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Patience as a Political Virtue: Delayed Gratification and Turnout

James H. Fowler · Cindy D. Kam

Abstract A number of scholars have demonstrated that voter turnout is influenced by the *costs* of processing information and going to the polls, and the policy *benefits* associated with the outcome of the election. However, no one has yet noted that the costs of voting are paid *on or before* Election Day, while policy benefits may not materialize until several days, months, or even years *later*. Since the costs of voting must be borne before the benefits are realized, people who are more patient should be more willing to vote. We use a ''choice game'' from experimental economics to estimate individual discount factors which are used to measure patience. We then show that patience significantly increases voter turnout.

Keywords Voter turnout · Discount factor · Patience · Delayed gratification

Patience as a Political Virtue: Delayed Gratification and Turnout

Does the aphorism, ''Patience is a virtue'' apply to political life? Is patience a political virtue? We argue that it is, and we show that patient citizens are more likely to participate in political life. Our account of patience as a political virtue contributes to the abundant literature that has sought to explain why citizens turn out to vote and participate in other activities (Campbell, Converse, Miller, & Stokes, 1960; Rosenstone & Hansen, 1993; Verba, Schlozman, & Brady, 1995; Wolfinger & Rosenstone, 1980). Several empirical studies suggest that voter turnout is influenced by the costs of processing information and going to the polls, and the policy benefits associated with the outcome of the election (Franklin & Grier, 1997; Hansen, Palfrey, & Rosenthal, 1987; Highton, 1997; Jackson, 2000; Kaempfer & Lowenberg, 1993; Knack 1997, 2001; Nagler, 1991). However, none of these studies considers the fact that the costs and benefits of turning out to vote are borne at different times. The costs of voting are paid *on or before* Election Day, while policy

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benefits may not materialize until several days, months, or even years *after* Election Day. If an individual must bear the costs of participation long before the benefits are received, then an individual's level of *patience* should also affect the decision to turn out. Patient individuals—that is, those who place greater value on the future benefits of participation—should be more likely to vote, while impatient individuals, who place greater value on the immediate costs of participation, should be less likely to vote.

This article provides an initial examination of the relationship between patience and turnout. To do so, we incorporate a technique from experimental economics, where subjects play a ''choice game'' (Coller & Williams, 1999; Harrison, Lau, & Williams, 2002; Harrison, Lau, Ruström, & Sullivan, 2004) in which they are asked to make a series of choices between a prize that will be awarded in 30 days and a larger prize that will be awarded in 60 days. The choices made reveal the degree to which subjects are willing to wait for future benefits and can be used to estimate how much they discount future payoffs. In other words, this procedure yields an innovative measure of the *patience* of each individual that does not require introspection or self-report.

We begin with a brief overview of our conceptualization of patience and why we think it should propel citizens to turn out to vote. We then review the meaning and measurement of patience in the literatures in psychology and economics, with special attention to laboratory-based research methodology. We conduct two analyses: first, we uncover the structural correlates of patience, as we have measured it. Second, we identify the relationship between patience and turnout. We find, indeed, that patience predicts turnout. We conclude with a discussion of the generalizability of our approach and its potential applications to other aspects of political life.

Patience and Political Life

Is patience a virtue that is relevant to political life? Normative theory suggests it may indeed be. In his discussion of liberal virtues, Galston (1988) characterizes patience as a virtue required by modern markets. Modern market economies require several virtues, among them ''the achievement of a mean between ascetic self-denial and untrammeled self-indulgence—call it a capacity for moderate delay of gratification; for while market economies rely on the liberation and multiplication of consumer desires, they cannot prosper in the long run without a certain level of saving, which rests on the ability to subordinate immediate gratification to longer-run self-interest'' (p. 1283). Additionally, liberal polities also require long-term time horizons: ''The greatest vices of popular governments are the propensity to gratify short-term desires at the expense of long-term interests'' (Galston, 1988, p. 1283).

What is the empirical link between patience and political life? Here, we pose the question of whether patience predicts a willingness to engage in political action, specifically, to turn out to vote. A wide range of empirical studies of voting has shown that turnout is influenced by the *costs* associated with making a decision and going to the polls and the *benefits* associated with the outcome of the election (Aldrich, 1993). For example, Verba, Schlozman, & Brady (1995) argue that socioeconomic status measures like education affect turnout because they influence the cost of obtaining and processing political information. Restrictive registration laws increase the cost of voting and thereby discourage turnout (Franklin & Grier, 1997; Highton, 1997; Knack, 1997, 2001; Nagler, 1991), while liberal absentee ballot laws and all-mail elections encourage it (Karp & Banducci, 2000; Oliver, 1996; Southwell & Burchett, 2000). Even rainfall on Election Day

has been shown to depress turnout among some voters (Knack, 1994). Although less well documented, benefits related to the election outcome also have an effect on turnout. For example, people are more likely to vote in ''high stakes'' elections that have larger policy effects (Hansen et al., 1987; Jackson, 2000; Wolfinger & Rosenstone, 1980) and when they think there is a larger difference in the policies offered by the competing parties (Kaempfer & Lowenberg, 1993).

