

CHOOSE YOUR WORDS WISELY: DELAY DISCOUNTING OF DIFFERENTLY TITLED SOCIAL POLICY ISSUES

Karyn M. Plumm
Hannah Borhart
Jeffrey N. Weatherly¹
University of North Dakota

ABSTRACT: The present study investigated whether altering how certain social policies were framed would alter how many participants valued and/or discounted those policies and also whether discounting of the policies would be related to several measures of the participants' religiousness and their political party affiliation. Five hundred ninety-seven university undergraduates were randomly divided into two groups and completed a delay-discounting task that involved one monetary and five social-policy outcomes. The phrasing of the policies differed between groups (e.g., affirmative action vs. equal rights). Results showed that framing the policies in different ways altered (a) the number of participants who indicated that the policy held value and (b) how participants discounted the policies. Levels of discounting were also related to measures of religiousness and/or political party affiliation for all but one outcome. The present results highlight the potential value of studying how individuals discount delayed outcomes pertaining to social issues.

KEYWORDS: delay discounting; social policies; religiousness; political party affiliation; university students

Discounting is said to occur when the subjective value of an outcome is altered because its delivery is either delayed or uncertain (see Madden & Bickel, 2010, for a recent review). For instance, you would likely be willing to accept \$95 today rather than waiting one month for \$100. If so, then the delay of one month has decreased the value of \$100 by at least 5%. Likewise, if the availability of the \$100 was further delayed, say one year, you would likely be willing to accept less

¹ Correspondence regarding this article should be directed to Jeffrey N. Weatherly, Ph.D., Department of Psychology, University of North Dakota, Grand Forks, ND 58202-8380, Phone: (701) 777-3470, Fax: (701) 777-3454, Email: jeffrey.weatherly@email.und.edu

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than \$95 to get the money today. Discounting is a general finding, but the process of discounting is reliably altered by certain factors such as the magnitude of the outcome (e.g., Thaler, 1981). For example, although you might accept \$95 today rather than waiting one month for \$100, you would be unlikely to take \$95,000 today rather than waiting one month for \$100,000.

Behavioral psychologists and other social scientists have been interested in the phenomenon of discounting for a number of reasons. One is that the rate at which people discount outcomes has been correlated with several behavioral disorders such as attention-deficit/hyperactivity disorder (see Williams, 2010), substance abuse (see Yi, Mitchell, & Bickel, 2010), and pathological gambling (see Petry & Madden, 2010). At a more general level, psychologists have been interested in the phenomenon because research has suggested that the ability to delay gratification is associated with positive life outcomes (Rotter, 1954). But interest has also expanded outside of the field of psychology, as researchers have argued that the process of discounting impacts things such as public policy decisions (e.g., Hardisty, Johnson & Weber, 2010; Hardisty & Weber, 2009).

Discounting relates to public policy because policy makers are often faced with decisions about what the public might be willing to accept today versus what they would be willing to wait to get in the future. Likewise, the implementation of a public policy today relies not only on the decisions of present policy makers, but also on the willingness of future policy makers to abide by the decisions made by past ones (see Pearce et al., 2003, for a discussion). Previous research on delay discounting and public policy has looked at environmental policies. Hardisty and Weber (2009), for instance, found that financial and environmental outcomes (i.e., improvement in air quality or increases in garbage) generated similar rates of discounting among participants. These researchers concluded that similar rates of discounting across domains was good news for the policy makers because it meant they could employ a single rate of discounting when creating both financial and environmental policies. On the other hand, Hardisty and Weber (2009) also reported finding different rates of discounting for health outcomes (i.e., choosing between two treatment options) than for monetary (i.e., winning \$250) or environmental outcomes (i.e., improved air quality).

More recently, Weatherly, Plumm, and Derenne (2011) had participants discount six different hypothetical social policies (e.g., abortion, affirmative action, gay marriage legislation), as well as one monetary outcome. The conclusions of their study depended upon which data were included in or excluded from the analyses. That is, a large proportion of the participants in the study indicated that they did not wish to ever have legislation enacted on certain issues (e.g., increasing access to abortion, legalizing gay marriage) regardless of

the delay. When the data from such individuals were excluded from the analyses, results suggested that absolute differences in the level of discounting were observed between the monetary outcome and the different social policies. However, results from factor analyses indicated a one-factor solution, indicating that discounting of any of the outcomes was predictive of discounting of the other outcomes. When the data from all participants were included in the analyses, on the other hand, not only were differences in the absolute levels of discounting observed, results from factor analyses indicated a two-factor solution. In other words, discounting of some social policies were predictive of discounting of some other, but not all, social policies.

If discounting is going to be a useful measure in the study of public or social policies, then one needs to understand why some participants might not value certain outcomes. One possibility raised by Weatherly et al. (2011) was that the percentage of participants who indicated that they did not value a certain social policy may have been influenced by how the policies were framed. For instance, had abortion legislation been labeled as a “right-to-choose” issue, an increased number of participants may have responded as if the outcome had some value. Such a suggestion is consistent with research and theory on how framing might influence decision-making (e.g., Tversky & Kahneman, 1981). From a behavioral perspective, framing would be expected to potentially alter behavior by altering the discriminative stimuli present in the situation.

The literature on discounting certainly supports the idea that how the outcome is framed can influence how that outcome is discounted. For instance, Hardisty and Weber (2009) reported that valence of the outcome (i.e., whether outcomes were framed in terms of gains and losses) had a stronger influence on discounting rates than did type of outcome (i.e., environmental vs. financial). Another example can be found in Weatherly, Derenne, and Terrell (2010), who demonstrated that participants displayed different rates of discounting for the same monetary amount as a function of whether the money had supposedly been “won” or whether it was money that the participant was “owed.”

