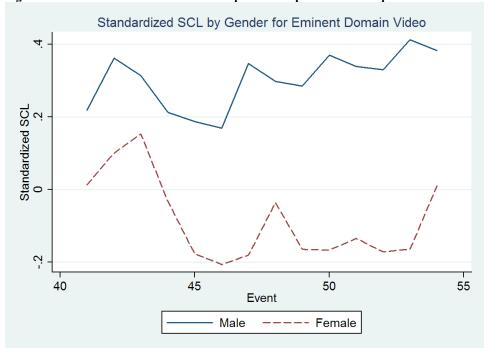


Figure 4 – Skin Conductance Levels for Interpersonal Experimental Group





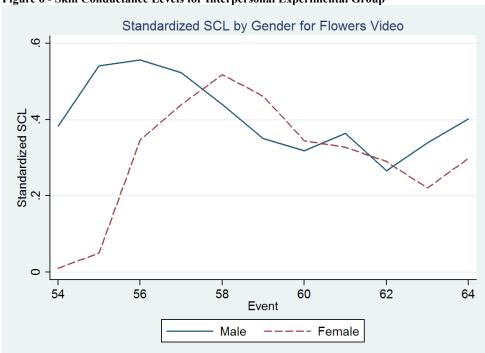
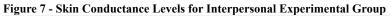
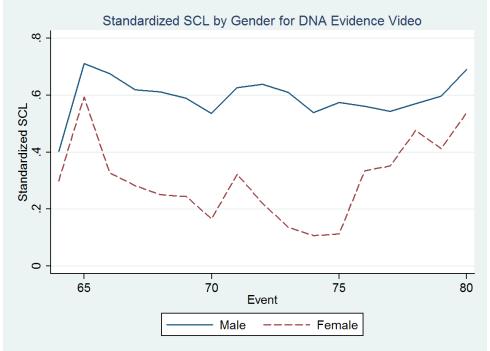


Figure 6 - Skin Conductance Levels for Interpersonal Experimental Group





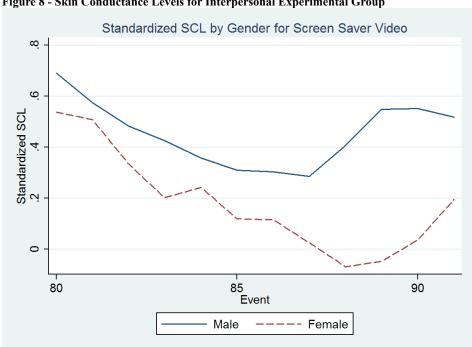


Figure 8 - Skin Conductance Levels for Interpersonal Experimental Group