An important oversight in this literature is that there is a time dimension to the costs and benefits of voting. While the costs of voting are paid *on or before* Election Day, any benefits related to the policy outcome are not obtained until *after* Election Day. In fact, it may take several years for an election result to yield the policy outcomes that motivated citizens to go to the polls. Given that present costs are being compared to future benefits, subjective time preferences may influence the decision to vote. Citizens who are patient might be willing to bear the immediate costs of voting because they place a high value on future policy benefits. In contrast, citizens who are impatient might place more weight on the costs of voting, which are felt immediately, and be less likely to gain utility from future policy benefits. Thus variation in patience may be an important factor in explaining individual turnout decisions.

The expressive benefits of voting and benefits related to fulfilling a social obligation may also invite patience to play a role in the turnout decision. If respondents experienced only immediate costs from the act of voting and immediate gains from the act of voting (for example, immediate social affirmation from wearing the ''I voted'' sticker), then patience would be irrelevant, since all voters could receive immediate benefits. However, the act of voting arguably taps *both* immediate *and* future-oriented expressive benefits. These future benefits might be understood, according to Riker and Ordeshook (1968), as supporting, in the long-term, the democratic form of governance. Patient citizens might therefore have a greater stake in using the vote as a means of affirming system support for the *future* stability of the regime. As Downs (1957) notes, a citizen might even throw his support behind a ''hopeless'' party ''in the belief that his support will enable it to grow and someday become a likely winner—thus giving him a wider range of selection in the future'' (p. 49). Patient citizens would be more likely to use the vote as a means of affirming allegiance to a party, again for the *future* benefit of the party. For these various reasons, we expect to see a relationship emerge between turnout and patience: for patience to be a political virtue that propels citizens to turn out.

We have found little in the political science literature to guide our conceptual understanding of patience, and no studies empirically test for a relationship between patience and political participation.[1] As a result, we have grounded our conceptualization and empirical approach in the existing literature on delayed gratifications, time orientations, and future time horizons from psychology and economics.

Following the existing approach in psychology and economics, we conceptualize patience as an individual-level disposition. Patience is a more or less stable propensity to react to situational demands with a willingness to defer immediate (or short-term) gratification for future rewards. Some individuals are more patient than others, and these individuals would be more likely to exhibit delayed gratification behaviors. Contextual conditions can also set

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[1] Renshon's (1977) piece deals explicitly with the concept of time horizons and political behavior, but the concept Renshon develops is very different from ours. Renshon analyzes individual's views about ''the propensity to expect or desire immediate rather than long-term rewards from the political system'' (p. 263). Instead of identifying an individual's generalized time horizon in willingness to wait for returns, Renshon focuses on an individual's beliefs about how quickly (or slowly) the *political system* should operate.

up incentives for individuals, even those who are not predisposed to delay gratification, to exhibit delayed gratification behaviors. Thus, delayed gratification behavior is determined by both individual-level dispositions (e.g., patience) and contextual inducements.[2] For our purposes, we are interested in the individual-level disposition, patience.

In the psychological literature, patience, delay behavior, and more generally, time preference, have been conceptualized as a psychological disposition—a more or less stable individual difference that influences how a person responds to situations that arise. The willingness to delay gratification has been ''an enduring focus'' of study within the field of personality psychology (Funder & Block, 1989, p. 1041). Variation in willingness to delay immediate gratification for the promise of future rewards appears among children as young as four years old and correlates with dispositions measured later in life (Funder, Block, & Block, 1983). A willingness to delay gratification has relevance for a wide range of behaviors, including drug addiction, educational attainment, savings and investment, and gambling (Funder et al., 1983; see Mischel, 1974 for a review).

Patience also plays a prominent role in the economics literature. As Becker and Mulligan (1997) note, ''Time preference plays a fundamental role in theories of savings and investment, economic growth, interest rate determination and asset pricing, addiction, and many other issues that are getting increasing attention from economists'' (p. 729). The economics literature, according to Becker and Mulligan, equates '''time preference' with the marginal rate of substitution between current and future consumption'' (p. 731).

Researchers have measured patience with both self-reports and with choice behaviors. Self-report scales require subjects to rate their own characteristics. Ray and Najman (1986) have compiled a 12-item self-report scale that has been used in studies of pathological gambling (Parke, Griffiths, & Irwing, 2004) and educational achievement (Bembenutty & Karebenick, 2004). Strathman, Gleicher, Boninger, and Edwards (1994) develop a Consideration of Future Consequences scale to measure the willingness to sacrifice immediate benefits (and absorb immediate costs) for future benefits. They argue that ''there are clear and reliable individual differences in the extent to which individuals are likely to consider distant outcomes in choosing their present behavior'' (p. 724). Strathman et al. (1994) further note that patience can be viewed as a continuum, anchored at one end by ''those individuals who consider future outcomes as a matter of course...They are willing to sacrifice immediate benefits like pleasure or convenience to achieve more desirable future states'' (p. 724) and anchored at the other by ''individuals who are not interested in considering possible future consequences. These individuals are more concerned with maximizing immediate benefits at the expense of costs or benefits that will not occur for some time, and they place a high priority on such immediate benefits'' (p. 724).