Another possible reason why participants might place no value on certain social policies may be linked to certain subject variables. Indeed, results from Weatherly et al. (2011) suggested both religiousness, as measured by self-reported regular church attendance, and political party affiliation were significantly correlated with discounting rates for the policies pertaining to abortion, affirmative action, and/or gay marriage. Interestingly, those three policies loaded onto their own factor when factor analyses were conducted by Weatherly et al. (2010) using data from all of the participants.

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Although behavioral psychologists typically avoid the study of subject variables, their influence on the process of discounting has received a fair amount of research attention. For instance, researchers (e.g., Hardisty et al., 2010; Rattner, Yagil & Sherman-Segal, 2003) have argued that individuals with liberal ideologies should be willing to wait longer than individuals with conservative ideologies for legislation that is more abstract. Phrased differently, they should be more likely than those with conservative ideologies to support legislation that delivers delayed benefits to society. On the other hand, Weatherly (2010) reported finding that university students who self-identified as Democrats displayed significantly more, rather than less, discounting of four different outcomes than did self-identified Republicans. Likewise, research has demonstrated that discounting of different outcomes sometimes varies as a function of aspects of the participants' religiousness (Weatherly & Plumm, in press; Weatherly & Terrell, 2011).

The present study was designed as a follow-up study to Weatherly et al. (2011). Specifically, the goal was to determine if the discounting of social policies would vary as a function of how those policies were framed, independent of subject variables such as religiousness and political affiliation. Two different groups of participants were recruited to complete a delay-discounting task that involved six different outcomes. One of the outcomes was identical between groups and involved a hypothetical monetary sum. The remaining five outcomes were social policies that were, between groups, labeled differently (e.g., affirmative action vs. equal rights). Participants also completed items intended to measure their religiousness and political party affiliation.

The hypotheses of the study were as follows. Consistent with the predictions of Weatherly et al. (2011), we predicted that a different percentage of participants would indicate that certain issues held value depending on how those issues were framed (e.g., abortion vs. a woman's right to choose). Likewise, we predicted that different levels of discounting would be observed as a function of how the outcomes were framed (e.g., doctor-assisted suicide vs. the right to die). Also consistent with the results Weatherly et al. (2011), we predicted that discounting of certain social issues (i.e., abortion, gay marriage, doctor-assisted suicide, teaching creationism in schools) would be related to participants' religiousness and political party affiliation. Lastly, we predicted that the former effects (i.e., how the issue is framed) would be observed independent of the latter effects (i.e., the participants' religiousness and political party affiliation).

Method

Participants

The participants were 597 undergraduate psychology students enrolled at the University of North Dakota. These participants were randomly (i.e., 50-50 chance) divided into two different groups and the demographic information pertaining to each group can be found in Table 1. Participants received (extra) course credit in their psychology course in return for their participation.

Materials and Procedures

Participants completed the study online through the SONA Systems, Ltd (Version 2.72; Tallinn, Estonia) experiment management system. This system ensured that participants were enrolled in a psychology course at the time of participation and they completed the study only one time. The first item a participant viewed was a description of the study, including its benefits and risks, as well as the participant's rights, as approved by the Institutional Review Board at the University of North Dakota. Continuation past this point constituted informed consent.

Participants in each group completed three measures. The first was a demographics form that asked for the information reported in Table 1. All participants completed the questions in the order presented in Table 1.

The second measure was the I/E-Revised scale (Gorsuch & McPherson, 1989). This scale contains 14 items related to the respondent's religious beliefs. Respondents can endorse each item on a 5-point Likert-like scale that ranges from "strongly disagree" (1) to "strongly agree" (5). Scores for 8 of the items are summed to provide a measure of intrinsic religiousness. Intrinsic religiousness is defined as internalizing and living out the precepts of one's faith. Scores for the remaining 6 items are summed to provide a measure of extrinsic religiousness, which is defined as using religion for social or personal goals. Research on the I/E-Revised scale has shown that it is a valid and reliable measure (see Donahue, 1985, for a review and meta-analysis). The scale was devised to explain the consistent finding that church-goers were more prejudiced (especially in terms of racial attitudes) than non-church-goers (Allport & Ross, 1967). The scale served to delineate the reasons for church attendance and has consistently found that those high in extrinsic religiousness show higher levels of racial prejudice than those high in intrinsic religiousness (Allport & Ross, 1967; Gorsuch & McPherson, 1989; Kirkpatrick, 1993; McFarland, 1989). Previous discounting research using this measure (Weatherly & Plumm, in press) reported the general

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Table 1. *Demographic information pertaining to Group A (n = 296) and B (n = 301). Totals may differ by category if participants did not provide the information.*

		Group A	Group B
Gender	Male	68	61
	Female	228	240
Age		20.0 (SD = 3.5)	20.4 (SD = 4.6)
Grade Point Average		3.3 (SD = 0.6)	3.3 (SD = 0.5)
Ethnicity	Caucasion	282	269
	American Indian	3	11
	African American	2	5
	Asian	1	6
	Other	7	7
Relationship Status	Single	162	171
	In Relationship	116	119
	Married	17	11
Political Party	Democrat	71	75
	Independent	21	39
	Other/Don't Know	97	88
	Republican	101	98

tendency for participants scoring high in intrinsic religiousness to display less discounting than participants who score low and for those who score high in extrinsic religiousness to display more discounting than those who score low.

The final measure was a delay-discounting task that involved six different outcomes. Both groups answered questions pertaining to winning \$100,000. This outcome was included as a manipulation check to determine whether the different groups differed in how they discounted a non-social-issue outcome. For participants in Group A, the remaining five outcomes were legalizing gay marriage, an affirmative-action bill, abortion legislation, legalizing doctor-assisted suicide, and teaching creationism in schools. For participants in Group B, the remaining five outcomes were legalizing same-sex marriage, an equal-rights bill, legislation on the right to choose, legalizing one's right to die, and teaching intelligent design in schools. The exact wording of all of the questions can be found in the Appendix.

