Public Choice **89**: 63–76, 1996.

If people vote because they like to, then why do so many of them lie?*

W.T. HARBAUGH
Department of Economics, University of Wisconsin, Madison, WI 53706

Accepted 13 October 1994

Abstract. Of those eligible, about 40% do not vote in presidential elections. When asked, about a quarter of those nonvoters will lie to the survey takers and claim that they did. Increases in education are associated with higher voting rates and lower rates of lying overall, but with increased rates of lying conditional on not voting. This paper proposes a model of voter turnout in which people who claim to vote get praise from other citizens. Those who lie must bear the cost of lying. The model has a stable equilibrium with positive rates of voting, honest non-voting, and lying. Reasonable parameter changes produce changes in these proportions in the same direction as the changes actually observed across education levels. I argue that a model where people vote because they want to be known as voters provides a better explanation for observed voting behavior than does a model where people vote because they want to vote.

1. Introduction

People have three choices when it comes to voting participation. They can vote, they can not vote and then admit to others that they did not vote, or they can not vote and then claim that they did.[1] Of those eligible, about 60 percent vote in presidential elections. About 30 percent do not vote and then admit that to the survey taker. About 10 percent do not vote and then lie, claiming that they did. The frequency of voting increases as education increases, and the frequency of lying decreases. The frequency of lying conditional on not voting, however, increases with education.[2] These are the basic facts of voting behavior. In this paper I develop a model in which people vote and lie for the same reason; to get praise. I show that this model can explain these basic facts, and I argue that this new model provides a more complete explanation of voting behavior than do existing models.

The usual rational choice model of voting is a variant of models of the voluntary private provision of public goods. Since the probability of any one person's vote affecting the outcome of an election approaches zero as the size of

*I thank Jay Coggins, Rick Harbaugh, Ron Johnson, Kate Krause and Doug Young for their help with this paper.

the voting population increases, the expected benefits to an individual from casting a vote vanish in reasonably large populations. On the other hand, there are non-zero costs to individuals of registering, deciding between candidates, and voting. Therefore self-interested people should not vote. The conflict between this conclusion and the fact that many people do vote is the "Paradox of Voting." This paradox is resolved either by proposing a taste for voting, as in Riker and Ordeshook (1968), or by arguing that individuals vote despite the small expected payoff, as in the minimax-regret model of Ferejohn and Fiorina (1974).

A taste for voting would obviously explain why people vote. It might also explain the increase in voting among the more educated, if education tends to instill social responsibility, thereby increasing the taste for voting (Ashenfelter and Kelly, 1975, for example). A taste for voting, however, is an ad hoc assumption and is subject to the usual criticisms of such assumptions. A taste for voting also does not explain the fact that many people lie and claim they voted when in fact they did not. The literature that addresses lying has focused on the fact that less educated people are more likely to lie, and has attributed this to a desire among less educated people to impress the survey taker (Abramson, Aldrich, and Rohde, 1983, cited in Silver, Anderson, and Abramson, 1986). Silver, Anderson, and Abramson (1986) note the increase in lying conditional on not voting, at high educational levels and challenge that view. They attribute the conditional increase in lying to the existence of a social norm in favor of voting, a norm which increases with education. They believe that, having decided not to vote, more educated people are more hesitant to admit to have broken that norm. Their paper is empirical and does not formally model such a norm.

In the minimax-regret model people vote because they want to minimize the chance of a bad outcome, namely the chance that the candidate they do not favor wins. They want to do this even though the bad outcome is not bad enough to raise the expected loss above the expected cost of voting. Again, this can explain voting behavior, but not lying. Again, this assumption is ad hoc: we do not generally use minimax-regret to explain behavior. This model has other problems as well, which are elaborated on in Mueller (1989) and Aldrich (1993). Both of these authors prefer the taste for voting model.

In this paper I develop a new model of voting participation. The implications of this model, in contrast to those of the taste for voting model, are consistent with both actual voting behavior and with lying about voting, and also with the ways in which these behaviors change with changes in education. While this model does not rely on the existence of a taste for voting, neither does it exclude it.

The following section describes the model and the derivation of equilibria for a single educational level. This is followed by three scenarios with differing assumptions about how the model's parameters might change with increases in education, and then by a conclusion.