Self-reports, especially for questions that trigger social desirability concerns or that require individuals to introspect, may be less reliable and less valid indicators than other measures, such as those derived from behavioral observation (Berinsky, 2004; Kagan, 1988[3]; Mischel, 1974; Schwarz, 1999; Webb, Campbell, Schwartz, & Sechrest, 2000). As

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[2] As an example of the latter approach, Dubin and Kalsow (1996), discuss ''patience'' in the context of whether individuals will vote on ballot propositions. In their analysis, the length of the ballot propositions tries an individual's patience; ''the longer the description of the proposition, the more impatient the voter becomes, and the less support the proposition receives'' (p. 407). We conceptualize patience as an individual-level disposition, whereas Dubin and Kalsow (1996) view (im-) patience as induced by the political environment, the length of ballot propositions.

[3] ''A serious limitation of self-report information is that each person has only a limited awareness of his or her moods, motives, and bases for behavior, and it is not obvious that only conscious intentions and moods make up the main basis for variation (Wilson, Hull, & John 1981)'', cited in Kagan (1988, p. 617).

such, patience, or willingness to delay gratification, has also been measured with observation of behavioral choices. In psychological studies of children, for example, researchers have examined the extent to which subjects forego some prize that is immediately available in order to obtain a more desirable prize in the future (Mischel, 1974).

Economists have also used a similar choice-based approach to measure willingness to delay gratification. In these studies, subjects are presented with a series of choices between two payoffs, a smaller amount paid now and a larger amount paid later. Each choice yields information about how much a subject *discounts* future payoffs, which allows us to estimate the subject's *discount factor* (δ). For example, if a subject chooses $90 now instead of $100 later, we know that she values the earlier payment more than the later payment. This implies a subjective inequality for her discount factor: $90 > \delta 100$ or $\delta < 0.9$ for the period between the present and future payoff. If the same subject also chooses $100 later instead of $80 now for the same time period, then we know that $80 < \delta$ $100 and the discount factor must lie in the interval $0.8 < \delta < 0.9$. A series of choices with different values for the same time period allows us to identify the interval in which the discount factor falls for each subject. Those who more frequently choose the future payoff will have higher discount factors. Thus, there should be a positive relationship between the discount factor and patience (for a discussion, see Becker & Mulligan, 1997).

One potential wrinkle in the procedure for measuring patience is that discount factors may be hyperbolic, meaning that people tend to value the present much more strongly than other periods (Laibson, 1997). As a result, recent efforts by economists to elicit discount factors usually avoid choices with immediate payments and instead give subjects two future choices (Coller & Williams, 1999; Harrison et al., 2002). This work suggests that beyond the immediate present the discount factor is approximately constant—people make consistent choices when they are faced with similar future time intervals. For example, subjects make the same choices between a smaller payment in 30 days and a larger payment in 60 days as they do when they must choose between a smaller payment in 90 days and a larger payment in 120 days.

Research Design and Subject Profile

We took advantage of a laboratory setting to examine the relationship between patience and turnout. The laboratory setting enables us to implement a choice-based measure of patience, as yet unseen in political science, and it enables us to do so in an environment that allows for a high degree of anonymity. In May 2004, about 350 subjects were recruited from two introductory undergraduate political science courses to participate in a computer-based survey. Subjects were offered credit towards their course grade for their participation in the study, and 249 (about 70%) of them chose to participate. Of these, 235 were eligible to vote in the March 2004 California primary election. Each subject answered several standard socioeconomic and political attitude questions (exact question wording can be found in the appendix).[4]

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[4] Subjects ranged in age from 18 to 27 years, were evenly divided between women and men, and about 53% were minorities. This convenience sample is similar to the undergraduate body from which it is drawn (the undergraduate body is 56% female and 51% minority). The average subject leaned left and Democratic, placing herself at 3.57 on the seven-point liberal conservative scale and 3.27 on the seven-point party identification scale. Admittedly, we rely on a convenience sample of undergraduates for our study. We discuss the advantages and disadvantages of this sample in the conclusion.

Subjects were asked whether or not they voted in the March 2004 California primary, which included nominations for national and local offices and four widely publicized ballot measures related to the California budget crisis. Typical for a younger population, about 21% of those eligible say they voted, compared to 31% in the population as a whole. About 39% said they were very interested in the election campaign, but only 34% agreed that voting in elections is a duty.