Participants answered five questions about each outcome, with the difference across questions being the delay to the delivery of the full amount. The five delays used were 6 months, 1 year, 3 years, 5 years, and 10 years, which were the same delays used by Weatherly et al. (2011). Participants in each group answered all five questions pertaining to a certain outcome before questions about the next outcome were posed. The order of presentation of outcomes, however, varied randomly across participants. Likewise, the order of the five delays for each outcome also varied randomly for each outcome across participants.

The method of collecting discounting data was identical to that used by Weatherly et al. (2011), which was based on the method employed by Beck and Triplett (2009). Specifically, in answering the delay-discounting questions, participants chose their response from a finite list of percentages that ranged from 100% to 0% in 5% increments. Furthermore, the anchors (i.e., 100% & 0%) were accompanied by qualitative statements (e.g., "willing to wait" and "against gay marriage," respectively). These anchors were included for two reasons. The first was to ensure that participants understood what the different extremes represented. The second was to ensure that people who did not value a particular outcome (e.g., were against abortion) could be identified and excluded from the analyses pertaining to rates of discounting².

² Discounting occurs when the subjective value of an outcome decreases as its delivery is delayed. However, if an outcome has no value to a person, then the outcome cannot be discounted because the delay to its delivery does not alter its subjective value. One could therefore argue that such data should be excluded when determining how that outcome is discounted by those who indeed discounted the outcome. It should also be noted that the reverse is not necessarily true. That is, participants who were willing to wait for 100% of the outcome regardless of the delay (i.e., up to

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Data Analysis

Discounting data were analyzed by calculating the area under the discounting curve (AUC; Myerson, Green, & Warusawitharana, 2001) using the following formula:

$$\sum_{i=1} (x_{i+1} - x_i) \times (y_i + y_{i+1})/2 \text{ (Equation 1)}$$

Using Equation 1, AUC is calculated by summing the areas of the successive trapezoids created by the indifference points (i.e., the amount the participant was willing to accept immediately rather than waiting a specified delay for the full amount of the outcome) across the different delays. For the present data, x was calculated in months. When using Equation 1, one could potentially assume that the value of the full outcome is 100% when there is no delay. We did not make that assumption, however, because it was possible that, for some outcomes (e.g., abortion), the participant may have valued some level of the outcome (e.g., abortions in some instances) but never the full amount (i.e., abortion in any instance). Thus, AUC values were calculated starting with the first indifference point for each outcome. AUC values could therefore vary between 0.0 and 1.0, with AUC value varying inversely with the rate of discounting. That is, low AUC values indicate that the subjective value of the outcomes decreased greatly as the delivery of the full outcome was delayed. High AUC values indicate that the subjective value of the outcome remained high despite its delivery being delayed.³

10 years in the present study) may not have displayed “discounting,” but in theory that was an outcome of the length of the delays employed. These individuals theoretically would have discounted those outcomes if longer delays had been employed (i.e., 200 years).

³ Although there are several other methods for analyzing delay-discounting data (e.g., fitting the indifference points to a hyperbolic equation; Mazur, 1987), Equation 1 and AUC were employed for four reasons. First, Equation 1 is atheoretical in terms of the form the delay-discounting data are expected to take. Although other analytical methods have successfully described rates of delay discounting (see Madden & Bickel, 2010, for a review), we had no theoretical reason to expect the data to, for instance, be hyperbolic in nature. Second, the AUC values generated by Equation 1 are typically parametric and do not require transformation, which is not the case with other methods such as using a hyperbolic equation. Third, Equation 1 does not have difficulty describing instances in which extreme subjective values are observed at every delay, which again cannot be said of other methods. Fourth, whereas other methods provide an estimation of the participant’s rate of discounting, AUC values are direct measures of the participant’s response at each delay, although it could be argued that Equation 1 does assume that the change subjective value of the outcome between two measured delays is linear, which may or may not be true.

Participants who had an AUC value of 0 for any given outcome were considered non-discounters. One question of interest is whether the different phrasings of the outcomes would influence how many participants qualified as non-discounters. To make this determination, the proportion of participants in each group that had an AUC value of 0 for a particular outcome was compared by using a test of proportions. For these, and all other, analyses, statistical significance was considered met at $p < .05$.

Participants who had an AUC value of greater than 0 for a particular outcome were considered discounters. AUC values for discounters in each group for each outcome were analyzed by conducting an analysis of covariance (ANCOVA) with participants' scores for the internal and external religiousness subscales used as covariates. Also used as a covariate was participants' self-reported political party affiliation. Consistent with the coding used by Weatherly et al. (2011), Democrats were coded as 1, Independents and "Other / Don't Know" were coded as 2, and Republicans were coded as 3. ANCOVAs were employed because such analyses allowed for determining whether the different phrasing of the issues produced different levels of discounting independent from the influence of the covariates.

Lastly, the data from both groups were subjected to separate factor analyses to determine whether discounting varied similarly across the different outcomes/issues when the outcomes/issues were framed differently. Factor analyses were conducted by first performing a principal components analysis (PCA) using PASW Statistics Version 17.0. The criteria used for determining the number of factors to identify were eigenvalues greater than 1.0, inspection of the scree plot, and logical item loadings (Cattell, 1966; Tabachnick & Fidell, 2007). If a multiple-factor solution was identified, the data were then subjected to a principle axis factoring (PAF) analysis using a Varimax rotation.