2. The model

The model starts with the premise that the benefits of voting are a public good. To encourage private provision of this good, society rewards voters with praise. Evidence of this can be seen in non-partisan campaigns to get out the vote, which typically emphasize duty as a citizen and responsibility to the community. Similarly, voters are often given pins to wear, saying something to the effect of "I Voted." People are assumed to have a taste for praise, a taste that varies across individuals.

Along with this taste for praise people have a distaste for lying, which also varies across individuals. Some people are not at all bothered by telling a lie, others feel quite guilty.[3] This heterogeneity is consistent with recent results from a panel of voters, which found that people who lied about one election were more likely to lie about the next (Presser and Traugott, 1992). The fact that individuals tend to lie consistently about different events suggests that this behavior is not random.

The model has two parameters in addition to those describing the above distribution of tastes, capturing the cost of voting and the number of reports about behavior that a person makes. For simplicity, I assume that these are the same for all people with the same education level, and that the number of reports that a person makes about their behavior is constant. The situation I envision is one where people have a circle of friends with whom they talk politics.

People choose among the three options vote (V), don't vote and honestly report (H), or don't vote and lie (L), with the object of maximizing their net benefits. Lies are only successful in eliciting praise to the extent that they are believed. People do not know whether an individual is lying, but they do have information about the proportion of people with given observable characteristics who actually vote. In this model people use that information to weigh the credibility of a claim to be a voter, and potential voters and liars know others will do this. This is incorporated by discounting the praise that an individual gets from a claim to be a voter by the proportion of people that actually vote.[4]

I assume that people are consistent in their reports. An alternative assumption would be that they honestly report they did not vote to some people while lying to others. It is well known, however, that telling the same story to everyone makes it much easier to keep lies straight. I therefore assume that the cost of inconsistent reporting is prohibitive. The empirical evidence supports this; the presence of other family members during the survey interview does not have a consistent effect on reporting (Silver, Abramson, and Anderson, 1986, and Miller, 1988).

The mathematical development of the model starts by defining the distribution of citizens as $f_j = f_j(p,l)$, where j indexes the education level, p gives the taste for praise, and l gives the cost of lying.

Within a given educational category, each individual then faces the following net benefits for each possible choice.

$$\text{Net benefits to V: } (n_v/n)p_i r - t \tag{1}$$

$$\text{Net benefits to H: } 0 \tag{2}$$

$$\text{Net benefits to L: } (n_v/n)p_i r - rl_i. \tag{3}$$

The subscript i indexes individuals, n_v is the number choosing to vote, n_l the number choosing to lie, n_h the number honestly reporting not voting, n the number eligible to vote in the population, p_i gives the taste for praise, r the number of reports that a person makes about their choice, t the cost of voting, and l_i gives the distaste for lying.

This paper uses the Nash equilibrium concept. Each individual chooses the alternative that maximizes his net benefits, given the choices of others. In this model the choices of others show up through the n_v/n term. For n_v/n to define an equilibrium, it therefore must be the case that, at that level of n_v/n, n_v/n proportion of people maximize their net benefits by choosing to vote. The conditions under which citizens will pick each of the three choices are represented by equations 4 through 6, which give the requirement that the net benefits from a choice exceed those of each alternate choice.

$$\text{V if: } (n_v/n)p_i r - t >= 0 \text{ and } (n_v/n)p_i r - t >= (n_v/n)p_i r - l_i r. \tag{4}$$

$$\text{H if: } 0 > (n_v/n)p_i r - t \text{ and } 0 > (n_v/n)p_i r - l_i r. \tag{5}$$

$$\text{L if: } (n_v/n)p_i r - l_i r > (n_v/n)p_i r - t \text{ and } (n_v/n)p_i r - l_i r > 0. \tag{6}$$

These can be simplified to

$$\text{V if: } p_i >= (t/r)\,[1/(n_v/n)] \text{ and } l_i >= t/r. \tag{4a}$$

$$\text{H if: } p_i < (t/r)\,[1/(n_v/n)] \text{ and } l_i > (n_v/n)p_i \tag{5a}$$