At the end of the survey, each subject was informed that he or she was eligible to win a prize and then asked to make a series of choices between a $100 prize in 30 days or a larger prize in 60 days[5] (see the appendix for a full description). Following Harrison et al. (2002) both a dollar amount and an effective annual interest rate were displayed in order to help subjects think about their choices. At the conclusion of the survey a lottery was used to choose a single prize winner and another lottery to decide which set of alternatives determined the payoff. It should be noted that just like previous experiments using this method (Coller & Williams, 1999; Harrison et al., 2002), the expected value of the prize to each subject in this experiment is quite low (approximately $100/N \approx 0.40 to each subject). However, Camerer and Hogarth (1999) show that stake size has only a small effect on average behavior in experiments like these and the biggest effect of stakes on behavior is changing from zero to positive stakes. Coller and Williams (1999) specifically show that discount factors elicited with a single prize are significantly different from discount factors implied by hypothetical choices, suggesting that even a small prize incentive causes subjects to take their decisions seriously.

If subjects are consistent and make no mistakes, they should always choose the earlier payoff, always choose the later payoff, or switch from the earlier payoff to the later payoff at exactly one point during their series of choices. The point at which they switch indicates the interval of the implied discount factor. For example, a subject may choose the earlier $100 prize when the later prize is less than or equal to $104.25 and then switch to the later prize for all values greater than or equal to $106.44. If so, then the implied discount factor is estimated to fall somewhere between $100/$106.44 \approx 0.94$ and $100/$104.25 \approx 0.96$. About 82% of the subjects in the experiment made consistent decisions across all 20 choices, while 15% made only one 'mistake'. Inconsistent choices are dropped from the data as in Harrison et al. (2002) and Coller and Williams (1999), but none of the analysis changes significantly when the first observed choice of the larger prize, the last observed choice of the smaller prize, or multiple imputation is used to estimate the remaining discount factors.

Figure 1 shows the distribution of monthly discount factors implied by subjects' responses in this choice game.[6] For subjects who always choose the earlier or later prize, discount factors are set to the value implied by maximum and minimum values, respectively. All other values are set to the midpoints of the estimated intervals. Notice that there are modes at the endpoints, suggesting that several subjects were either willing to wait for *all* future prizes (the patient), or not willing to wait for any of them (the impatient). There

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[5] To be sure all students would be present at the time of the future awards, the survey was administered more than 60 days prior to the end of the quarter. Specific discount factors and the dollar amounts they imply for the future prize are taken directly from Harrison et al. (2002). This and other discount factor studies suggest that results are robust to different gradations of choices.

[6] Although these experimental discount factors may be high relative to those implied by *annual* market rates of interest, they fall within the wide range of discount factors estimated by other scholars in the literature (see Frederick, Loewenstein, & O'Donoghue, 2002 for a comprehensive review) and should still be useful for resolving whether or not people who prefer the earlier prize behave differently from people who prefer the later prize.
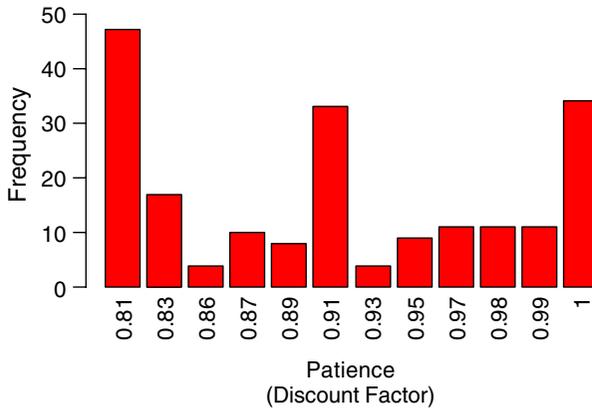
Fig. 1 Distribution of patience in the discount factor choice game

is another mode in the center where subjects chose the future prize once its value rose above $110. This is consistent with evidence from Harrison et al. (2004) showing that subjects sometimes focus on dollar values instead of rates of return and thus may be influenced by ''focal points'' in the dollar amount. The rest of the discount factor estimates span the distribution, ensuring a wide range of variation for evaluating the influence of patience on turnout.

Who Is Patient?

Before we test the hypothesis that patient individuals are more likely to vote, we analyze the structural correlates of patience, as we have measured it. Table 1 displays the pairwise correlations between patience and a number of factors that are widely thought to affect turnout, including socioeconomic status, political engagement, political efficacy, civic duty, and church attendance.

Consistent with earlier findings by Harrison et al. (2002) and Coller and Williams (1999), patience does not correlate significantly with any of our demographic or socio-economic status variables. However, we do observe two intriguing relationships. First, patience correlates positively with political interest, suggesting that individuals who are more oriented towards future rewards are more likely to pay attention to politics. Most campaign issues revolve around policies and political outcomes that will not have an immediate effect—it usually takes months to legislate such changes, years to implement them, and it may be even longer before typical voters notice a change in their own lives. Individuals who only care about the present thus may not pay attention to political campaigns because they prefer to pay attention to other events that are more likely to affect them immediately. Second, patience correlates positively with church attendance, consistent with other studies that indicate a link between patience and church attendance. For example, Iannaccone (1998) shows that those who believe in an afterlife are more likely to attend church, and Becker and Mulligan (1997, p. 741) argue that religious people have higher discount factors because they believe in an afterlife and thus have longer time horizons. Given that patience correlates with both political interest and church attendance, it will be important to include these variables as controls in our models of turnout to be sure that the relationship between patience and the decision to vote is not epiphenomenal.