Results

Non-Discounters

For the outcome of winning \$100,000, the difference in the proportion of non-discounters in Group A (0.7%) and Group B (1.0%) was not statistically significant, $z = -0.047$. Likewise, the difference in the proportion of non-discounters in Group A (gay marriage; 22.3%) and Group B (same-sex marriage; 20.9%) was not significant, $z = 0.198$. However, the differences in the proportion of non-discounters in Groups A and B for the outcomes of affirmative-action (9.1%) vs. equal-rights (1.3%) legislation, $z = 4.11$, legalizing doctor-assisted suicide (30.1%) vs. one's right to die (12.0%), $z = 5.235$, abortion (41.6%) vs. a

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woman's right to choose (25.6%), $z = 4.047$, and teaching creationism (20.6%) vs. intelligent design in schools (10.3%), $z = 3.375$, were all statistically significant.

Discounters

Results for the ANCOVA conducted on the AUC values for the outcome of winning \$100,000 for the participants in Groups A and B who discounted (i.e., displayed AUC values > 0) was not significant, $F(1, 565) = 0.69$, $p = .407$, $\eta^2 = .001$, indicating that both groups discounted the monetary amount similarly. The only covariate that was statistically significant was extrinsic religiousness, $F(1, 565) = 7.63$, $p = .006$, $\eta^2 = .013$. Participants who scored high in extrinsic religiousness discounted winning \$100,000 more (i.e., displayed lower AUC values) than those who scored low.

Comparison of discounting of legalization of gay marriage vs. same-sex marriage did not reveal a significant difference, $F(1, 446) = 2.11$, $p = .147$, $\eta^2 = .005$. The covariates of intrinsic religiousness, $F(1, 446) = 9.94$, $p = .002$, $\eta^2 = .022$, and political party affiliation, $F(1, 446) = 7.92$, $p = .005$, $\eta^2 = .017$, however, were both significant. Participants who scored high in intrinsic religiousness discounted this outcome more than those who scored low. Likewise, Republicans discounted this outcome more than Democrats.

The difference in discounting of an affirmative-action (Mean AUC = 0.766, SE = 0.014) vs. an equal-rights bill (Mean AUC = 0.813, SE = 0.012) was significant, $F(1, 541) = 6.44$, $p = .011$, $\eta^2 = .012$, indicating that participants discounted affirmative action legislation to a greater degree than equal rights legislation. None of covariates were significant in this analysis.

The difference in discounting of legalization of doctor-assisted suicide (Mean AUC = 0.670, SE = 0.020) vs. one's right to die (Mean AUC = 0.719, SE = 0.016) was significant, $F(1, 454) = 5.09$, $p = .025$, $\eta^2 = .011$, indicating that participants discounted legalization of doctor-assisted suicide to a greater degree than one's right to die. The covariate of intrinsic religiousness was also significant, $F(1, 454) = 10.88$, $p = .001$, $\eta^2 = .023$. Participants who scored high in intrinsic religiousness discounted this outcome more than those who scored low.

Comparison of discounting of legislation on abortion vs. a woman's right to choose did not reveal a significant difference, $F(1, 379) = 0.06$, $p = .811$, $\eta^2 = .000$. However, the covariates of intrinsic religiousness, $F(1, 379) = 4.97$, $p = .026$, $\eta^2 = .013$, extrinsic religiousness, $F(1, 379) = 4.36$, $p = 0.037$, $\eta^2 = .011$, and political party affiliation, $F(1, 379) = 5.00$, $p = .026$, $\eta^2 = .013$ were all significant. Participants who scored high in intrinsic or extrinsic religiousness or

were Republicans discounted this outcome more than those who scored low in intrinsic or extrinsic religiousness or were Democrats.

Lastly, the difference in discounting of teaching creationism (Mean AUC = 0.639, SE = 0.017) vs. intelligent design in schools (Mean AUC = 0.689, SE = 0.014) was significant, $F(1, 486) = 4.90, p = .027, \eta^2 = .010$, as was the covariate of intrinsic religiousness, $F(1, 486) = 7.66, p = .006, \eta^2 = .016$. Participants who scored high in intrinsic religiousness discounted this outcome to a lesser degree than did those who scored low.

Factor Analyses

The AUC values for all outcomes for all participants in Group A were first subjected to a PCA. This analysis indicated a three-factor solution. The data were then subjected to a second analysis employing PAF. This analysis also yielded a three-factor solution, with the three factors accounting for 68.03% of the variance. The factor loadings can be seen in the top half of Table 2. The outcomes of gay marriage, doctor-assisted suicide, and abortion loaded onto one factor, affirmative action and, to a weak extent, winning \$100,000 loaded onto the second factor (gay marriage also cross-loaded on this second factor), and teaching creationism loaded onto the third factor.

The AUC values for all outcomes for all participants in Group B were also first subjected to a PCA, which indicated a two-factor solution. The data were then subjected to a PAF analysis. This analysis also yielded a two-factor solution, with the two factors accounting for 55.46% of the variance. The factor loadings can be seen in the bottom half of Table 2. Same-sex marriage, the right to die, and the right to choose loaded onto the first factor, winning \$100,000 and equal rights loaded onto the second factor, and teaching intelligent design failed to strongly load onto either factor.