$$\text{L if: } l_i < (n_v/n)p_i \text{ and } l_i < t/r. \tag{6a}$$

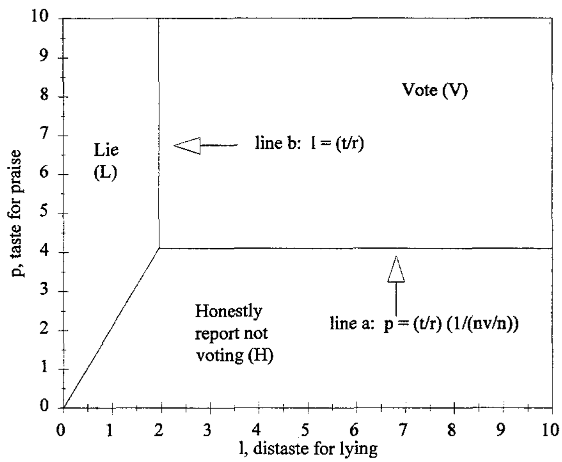

Figure 1. Optimal choices.

These equations can be interpreted as defining boundaries that divide the distribution of citizens according to their optimal choices. The boundaries are shown in Figure 1, given the assumption that l_i and p_i are distributed over the area shown. Specifically, the boundaries of the V region are determined by part one of equation 4a, represented by line a in the figure, and by part two, represented by line b. V is the best choice for all those with values of p_i and l_i that lie within that region. The boundaries of the other areas are determined in a similar fashion. Note that the boundaries can change according to the parameters t and r and the ratio n_v/n.

Changes in n_v/n do not change the vote / lie decision, because n_v/n shows up identically in the benefits to each of those actions. Line b, therefore, does not change with changes in n_v/n. Line a does change, because increases in the proportion of voters cause increases in the credibility of a claim to be a voter. With an increase in n_v/n, for example, people who preferred not to vote before will get enough praise from voting that they decide to vote. Graphically, line a shifts down, increasing the area of V and the proportion of voters. A Nash equilibrium occurs when the proportion of people in area V equals n_v/n.

I now parameterize and solve the model, with arbitrary values and distributions. My objective is to develop intuition and to show that the observed facts can be explained by a reasonable specification of this model, not to claim that these particular parameters are correct. Since I will investigate the effect of education on the model in the next section these first results should be thought of as applying to the low education group. I assume that l_i and p_i are independently and uniformly distributed from 0 to 10, that $t = 39$, and $r = 20$. The optimal choices of individuals are then as shown in Figure 1. With this uniform distribution the areas of Figure 1 can now be directly interpreted as numbers

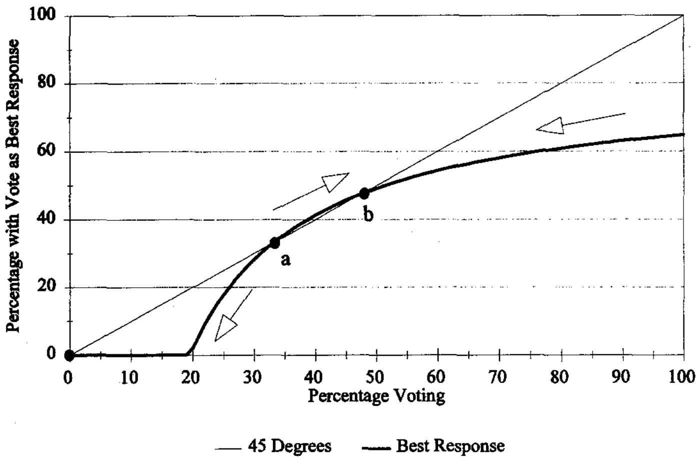

Figure 2a. Best response (low education baseline).

of people. When divided by the total area, they can be interpreted as proportions. The proportion of people with Vote as their optimal choice is therefore given by the proportion of the total area that is in V, or by

$$\max \{0, [l_u - t/r] [p_u - (t/r) (1/(n_v/n))] / (l_u - l_l) (p_u - p_l)\}, \qquad (7)$$

where p_u and l_u are the respective upper bounds for p and l, here both equal to 10, and p_l and l_l are the lower bounds, here equal to zero.

The function is plotted in Figure 2a. The Nash equilibria are those points where the function intersects the 45 degree line. At those points the fraction of people choosing Vote as their best option equals n_v/n. As can be seen in Figure 2a, there may be multiple Nash equilibria. One equilibrium is always at the origin. When no one votes, a claim to be a voter has no credibility, so people get no praise from voting or from lying. Everyone will choose not to vote. This is a stable equilibrium.[5] Another equilibrium is at point a. When citizens believe that 33 percent of the people are voting, the best response of 33 percent is to vote. This equilibrium, however, is unstable in a dynamic sense. A slight deviation, perhaps caused by a mistake in optimization by some person, will cause the equilibrium to collapse. Only the origin and point b are stable equilibria.