Table 1 Individual-level variables and their correlations with patience

Variable	Correlation with patience	*p*-value
Turnout	0.15	0.04
Age	−0.01	0.88
Female	0.08	0.25
Nonwhite	−0.06	0.37
Parents' income	−0.01	0.86
Parents' education	−0.06	0.37
Strength of party ID	0.08	0.25
Political interest	0.20	0.00
Reads news	0.02	0.73
Watches news	0.00	0.99
Political information	0.03	0.71
External efficacy	−0.01	0.93
Internal efficacy	0.07	0.32
Civic duty	−0.12	0.08
Church attendance	0.20	0.00

Patience and Turnout

In Table 1, we see that there is a significant bivariate correlation between patience and turnout (0.15, $p = 0.04$). Examination of the raw data makes this relationship more concrete. Subjects who had higher than average discount factors ($\delta > 0.91$) turned out at a rate of 26% compared to 16% turnout for those with lower than average discount factors. Among subjects who always chose the earlier prize (the least patient), only 13% voted. Among subjects who always chose the later prize (the most patient), 20% voted. Voters also tended to be more patient, with significantly higher discount factors than nonvoters (two-sided *t*-test, $p = 0.02$). People who are more willing to wait for a larger prize in the choice game are more likely to vote, supporting the connection between patience and turnout.

To be sure this correlation is not the result of other confounding relationships, we present results from three logit models of turnout in Table 2. Model 1 is a simple bivariate regression of individual turnout on the discount factor measured in the study. The results confirm that the relationship between patience and turnout is positive and significant. In Models 2 and 3, we include a number of factors that are widely thought to affect turnout. In Model 2, we run the ''standard'' model of turnout, excluding patience, in order to provide a baseline for comparison between a standard model of turnout and one that includes these standard predictors along with patience. These standard predictors include socioeconomic status (SES), political engagement, political efficacy, civic duty, and church attendance. SES is included on the idea that individuals with higher SES are more likely to vote because their costs are lower (Verba et al., 1995; Wolfinger & Rosenstone, 1980). To capture SES, we include variables such as age, gender, and race, as well as subjects' reports of parental income and education, since parental characteristics are influential in the development of turnout behavior among young people (Plutzer, 2002). Interest in politics, the frequency of news reading or viewing, and the ability to answer basic questions about government indicate political engagement, which tends to correlate with turnout. Moreover, if individuals feel that they can understand political issues (internal efficacy) and their government responds to them (external efficacy), then they are more likely to go to the polls. Church attendance has also been found to be significantly related to turnout (e.g. Timpone, 1998). In particular, Verba et al. (1995) argue that church attendance is important because people acquire civic skills in religious organizations

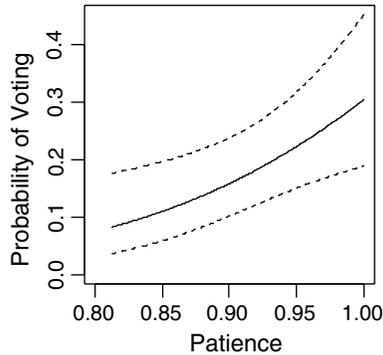**Table 2** Effect of patience and other variables on voter turnout

Variable	Dependent variable: Did subject vote?								
	Model 1			Model 2			Model 3		
	Coef.	S.E.	*p*-value	Coef.	S.E.	*p*-value	Coef.	S.E.	*p*-value
Patience	4.91	2.54	0.05				7.98	3.49	0.02
Age				0.27	0.14	0.06	0.29	0.14	0.05
Female				−0.76	0.51	0.13	−0.91	0.52	0.08
Nonwhite				−0.66	0.52	0.20	−0.61	0.54	0.26
Parents' income				0.21	0.15	0.16	0.21	0.15	0.17
Parents' education				−0.16	0.18	0.37	−0.14	0.18	0.45
Strength of party ID				0.15	0.28	0.60	0.14	0.28	0.63
Political interest				0.52	0.43	0.23	0.25	0.45	0.58
Reads the news				0.27	0.11	0.02	0.32	0.12	0.01
Watches the news				0.18	0.11	0.09	0.21	0.11	0.05
Political information				0.12	0.16	0.45	0.17	0.17	0.32
External efficacy				0.16	0.28	0.56	0.19	0.29	0.50
Internal efficacy				−0.03	0.18	0.88	−0.03	0.19	0.86
Civic duty				0.17	0.17	0.31	0.11	0.17	0.53
Church attendance				0.03	0.18	0.88	−0.04	0.18	0.82
Constant	−5.71	2.34	0.01	−11.18	3.52	0.00	−18.50	4.95	0.00
Deviance residual	198.7			143.7			138.1		
Null deviance	194.8			185.5			185.5		
N	186			170			170		

Note: Model estimated using GLM with logit link function

(writing letters, public speaking, and so on) that may make it easier for them to participate in politics. Finally, we include a variable for civic duty (Riker & Ordeshook, 1968) to control for the possibility that the feeling that voting is an obligation induces turnout. Details on coding, question wording, and sufficient statistics for all these controls can be found in the Appendix.