Discussion

The present study was designed to determine whether delay discounting of social policies would be influenced by how the policies are framed and/or by the participants' religiousness and political party affiliation. Results demonstrated that both outcomes were observed. Altering how the issues were framed significantly altered the proportion of participants per group that indicated the policy held some value (i.e., displayed AUC values > 0) for four of the five social policies tested. Likewise, for participants who displayed discounting of the policies, altering how the policy was framed produced significantly different rates of discounting for three of the five outcomes. Lastly, rates of discounting differed

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Table 2. *Results of the Principal Axis Factoring analysis of the AUC values of all participants in Groups A and B.*

	Group A		
	Factor 1	Factor 2	Factor 3
Winning \$100,000	0.021	0.246	0.020
Affirmative Action	0.078	0.690	0.110
Gay Marriage	0.420	0.380	-0.195
Doctor-Assisted Suicide	0.757	0.119	0.148
Abortion	0.701	0.011	-0.071
Teaching Creationism	0.002	0.060	0.459

	Group B	
	Factor 1	Factor 2
Winning \$100,000	0.087	0.582
Equal Rights	0.170	0.613
Same-Sex Marriage	0.652	0.252
Right to Die	0.544	0.176
Right to Choose	0.677	0.019
Teaching Intellig. Design	0.228	0.194

Factor scores > 0.300 are bolded

as a function of intrinsic religiousness, extrinsic religiousness, and/or political party affiliation for all but one of the outcomes tested.

Finding that the proportion of respondents who indicated that the outcome had value based on how the outcome was worded supports the contention made by Weatherly et al. (2011). It is also consistent with research from outside behavioral psychology (e.g., Blendon, Benson, & Donelan, 1993; Glaser, 2005; Rabinowitz, Sears, Sidanius, & Krosnick, 2009). For instance, the present results indicated that more people valued legislation when it was framed as about a woman's right to choose vs. about abortion. Blendon et al. (1993) found that if a survey question emphasized a woman's right to make choices about her own body and reproduction, responses favored the legality of abortion, but if the question emphasized the fetus's right to life or the death of an unborn child, the responses were significantly less favorable to the legal availability of abortion (as cited in Adamek, 1994).

The affirmative-action bill produced a greater proportion of non-discounters than did the equal rights bill, which may be because "affirmative action" has negative connotations that are not attached to "equal rights." For example, past research has suggested that participants object to government intervention in the lives of its citizens and view affirmative action as such (Glaser, 2005). Similar to the finding with abortion and right-to-choose policy, the more "benign" phrase of equal rights produced non-discounting to a much lesser degree. This result suggests again that, for these issues in particular, while participants' views may differ given the framing of the policy, so too does the value placed on such policy.

Finding that rates of discounting of some of the outcomes varied as a function of how the social policies were worded is also consistent with the idea that the wording had altered the subjective value of the outcome. As noted above, the more valuable the outcome, the less respondents tend to discount it (i.e., the magnitude effect; Thaler, 1981). Finding significantly less discounting for teaching intelligent design rather than creationism in schools, for instance, suggests that the idea of teaching intelligent design holds a greater subjective value than teaching creationism. It is worthy of noting that the results support this conclusion independently of participants' religiousness or political party affiliation.

Interestingly, manipulating how a social-policy outcome is framed may produce two changes in discounting. That is, for three of the social policies tested, altering the wording A) increased the proportion of people who indicated that outcome had some subjective value and B) decreased the rate at which they discounted the outcome. Both outcomes are the result of the increase in the value of the outcome. But this pair of results is interesting because low rates of

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discounting are indicative of a willingness to wait for a larger amount, if not the full amount, of the outcome. In other words, altering how the policies were phrased simultaneously increased the policy's subjective value and made the respondent less willing to accept small advances toward that outcome immediately. Thus, framing social issues in different ways may heighten how much the public values those issues, but it might also make people less willing to compromise on those issues so as to make short-term progress towards them.

The above conclusions notwithstanding, it should also be noted that the framing of the different social policies in the present did not appear to alter their relative value. That is, the results from the factor analyses for the different groups were remarkably similar. For both groups, discounting of money and affirmative action/equal rights legislation varied together while discounting of abortion/right to choose, gay/same-sex marriage, and doctor-assisted suicide/right to die legislation varied together. Likewise, teaching creationism/intelligent design in schools was the odd-outcome-out in both sets of analyses. These results suggest that there are different categories of social policies and one cannot necessarily expect the rate of discounting of one type of policy to be predictive of discounting of all social policies. The fact that discounting of teaching creationism was its own factor for one group and discounting of teaching intelligent design was not its own factor for the other group also suggests that these two issues (i.e., creationism vs. intelligent design) may not be synonymous.

Finding that religiousness, both intrinsic and extrinsic, was related to most of the social-policy issues tested is also consistent with previous research outside of behavioral psychology (Allport & Ross, 1967; Gorsuch, 1984; Gorsuch, 1988; Gorsuch & MacFarland, 1972; Kirkpatrick, 1988). Social psychologists would argue that intrinsic religiosity tends to cause individuals to internalize a value system that they may then use to guide their political beliefs and/or understanding of social policy. Intrinsic religiosity was a significant covariate for the discounting outcomes of gay marriage vs. same-sex marriage, abortion vs. a woman's right to choose, doctor-assisted suicide vs. one's right to die, and teaching creationism vs. intelligent design in schools. Although it may not be possible to identify exactly what intrinsic religiousness is measuring, from the present data it can be stated that whatever it is, intrinsic religiousness is serving as an establishing operation (Michael, 1993) or setting event (Kantor & Smith, 1975). It is also worth noting that Weatherly and Plumm (in press) reported that participants scoring high in intrinsic religiousness displayed the general tendency of less discounting than participants who scored low. The opposite effect was observed in the present study for the issue of abortion vs. a woman's right to choose, indicating that intrinsic religiousness will not always be associated with less discounting.

Extrinsic religiosity was also found to be a significant covariate for two of the outcomes: money and abortion versus a woman's right to choose. Finding that discounting of a monetary outcome is related to religiousness is consistent with past research on discounting (Weatherly & Terrell, 2010). Finding that it is related to abortion legislation is also consistent with previous discounting research (Weatherly et al., 2011). According to social-psychological research, participants who endorse high degrees of extrinsic religiosity are likely affected by their chosen religion as the importance of belonging to the social group is salient (Duriez, Luyten, Snauwaert, & Hutsebaut, 2002). Religious organizations tend to take strong positions on issues such as abortion, so the social contingencies for participants endorsing high extrinsic religiosity may differ than those faced by participants endorsing low extrinsic religiosity.