The nonzero equilibria can also be obtained algebraically. Setting the second part of equation 7 equal to n_v/n and solving the resulting quadratic equation gives

$$n_v^*/n = \{p_u r(l_u r - t) + \mathrm{Sqrt}\,[-4\,(l_u - l_l)\,(p_u - p_l)\,r^2(l_u r - t)t + p_u^2 r^2(t - (l_u r))^2]\,\}\,/\,2(l_u - l_l)\,(p_u - p_l)r^2. \quad (8)$$

(Subtracting the radical gives the unstable equilibrium.) This equilibrium result can then be used to calculate areas L and H from Figure 1. From these equilibrium results for the proportions of liars, n_l^*/n, and honest nonvoters, n_h^*/n, can be obtained. These equations are rather lengthy and in the following section I present simulation results in their place. Note that it is quite possible for there to be no nonzero equilibria. Such a case could result from, say, high costs of voting. Graphically, this would mean that the best response line is always below the 45 degree line, except at the origin.

3. Simulations

This section presents the stable Nash equilibria results for a variety of parameter values. The parameters are given in Table 1 and the results in Table 2. The first scenario makes the assumption that increases in education reduce the cost of voting. This is a common assertion in the empirical literature, (Mueller, 1989) and is based on the belief that more educated people have lower costs of gathering information and more flexible work arrangements, allowing time off for voting. Two caveats should be noted: higher educated workers presumably also have higher opportunity costs of time, and it is quite possible for more information to increase, not decrease, the difficulty of making a decision between two candidates.

In the second scenario the more educated people report their voting behavior to more people. This is consistent with the empirical evidence: more educated people report spending more time talking politics (Miller, 1988).

In the third scenario, increases in education are associated with an upward shift in the distribution of the taste characteristics.[6] This is consistent with two of the standard explanations of what education does. One common argument is that education acts as social conditioning, training people to act as good group members. Clearly one way to do this is to make them more responsive to group desires and less likely to lie. Another argument is that education acts as a signalling device to employers: only those with certain desirable characteristics are willing to undergo education (Spence, 1974). This literature emphasizes education as a signal of work ability, but a similar argument could be made about the willingness to undergo education as a signal of ability to get along in a group. I consider three alternative forms that a shift in tastes might take. These are an increase in both the taste for praise and the distaste for lying, an increase in only the taste for praise, and an increase in only the distaste for lying.

Table 1. Parameter values for the simulations

Scenario	t	l_l	l_u	p_l	l_u	r
Low education:	39	0	10	0	10	20
High ed.: Low t	33	0	10	0	10	20
High r	39	0	10	0	10	25
High l and p	39	0.5	10.5	0.5	10.5	20
High l	39	0.5	10.5	0	10	20
High p	39	0	10	0.5	10.5	20

Table 2. Simulation results

Scenario	n_v^*/n	n_l^*/n	n_h^*/n	Lying conditional on not voting
Low education:	47	15	37	29
High ed.: Low t	61	14	25	36
High r	64	14	23	38
High l and p	64	13	24	35
High l	55	12	33	28
High p	57	17	26	39

All numbers are percentages and are rounded.

The first result in Table 2 is for the low education group and is the basis for comparisons. For this group 47% of the people vote, 15% lie, 37% are honest about not voting, and of the nonvoters 29% lie. I present the three basic scenarios described above as changes from the parameters and results given for the low education result. The objective of these simulations is to investigate the circumstances under which the model can replicate the observed increase in voting, decrease in lying, and increase in lying conditional on not voting.

In the "low t" scenario, the effect of education is assumed to be a reduction in the cost of voting. As can be seen in Table 2, the effect of this change is qualitatively the same as that found in the data. The proportion of voters increases, the proportion of liars decreases, while the proportion lying conditional on not voting increases. The effect of this decrease in t on the best response function is shown in Figure 2b, and the corresponding changes in the equilibrium proportions of the choices are illustrated in Figure 3.

In the "High r" scenario, the only difference from the base scenario is an increase in the numbers of reports about voting behavior made to others.