In Model 2, we see that turnout is positively influenced by age, parents' income, strength of party identification, political interest, media exposure, political information, external efficacy, civic duty, and church attendance. It is also related to race and gender, with males and whites being more likely to vote. While most of these results are only weakly significant, they are consistent with past studies that utilize much larger sample sizes to show small but significant relationships between these variables and turnout (Verba et al., 1995; Wolfinger & Rosenstone, 1980). We also note that many of these relationships are significant in simple bivariate correlations (see the appendix).

Since our goal is a strong test of the hypothesis that patience influences turnout, we retain all of these variables—including those that are not significant—in Model 3. Note that in spite of the small sample size and even with the addition of numerous controls, the coefficient on patience continues to be strong and significant. A χ^2 test confirms that adding patience to the model significantly improves model fit (deviance reduction of 5.6, $df = 1$, $p = 0.02$) and suggests that we should reject Model 2 in favor of Model 3. To make these results more concrete, Fig. 2 shows the predicted effect of patience on the probability of voting while holding race at nonwhite, gender at male, and all other values at their means. The least patient subjects vote at a rate of about 9% compared to 32% for the most patient subjects. These results suggest that subjective time preferences have an important effect on the decision to vote.

Fig. 2 Effect of patience on turnout
Note: Predicted turnout probabilities and 95% confidence intervals calculated from Model 3 in Table 2 by varying patience and holding race at nonwhite, gender at male, and all other values at their means

Conclusions

A number of scholars have demonstrated that individual decisions to vote depend on the costs of processing information and going to the polls, and the benefits associated with the outcome of the election. This article draws attention to the fact that the costs of turnout are borne on or before Election Day, while benefits related to the outcome of the election are not reaped until much later. As a consequence, patience should play an important role in the turnout decision. Patient citizens who are willing to wait for future benefits should be more likely to vote because they place a greater value on the impact of the election on future policy changes. Impatient citizens should be less likely to vote because they are more influenced by the immediate burdens of decision-making and physical participation.

Evidence from the laboratory supports this hypothesis. Subjects were given a series of choices between an earlier, smaller prize and a later, larger prize. Those who consistently chose the later prize were significantly more likely to vote than those who consistently chose the earlier prize. The statistical relationship between patience and turnout remains even when we control for numerous other factors thought to affect the decision to vote.

We argue that behavior in the choice game represents patience: the willingness to defer short-term gains in order to obtain larger long-term gains. However, we concede that it is entirely possible that alternative mechanisms could explain the empirical relationship between an individual's discount factor and an individual's likelihood of turning out to vote. Perhaps a third individual-level factor structures both choice behavior and turnout; possibilities include SES or intelligence. With our data we can be confident that SES is probably not the confounding variable, since we control for it in our analysis. We do not, however, have a measure of intelligence, so we cannot dispute this as an alternative explanation.

One might worry that these results are of limited value because they are based on the behavior of a group of college students who are neither representative of the population as a whole, nor representative of college students as a whole. College students, admittedly, represent a group of individuals who by virtue of matriculating into higher education have already engaged in ''one form of investment in future-oriented capital'' (Becker & Mulligan, 1997, p. 751). These individuals already possess some disposition for delayed gratification—a baseline level of patience, one might argue. As a consequence, variation in the underlying level of patience is likely to be smaller within our convenience sample, compared with what we might see using a more representative sample. This limited

variation makes for a more, not less, difficult test of our proposition. In fact, we do see effects attributable to our measure of patience, despite the likely truncation in the underlying construct. We might expect to see even larger effects manifested in a more representative sample, where we would capture wider variation in level of patience. We believe our results would still hold, and might be strengthened, if the study were replicated with a more representative sample.

We also note that the setting of our study is unique: it was a low salience, primary election. Conceptually, we believe that patience should predict electoral behavior across elections—be they national, subnational, general, or primary. However, the magnitude of the relationship between patience and turnout could vary with the salience of the election. One might imagine that highly publicized elections provide adequate gratification in the short-term for individuals such that the effect of patience could be crowded out in these elections. As a consequence, patience might be more likely to propel individuals into political action when more immediate costs and benefits recede into the background. That is, patience might be more consequential in propelling individuals to the voting booths in lower salience elections compared with higher salience elections. To the extent that patience is systematically correlated with other demographics and dispositions of interest (e.g., education), it would in these circumstances accentuate systematic inequalities in who votes.