In the discounting situation of an affirmative-action vs. an equal-rights bill, religiousness was not a significant covariate. This result parallels that of Cook and Wilcox (1990; as cited in Calhoun-Brown, 1998) in that neither intrinsic nor extrinsic religiosity were important influences on the positions held on economic-type policies. Religions do not tend to promote strong stances regarding affirmative action, thus one would not necessarily expect intrinsic or extrinsic religiosity to have a significant effect on how a person discounts this type of legislation.

Political party affiliation was a significant covariate for two of the outcomes: same-sex marriage and a woman's right to choose. As noted above, previous research (Weatherly, 2010) has demonstrated differences in levels of discounting as a function of political party affiliation. In that study, however, Democrats displayed significantly more discounting than Republicans. In the present study, in both instances where significant effects were observed, Republicans displayed more discounting than Democrats. Thus, the results support the conclusion that people from the different political parties discount differently and that the direction of the difference will likely vary as a function of the outcome that is being discounted.

Before drawing strong conclusions from the present study, it should be noted that it does have several limitations. For one, the respondents in the present study were college students from a particular university, which could have influenced the results in a variety of ways. One is age, which varied little across the present sample. There is no guarantee that middle-aged or elderly adults would hold the same opinions of the social-policy issues utilized in the present study as did our participants. Another is how familiar the participants were about the social policies presented to them. One could argue that, because of their youthfulness, the participants might be somewhat less informed about the issues than older

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adults would be. However, although that may be true, the fact that religiosity and/or political party affiliation were significant covariates on many issues suggests that participants were able to interpret the issues presented to them in the context of their own beliefs. Next, the present sample was racially homogeneous (i.e., 90% Caucasian). Because there may be variations in how individuals of different races value certain social policies, future research attempts would be well served by recruiting a more racially diverse sample of participants than used in the present study.

It is also the case that the present study investigated only five social-policy issues. Myriad other issues could have been used instead of, or in addition to, the ones we employed. Thus, we cannot conclude that, when individuals discount social policies, they will discount all of them in a similar way. But they may. It would certainly seem a worthwhile endeavor to attempt to find out.

The overarching goal of the present study was to demonstrate the usefulness of a delay-discounting framework in understanding how social policy may be valued. To this end, the present results demonstrate that such a technique can be extended to other commodities that have social relevance and that the data can potentially provide useful information as to how those commodities are valued. Whether they realize it or not, people who are interested in promoting certain social issues are attempting to change how citizens discount that particular issue, potentially altering how the citizens discount other issues as a result. Thus, knowing how people discount certain social issues relative to others, what factors are associated with the rate of discounting of a particular issue, and how the framing of the issue may influence how it is discounted would seem to have potential value for policy makers and researchers alike. For policy makers (and/or politicians running for election), understanding discounting of social issues could impact how one communicates with one's (potential) constituents. For researchers, one would predict that issues that are discounted differently would be dealt with differently by voters and/or policy makers. Thus, one could look at how quickly policies get created and/or passed. One would predict that passage of policies would be related to rates of discounting of the issues the policies address.

References

- Adamek, R. J. (1994). The polls—a review, public opinion and *Roe v. Wade*: Measurement difficulties. *Public Opinion Quarterly*, 58, 409-418.
- Allport, G.W., & Ross, J.M. (1967). Personal religious orientation and prejudice. *Journal of Personality and Social Psychology*, 5, 423-443.

- Beck, R.C., & Triplett, M.F. (2009). Test-retest reliability of a group-administered paper-pencil measure of delay discounting. *Experimental and Clinical Psychopharmacology*, 17, 345-355.
- Blendon, R. J., Benson, J. M., & Donelan, K. (1993). The public and the controversy over abortion. *Journal of the American Medical Association*, 270, 2871-2875.
- Calhoun-Brown, A. (1998). While marching to Zion: Otherworldliness and racial empowerment in the Black community. *Journal for the Scientific Study of Religion*, 37, 427-439.
- Cattell, R. B. (1966). The scree tests for the number of factors. *Multivariate Behavioral Research*, 1, 245-276.
- Chapman, G.B. (1996). Temporal discounting and utility for health and money. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 22, 771-791.
- Cook, E. A., Jelen, T. J., & Wilcox, C. (1993). Catholicism and abortion attitudes in the American states: A contextual analysis. *Journal for the Scientific Study of Religion*, 32, 223-230.
- Duriez, B., Luyten, P., Snauwaert, B., & Hutsebaut, D. (2002). The importance of religiosity and values in predicting political attitudes: Evidence for the continuing importance of religiosity in Flanders (Belgium). *Mental Health, Religion & Culture*, 5, 35-54.
- Glaser, J. (2005). Intergroup bias and inequity: Legitimizing beliefs and policy attitudes. *Social Justice Research*, 18, 257-282.
- Gorsuch, R.L. (1984). Measurement: The boom and bane of investigating religion. *American Psychologist*, 39, 228-236.
- Gorsuch, R.L. (1988). Psychology of religion. *Annual Review of Psychology*, 39, 201-221.
- Gorsuch, R.L., & McFarland, S. (1972). Single vs. multiple item scales for measuring religious values. *Journal for the Scientific Study of Religion*, 11, 53-64.
- Gorsuch, R.L., & McPherson, M.E. (1989). Intrinsic/extrinsic measurement: I/E-revised and single-item scales. *Journal for the Scientific Study of Religion*, 28, 348-354.
- Hardisty, D.J., & Weber, E.U. (2009). Discounting future green: Money versus the environment. *Journal of Experimental Psychology: General*, 138, 329-340.
- Hardisty, D.J., Johnson, E.J., & Weber, E.U. (2010). A dirty word or a dirty world? Attribute framing, political affiliation, and query theory. *Psychological Science*, 21, 86-92.