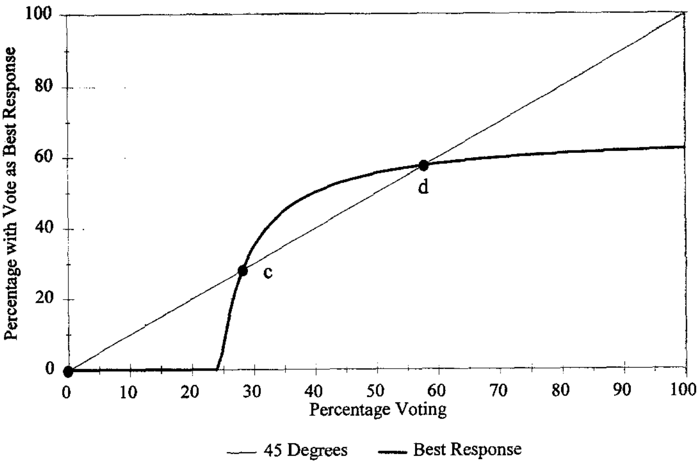

Figure 2b. Best response (high education, Low t).

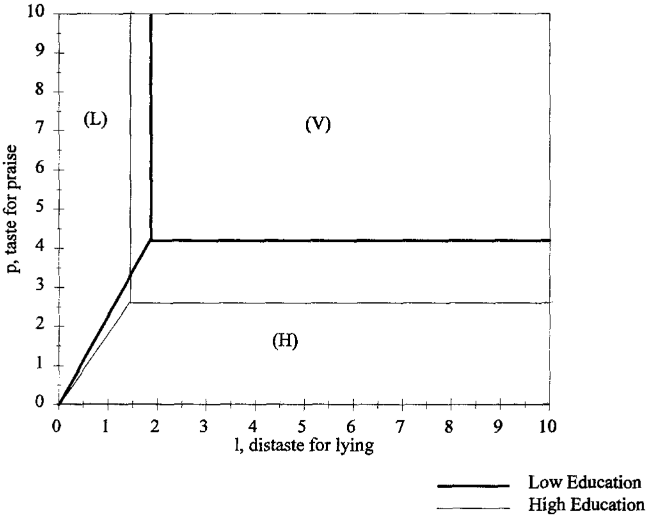

Figure 3. Changes in optimal choices.

Again, this change produces changes that, qualitatively, match what is found in the data.

The intuition for these results is straightforward. When the cost of voting is lowered, as the benefit increased, more people find voting to be their best option. Then, as more people vote, others assess a claim to be a voter to be more believable. The benefits to voting, and so the proportion of voters, increase still more. This increased proportion of voters makes lying more believable. The increase in liars which then occurs counterbalances the initial increase in voters, providing an equilibrium. In addition, it increases the conditional proportion of liars, because n_v/n shows up in the benefits to lying, but not in the benefits to being honest. Among those not voting, a larger share now find the benefits from lying to exceed those from being honest. An increase in r, the number of voting reports made, has a similar effect.

The first of the three alternative characterizations of the effect of education on tastes assumes an upward shift in the distribution with respect to both the taste for voting and the distaste for lying. (''High p and l'' in the tables). This scenario gives results similar to the first two and, again, to the data. Under the ''High l'' scenario, only the distribution of the distaste for lying is increased. This produces an increase in the voting proportion and a decrease in lying, but actually lowers the conditional proportion of liars. Under the ''High p'' scenario, only the distribution of the taste for praise is increased. With this change, the proportion of votes increases, the conditional proportion of liars increases, but so does the raw proportion of liars.

The intuition for the first of these effects is like that for the changes in t and r discussed above. The changes increase the proportion of people in the upper right hand part of Figure 1, or those with V as their best choice. The subsequent effects are just as above. For the ''High l'' scenario, the increase is only in the distaste for lying. The initial effect is an increase in the proportion of people in the V and H regions. The increase in H is reduced by increased rewards to lying as n_v/n increases. Because there are more people in the H region, the conditional proportion of liars actually falls. For the ''High p'' scenario, the shift up increases the size of the V and L regions, those choices that earn praise, at the expense of the H region. The conditional probability does increase, but the decrease in the proportion of liars that is found in the data of course does not occur, because the shift in the distribution has increased the taste for praise and not the distaste for lying.