In this initial examination of patience as a political virtue, we have focused exclusively on the relationship between patience and turnout, and our evidence suggests the relationship is strong and substantial. Extensions to this research trajectory come readily to mind—patience might be linked with other acts of political participation, or the relationship between patience and political participation might be contingent upon the type of act; e.g., patient individuals might be more likely to engage in letter-writing than to join demonstrations. The concept of patience might also be relevant in considering citizens' views towards policy issues. To what extent are citizens willing to make sacrifices in the present-day in order to enact policies with long-run benefits? Variation in patience might be linked with policy priorities and the direction of policy preference. This possibility is directly relevant to contemporary issues, from the more mundane discussions about whether and to what extent citizens are willing to tolerate delays in airport security lines; to larger issues about Social Security and its long-run solvency; to discussions about the federal budget deficit; to tradeoffs that must be made between policies designed to provide employment opportunities in the short-run that might pose environmental consequences in the long-run. Our evidence so far suggests that patient citizens are more likely to turn out to vote, and it is easy to imagine that patience could pose even broader political consequences.

Appendix: Variable Description and Question Wording

The discount factor is based on behavior in the choice game. The game was described to subjects as follows: "Two prizes will be awarded in class at the conclusion of this study. If you are chosen to receive the second prize[7], your answers to the following series of

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[7] There was another prize related to a dictator game experiment that came earlier in the omnibus survey. Responses in the other experiment are not correlated with those made in the choice game.

questions will determine the amount of the award and the date of payment. You will be asked to choose the payment option that you would prefer in each of 20 different payoff alternatives. Note that each of the 20 payoff alternatives will pay $100 in 30 days (option A) or $100 + $x in 60 days (option B), where x differs under each payoff alternative. For each payoff alternative you will select the payment option (A or B) that you would prefer if you are chosen to receive the prize. When the study is completed, a random drawing will be held in class to choose which one of the 20 payoff alternatives will determine the prize and another random drawing will be held to determine the one person who will receive the second prize. When and how much the winner will be paid will be based on the payment option he or she chooses under the payoff alternative selected.

  "In the table of alternatives there is a column labeled ''Annual Interest Rate.'' This is the interest rate required on the initial balance of $100 (option A) that would yield the amount in option B, after accounting for the fact that interest is compounded daily on the initial balance. For comparison, most banks are currently paying 1%–2% interest on savings accounts or certificates of deposits. Most credit card companies are charging college students 12%–16% interest to borrow money. Thus, you have an opportunity to earn money at much higher rates of interest in this study. Below is the table of the payment options for the 20 different alternatives. For payoff alternative 1, would you prefer option A ($100 in 30 days) or option B ($100.17 in 60 days)?'' Subjects were asked to make choices over twenty sets of alternatives. Table A1 shows each set of alternatives as they were displayed to the subjects.

  Political information is the number of correct answers to the following 8 multiple choice and open answer questions. ''Which party currently has the most members in the House of Representatives in Washington?'' (Republican/Democrat) ''Which party currently has the most members in the Senate in Washington?'' (Republican/Democrat) ''Who has the final responsibility to decide if a law is constitutional or not?'' (President/Congress/Supreme

Appendix 1 Choices available to subjects

Payoff alternative	Payment option A (pays amount ($) below in 30 days)	Payment option B (pays amount ($) below in 60 days)	Annual interest rate (%)	Payment option preferred (choose A or B)
1	100.00	100.17	2.0	A B
2	100.00	100.25	3.0	A B
3	100.00	100.33	4.0	A B
4	100.00	100.42	5.0	A B
5	100.00	100.63	7.5	A B
6	100.00	100.84	10.0	A B
7	100.00	101.05	12.5	A B
8	100.00	101.26	15.0	A B
9	100.00	101.47	17.5	A B
10	100.00	101.68	20.0	A B
11	100.00	102.10	25.0	A B
12	100.00	102.96	35.0	A B
13	100.00	104.25	50.0	A B
14	100.00	106.44	75.0	A B
15	100.00	108.68	100.0	A B
16	100.00	110.96	125.0	A B
17	100.00	113.29	150.0	A B
18	100.00	115.66	175.0	A B
19	100.00	118.08	200.0	A B
20	100.00	123.07	250.0	A B

Appendix 2 Sufficient statistics

	Mean	S.D.	Min.	Max.
Vote	0.21	0.41	0	1
Patience	0.91	0.07	0.81	1
Age	19.77	1.62	17	27
Female	0.49	0.5	0	1
Nonwhite	0.53	0.5	0	1
Parents' income	5.73	2.19	1	8
Parents' education	4.23	1.59	1	7
Strength of party ID	2.99	0.84	1	4
Political interest	2.32	0.6	1	3
Reads news	2.89	2.24	0	7
Watches news	2.58	2.21	0	7
Political information	4.76	1.6	1	8
External efficacy	2.37	0.83	0	4
Internal efficacy	3.29	1.29	1	5
Civic duty	2.67	1.32	1	5
Church attendance	2.31	1.34	1	5

Court) ''Whose responsibility is it to nominate judges to the Federal Courts?'' (President/ Congress/Supreme Court) ''What is the job held by William Rehnquist?'' ''What is the job held by Tony Blair?'' ''What is the job held by John Ashcroft?'' ''What is the job held by Bill Frist?''