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- Kantor, J. R., & Smith, N. W. (1975). *The science of psychology: An interbehavioral survey*. Principia Press, Inc: Chicago, IL.
- Kirkpatrick, L.A. (1988). A psychometric analysis of the Allport-Ross and Feagin measures of intrinsic-extrinsic religious orientation. In D.O. Moberg and M.L. Lynn (Eds), *Research in the Social Scientific Study of Religion. Vol 1*, Greenwich, CT: JAI Press.
- Kirkpatrick, L.A. (1993). Fundamentalism, Christian orthodoxy, and intrinsic religious orientation as predictors of discriminatory attitudes. *Journal for the Scientific Study of Religion*, 32, 256-268.
- Madden, G.J., & Bickel, W.K. (Eds). (2010). *Impulsivity: The behavioral and neurological science of discounting*. Washington, D.C.: American Psychological Association.
- Mazur, J.E. (1987). An adjusting procedure for studying delayed reinforcement. In M.L. Commons, J.E. Mazur, J.A. Nevin, & H. Rachlin (Eds.), *Quantitative analyses of behavior: Vol. 5. The effect of delay and intervening events on reinforcement value* (p. 55-73). Hillsdale, N.J.: Erlbaum.
- McFarland, S.G. (1989). Religious orientations and the targets of discrimination. *Journal for the Scientific Study of Religion*, 28, 324-336.
- Michael, J. (1993). Establishing operations. *The Behavior Analyst*, 16, 191-206.
- Myerson, J., Green, L., & Warusawitharana, M. (2001). Area under the curve as a measure of discounting. *Journal of the Experimental Analysis of Behavior*, 76, 235-243.
- Petry, N.M., & Madden, G.J. (2010). Discounting and pathological gambling. In G.J. Madden and W.K. Bickel (Eds.), *Impulsivity: The behavioral and neurological science of discounting* (p. 273-294). Washington, D.C.: American Psychological Association.
- Rabinowitz, J. L., Sears, D. O., Sidanius, J., & Krosnick, J. A. (2009). Why do White Americans oppose race-targeted policies? Clarifying the impact of symbolic racism. *Political Psychology*, 30, 805-828.
- Rattner, A., Yagil, D., & Shermn-Segal, C. (2003). The sense of entitlement to violate the law: Legal disobedience as a public versus a private reaction. *Social Behavior and Personality*, 31, 545-556.
- Rotter, J.B. (1954). *Social learning and clinical psychology*. Englewood Cliffs, NJ: Prentice-Hall.
- Schneider, M. The difference a word makes: Responding to questions on 'disability' and 'difficulty' in South Africa (2009). *Disability and Rehabilitation*, 31, 42-50.
- Tabachnick, B. G., & Fidell, L. S. (2007). *Using multivariate statistics* (5th ed.). Boston: Pearson Education, Inc.

- Thaler, R.H. (1981). Some empirical evidence on dynamic inconsistency. *Economic Letters*, 8, 201-207.
- Thibodeau, P. H., & Boroditsky, L. (2011). Metaphors we think with: The role of metaphor in reasoning. *Plos One*, 6, 1-11.
- Tversky, A., & Kahneman, D. (1981). The framing of decisions and the psychology of choice. In D.A. Balota & E.J. Marsh (Eds.), *Cognitive psychology: Key readings* (p. 621-630). New York: Psychology Press.
- Weatherly, J.N. (2010). Delay discounting of different commodities varies as a function of political party affiliation in a college sample. *Behavior and Social Issues*, 19, 167-178.
- Weatherly, J.N., Derenne, A., & Terrell, H.K. (2010). College students discount money “won” more than money “owed.” *The Psychological Record*, 60, 463-472.
- Weatherly, J.N., & Plumm, K.M. (in press) Delay discounting as a function of intrinsic/extrinsic religiousness, religious fundamentalism, and regular church attendance. *Journal of General Psychology*.
- Weatherly, J.N., Plumm, K.M., & Derenne, A. (2011). Delay discounting and social-policy issues. *The Psychological Record*, 61, 527-546.
- Weatherly, J.N., & Terrell, H.K. (2011). Differences in delay discounting of some commodities as a function of church attendance. *Current Psychology*, 30, 258-267.
- Williams, J. (2010). Attention-deficit/hyperactivity disorder and discounting: Multiple minor traits and states. In G.J. Madden and W.K. Bickel (Eds.), *Impulsivity: The behavioral and neurological science of discounting* (p. 323-357). Washington, D.C.: American Psychological Association.
- Yi, R., Mitchell, S.H., & Bickel, W.K. (2010). Delay discounting and substance abuse-dependence. In G.J. Madden and W.K. Bickel (Eds.), *Impulsivity: The behavioral and neurological science of discounting* (p. 191-211). Washington, D.C.: American Psychological Association.

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Appendix

X time = 6 months, 1 year, 3 years, 5 years, or 10 years. Labels are for presentation purposes; they were not shown to participants.

Money (manipulation check; both groups)*

You have won \$100,000 but you need to wait *X time* before you can collect the money. What is the minimum percentage of the \$100,000 you would be willing to accept immediately rather than waiting *X time*?