4. Conclusion

In this paper I have argued that the facts of voting behavior are better explained by a model where people vote because they want to be known as voters than by the usual model, where people vote because they want to vote. In equilibrium, some people vote because they like praise and aren't willing to lie to get it. Some lie because they like praise and don't mind telling a lie. Some are honest nonvoters, because the gain from the praise is not enough to outweigh either the cost of voting or the loss from the lie. I have shown that a model based on these assumptions can explain the basic facts about people's choices to vote, to not vote and be honest, or to not vote and lie.

This model is preferable to the taste for voting models for several reasons. First, the model accounts for both voting and lying, not just voting. Second, the model can explain the qualitative changes in the frequencies of voting, lying, and lying conditional on not voting that occur with increases with education. These are rather subtle facts, and the fact that this model explains them supports its validity as an explanation of why people vote. Third, the assumptions that the model makes about tastes and distastes are not ad hoc, rather they are consistent with commonly held beliefs about human behavior upon which we all rely every day.

Nothing in the model precludes the existence of a taste for voting.[7] Although I present the model as if the distaste for lying is internal, it could arise from the consequences of being found out. In such a case the increase in distaste for lying that I attribute to education might instead come from a higher likelihood of being caught, perhaps because acquaintances are more likely to be volunteering at the polls. Another interpretation might be that people in white-collar jobs may derive more benefit from a reputation for truth-telling, and so have more to lose from being caught in a lie.

This model can explain the effectiveness of campaigns to "get out the vote." Free rides to the polls and stickers passed out at the polls increase the number of times a person reports their actions. They are particularly effective because the verifiable reports they provide are not discounted by n_v/n.

This model is a simple one. It could be extended by allowing the taste for praise and the distaste for lying to be nonlinear, and by allowing the tastes to be distributed non-uniformly. Comparative static results derived under these conditions would show the extent to which the above results can be generalized.

Notes

1. Only about one percent of respondents report they did not vote when in fact they did. I ignore this choice.
2. Miller (1988). Data on lying is obtained by comparing self-reported behavior with records kept by election officials. This process is not completely reliable: when the records are poorly kept it is not certain if all those for whom records cannot be found are actually non-voters. Of the 175 people counted as liars, 91 are reported by the survey as "Self report voted, voting record shows R(espondent) did not vote." Another 84 are coded as "Self-report voted, no registration record or voting record found for R." There are another 33 people who are listed as "Self-report voted, office refused; no voting records available, voted out of area." I omit this last group from my calculations.
3. An alternative characterization would be that people vary in the ability to lie convincingly. Frank (1988) cites evidence that this is so. It is also possible that the costs of lying are external, perhaps if there is some risk to being caught, and then marked as a liar. This stigma may be more expensive for some people, such as those whose businesses depend on a reputation of honesty, than others. Such alternatives would require slight changes in the interpretation of the model, but not in its structure.

4. An alternative assumption would be that praise is discounted by the proportion of those *claiming* to vote that actually do vote. Since people observe the number of people who claim to vote, and are assumed to know the number of people voting, they can calculate this conditional proportion. I develop such a model in the appendix. The results are qualitatively identical to those of this model, but the interpretation is far less intuitive. I thank Doug Young for this point.
5. This equilibrium could potentially be excluded by arguing that, with no one voting, the outcome of the election is now in the hands of anyone who chooses to vote. So long as the potential benefits from a particular outcome exceed the costs for even a single voter, this equilibrium can be discarded. Note, however, that I am not explicitly modelling these benefits in this model, and if I were the possibility of another equilibrium *near* zero arises. In any case, it is not really necessary to exclude zero as a potential equilibrium point, it could be argued that such equilibria do occur in reality.
6. The model that I solve uses uniform distributions, and this shift consists of an equal increase in the upper and lower bounds.
7. A taste for voting would have the same effect on this model as reducing the cost of voting. The result of reducing the cost of voting is given in the simulations.

References

Abramson, P.R., Aldrich, J.H., and Rohde, D.W. (1983). Changes and continuity in the 1980 elections, rev. ed. Washington DC: *Congressional Quarterly Press.*

Aldrich, J.H. (1993). Rational choice and turnout. *American Journal of Political Science* 37: 246–278.

Ashenfelter, O., and Kelley Jr., S. (1975). Determinants of participation in presidential elections. *The Journal of Law and Economics* 18: 695–733.

Ferejohn, J.A., and Fiorina, M.P. (1974). The paradox of not voting: A decision theoretic analysis. *American Political Science Review* 68: 525–36.