Reads the News and Watches the News were based on answers to these two questions: ''During the past week, about how many days did you read a daily newspaper (other than the CALIFORNIA AGGIE) or consult an online news source?'' and ''During the past week, about how many days did you watch a national network news program on television?''

Parents' Income is the answer to: ''Please choose the category that describes the total amount of INCOME earned in 2003 by your PARENTS or GUARDIANS. Consider all forms of income, including salaries, tips, interest and dividend payments, scholarship support, student loans, parental support, social security, alimony, and child support, and others.'' (1 = \$15,000 or under, 2 = \$15,001–\$25,000, 3 = \$25,001–\$35,000, 4 = \$35,001–\$50,000, 5 = \$50,001–\$65,000, 6 = \$65,001–\$80,000, 7 = \$80,001–\$100,000, 8 = over \$100,000). Parents' Education is the average for both parents on ''What was the highest level of education that your father [mother] (or male [female] guardian) completed?'' 1 = Less than high school, 2 = High school diploma, 3 = Vocational School, 4 = Attended College, 5 = Bachelor's, 6 = Graduate School.

For external efficacy, we follow Craig, Niemi, and Silver (1990) and Niemi, Craig, and Mattei (1991) by creating an index that sums responses from four questions: ''People like me don't have any say about what the government does'', ''I don't think public officials care much what people like me think'', ''How much do you feel that having elections makes the government pay attention to what the people think?'', and ''Over the years, how much attention do you feel the government pays to what the people think when it decides what to do?''. The first two questions are coded 0 = agree, 0.5 = neither, and 1 = disagree. The third and fourth questions are coded 1 = a good deal, 0.5 = some, and 0 = not much.

For the remaining variables, we follow the coding procedure in Timpone (1998) and the question wording used in the NES. Age is in number of years. Church attendance is an index of religious attendance, 1 = never/no religious preference, 2 = a few times a year,

Appendix 3 Pearson correlation matrix

	Vote	Patience	Age	Female	Nonwhite	Parents' income	Parents' education	Strength of party ID	Political interest	Reads news	Watches news	Political information	External efficacy	Internal efficacy	Civic duty
Patience	0.15*														
Age	0.16*	-0.01													
Female	0.01	0.08	0.08												
Nonwhite	-0.20*	-0.06	0.02	-0.12											
Parents' income	0.22*	-0.01	-0.04	0.11	-0.41										
Parents' education	0.09*	-0.06	-0.11	0.15	-0.39	0.54									
Strength of party ID	0.22*	0.08	0.00	-0.04	-0.09	0.18	0.10								
Political interest	0.25*	0.20	0.06	0.08	-0.26	0.23	0.23	0.20							
Reads news	0.26*	0.02	0.12	0.32	-0.14	0.15	0.11	0.09	0.32						
Watches news	0.24*	0.00	0.27	0.15	-0.05	0.19	0.05	0.18	0.19	0.34					
Political information	0.14*	0.03	0.06	0.37	-0.28	0.23	0.24	0.06	0.31	0.39	0.12				
External efficacy	0.09	-0.01	0.05	-0.08	-0.15	0.15	0.10	0.16	0.18	0.03	0.08	0.08			
Internal efficacy	0.08	0.07	0.03	0.18	-0.20	0.21	0.18	0.01	0.30	0.21	0.16	0.20	0.28		
Civic duty	-0.02	-0.12	0.09	-0.05	-0.02	-0.08	-0.01	-0.04	0.12	0.01	0.05	0.12	0.16	0.03	
Church attendance	-0.01	0.20	0.03	-0.08	0.13	-0.15	-0.13	0.03	-0.05	-0.01	0.15	-0.09	0.01	-0.05	-0.06

*$p < 0.05$ for correlations with turnout

3 = once or twice a month, 4 = almost every week, and 5 = every week. Internal efficacy is a binary response (0 = true, 1 = false) to the question ''Sometimes politics and government seem so complicated that a person like me can't really understand what's going on.'' Strength of party identification is coded 1 = independents and apoliticals, 2 = independents leaning towards a party, 3 = weak partisans, and 4 = strong partisans. Civic duty is coded 1 = agree strongly, 2 = agree somewhat, 3 = neither, 4 = disagree somewhat, and 5 = disagree strongly for ''If a person doesn't care how an election comes out he shouldn't vote in it.'' Female is 1 for female, 0 for male. Nonwhite is 1 for nonwhite, 0 for white. Interest in Politics is the answer to the question ''Some people don't pay much attention to political campaigns. How interested are you in the 2004 presidential election campaign?'' (1 = not much interested, 2 = somewhat interested, 3 = very much interested).

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