100% (willing to wait) 95% 90% 85% 80% 75% 70% 65% 60% 55% 50%
45% 40% 35% 30% 25% 20% 15% 10% 5% 0% (I don't want the money)

Gay Marriage (Group A)*

Your state's governor says that s/he can guarantee passage of a comprehensive policy legalizing gay marriage in the state that includes 100% of the benefits (e.g., tax breaks, visitation rights, insurance coverage) enjoyed by married heterosexual couples. However, passage of that policy will take *X time*. What is the minimum percentage of the "complete" benefits package you would accept to have gay marriage legalized immediately rather than having to wait *X time*?

100% (willing to wait) 95% 90% 85% 80% 75% 70% 65% 60% 55% 50%
45% 40% 35% 30% 25% 20% 15% 10% 5% 0% (against gay marriage)

Same-Sex Marriage (Group B)

Your state's governor says that s/he can guarantee passage of a comprehensive policy legalizing same-sex marriages in the state that includes 100% of the benefits (e.g., tax breaks, visitation rights, insurance coverage) enjoyed by married opposite-sex couples. However, passage of that policy will take *X time*. What is the minimum percentage of the "complete" benefits package you would accept to have same-sex marriages legalized immediately rather than having to wait *X time*?

100% (willing to wait) 95% 90% 85% 80% 75% 70% 65% 60% 55% 50%
45% 40% 35% 30% 25% 20% 15% 10% 5% 0% (against same-sex marriage)

Affirmative Action (Group A)*

Your congressional representative says that Congress will be able to pass an Affirmative Action Bill that will level the playing field, in terms of wages, for people of all races, religions, sexual orientation, and gender. However, it will take *X time* before that bill will be passed. Your representative indicates that a less-than-perfect Affirmative Action Bill can be passed immediately. What minimum percentage of perfect would you be willing to accept to have the bill passed immediately rather than wait *X time*?

100% (willing to wait) 95% 90% 85% 80% 75% 70% 65% 60% 55% 50%
45% 40% 35% 30% 25% 20% 15% 10% 5% 0% (against Affirmative Action)

Equal Rights (Group B)

Your congressional representative says that Congress will be able to pass an Equal Rights Bill that will level the playing field, in terms of wages, for people of all races, religions, sexual orientation, and gender. However, it will take *X time* before that bill will be passed. Your representative indicates that a less-than-perfect Equal Rights Bill can be passed immediately. What minimum percentage of perfect would you be willing to accept to have the bill passed immediately rather than wait *X time*?

100% (willing to wait) 95% 90% 85% 80% 75% 70% 65% 60% 55% 50%
45% 40% 35% 30% 25% 20% 15% 10% 5% 0% (against Equal Rights)

Abortion (Group A)*

Legislation that would make abortion legal in 100% of the potential instances is making its way through Congress. Experts, however, believe that it will be *X time* before the bill becomes law. What is the minimum percentage of instances you would be willing to make abortion legal to get the legislation passed immediately rather than waiting *X time*?

100% (willing to wait) 95% 90% 85% 80% 75% 70% 65% 60% 55% 50%
45% 40% 35% 30% 25% 20% 15% 10% 5% 0% (against abortion)

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Right to Choose (Group B)

Legislation that would give women a right to choose to terminate their pregnancies in 100% of the potential instances is making its way through Congress. Experts, however, believe that it will be X time before the bill becomes law. What is the minimum percentage of instances you would be willing to give women the right to choose to terminate their pregnancies to get the legislation passed immediately rather than waiting X time?

100% (willing to wait) 95% 90% 85% 80% 75% 70% 65% 60% 55% 50%
45% 40% 35% 30% 25% 20% 15% 10% 5% 0% (against the right to choose)

Doctor-Assisted Suicide (Group A)

Congress is considering a bill that would allow terminally ill patients access to doctor-assisted suicide in all cases in which the patient requested it. However, members of one political party are threatening to delay passage of the bill by up to X times. A compromise bill can be passed immediately. What percentage of cases would you be willing to make doctor-assisted suicide legal to get the bill passed immediately?

100% (willing to wait) 95% 90% 85% 80% 75% 70% 65% 60% 55% 50%
45% 40% 35% 30% 25% 20% 15% 10% 5% 0% (against doctor-assisted suicide)

Right to Die (Group B)

Congress is considering a bill that would give terminally ill patients the right to die in all cases in which the patient requested it. However, members of one political party are threatening to delay passage of the bill by up to X time. A compromise bill can be passed immediately. What percentage of cases would you be willing to make the right to die legal to get the bill passed immediately?

100% (willing to wait) 95% 90% 85% 80% 75% 70% 65% 60% 55% 50%
45% 40% 35% 30% 25% 20% 15% 10% 5% 0% (against the right to die)

Creationism (Group A)

The local school board is considering adopting a district-wide policy that creationism be taught in 100% of the science classes. Several advocacy groups, however, are threatening to sue the school district and that could delay the implementation of the policy by *X time*. These groups are willing to let creationism be taught in a lesser percentage of science classes, which would allow the policy to begin immediately. What percentage of science classes would you be willing to have creationism taught to have the policy begin immediately?

100% (willing to wait) 95% 90% 85% 80% 75% 70% 65% 60% 55% 50%
45% 40% 35% 30% 25% 20% 15% 10% 5% 0% (against teaching
creationism)

Intelligent Design (Group B)

The local school board is considering adopting a district-wide policy that intelligent design be taught in 100% of the science classes. Several advocacy groups, however, are threatening to sue the school district and that could delay the implementation of the policy by *X time*. These groups are willing to let intelligent design be taught in a lesser percentage of science classes, which would allow the policy to begin immediately. What percentage of science classes would you be willing to have intelligent design taught to have the policy begin immediately?

100% (willing to wait) 95% 90% 85% 80% 75% 70% 65% 60% 55% 50%
45% 40% 35% 30% 25% 20% 15% 10% 5% 0% (against teaching intelligent
design)

* The wording of these questions was identical to those used in Weatherly, Plumm, & Derenne (2011).