Frank, R.H. (1988). *Passions within reason.* New York: Norton.

Miller, W.E., and the National Election Studies. (1988). *American national election study: Pre and post election survey.* Conducted by the Center for Political Studies of the Institute for Social Research, The University of Michigan. 2nd ICPSR ed. Ann Arbor, MI: Inter-University Consortium for Political and Social Research, 1989.

Mueller, D.C. (1989). *Public Choice II.* Cambridge: Cambridge University Press.

Presser, S., and Traugott, M. (1992). Little white lies and social science models. *Public Opinion Quarterly* 56: 77–86.

Riker, W.H. and Ordeshook, P.C. (1968). A theory of the calculus of voting. *American Political Science Review* 62: 25–42.

Silver, B.D., Abramson, P.A., and Anderson, B.A. (1986). The presence of others and overreporting of voting in American national elections. *Public Opinion Quarterly* 50: 228–239.

Silver, B.D., Anderson, B.A., and Abramson, P.A. (1986). Who overreports voting? *American Political Science Review* 80: 613–24.

Spence, A.M. (1974). *Market signalling.* Cambridge: Harvard University Press.

Appendix

In this appendix I calculate stable non-zero Nash equilibria under the assumption that claims to be a voter are discounted by $(n_v/(n_v + n_l)$, the proportion of those reporting voting who actually voted. In these formulae $b = n_v/(n_v + n_l)$. Equations A.1 through A.6a are analogous to equations 1 through 6a.

Net benefits to V: $bp_ir - t$ (A.1)

Net benefits to H: 0 (A.2)

Net benefits to L: $bp_ir - rl_i$ (A.3)

A.4 – A.6 give the conditions under which each choice is optimal.

V if: $bp_ir - t >= 0$ and $bp_ir - t >= bp_ir - l_ir$. (A.4)

H if: $0 > bp_ir - t$ and $0 > bp_ir - l_ir$. (A.5)

L if: $bp_ir - l_ir > bp_ir - t$ and $bp_ir - l_ir > 0$ (A.6)

These can be simplified to:

V if: $p_i >= (t/r)\ [1/b]$ and $l_i >= t/r$. (A.4a)

H if: $p_i < (t/r)\ [1/b]$ and $l_i > bp_i$ (A.5a)

L if: $l_i < bp_i$ and $l_i < t/r$ (A.6a)

Given the same uniform distribution assumption used above, the numbers of people in each group are given by the following formulas, which are simply the areas determined by the boundaries given in A.4a – A.6a.

$$n_v = [l_u - t/r)]\ [p_u - (1/b)\ (t/r)] \qquad (A.7)$$

$$n_l = [(t/r) - l_l]\ [p_u - (t/r)\ (l/b)] + (1/2)\ [(t/r)-l_l]\ [(t/r)\ (l/b) - p_l] \qquad (A.8)$$

$$n_h = [l_u - (t/r)]\ [(t/r)\ (l/b) - p_l] + (1/2)\ [(t/r) - l_l]\ [(t/r)\ (l/b) - p_l] \qquad (A.9)$$

Nash equilibria occur when n_v and n_l given in A.7 and A.8 are such that

$$n_v/(n_v + n_l) = b$$

Table A.1. Parameter values for the simulations, conditional probability model

Scenario	t	l_l	l_u	p_l	l_u	r
Low education:	50	0	10	0	10	20
High ed.: Low t	30	0	10	0	10	20
High r	50	0	10	0	10	30
High l and p	30	1	11	1	11	20
High l	30	1	11	0	10	20
High p	30	0	10	1	11	20

Table A.2. Simulation results, conditional probability model

Scenario	n_v^*/n	n_l^*/n	n_h^*/n	Lying conditional on not voting
Low education:	48	21	31	40
High ed.: Low t	70	14	17	45
High r	66	15	19	44
High l and p	68	14	18	42
High l	59	13	28	31
High p	56	22	22	50

All numbers are percentages and are rounded.

The graphical representation of these equilibria is virtually identical to that given in Figure 2a. The stable Nash equilibrium values for n_v, n_l, n_h, and n_l conditional on not voting van then be calculated from equations A.7 through A.9. Tables A.1 and A.2 provide the same information as Tables 1 and 2 above.

As can be seen, the results of this model are qualitatively similar to those of the previous model.