STIMULUS DIFFERENTIATION VERSUS STIMULUS COMPLEXITY AS FACTORS AFFECTING TURNOUT IN TWO-CANDIDATE AND MULTICANDIDATE RACES

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Rational incentives and psychological involvement are hypothetical alternative motives for voting participation. The relationship of these alternative motives to turnout is explored in the presidential elections held between 1952 and 1976. Rational incentives as such are not more productive of turnout than other stimuli to psychological involvement in the electoral situation.

Rational models of turnout feature perceptions of differences between alternatives as a *necessary* condition for participation. Leaving aside a discussion of the causal foundations of such perceptions and the particularities of the many rational choice models that have been explored [e.g., expected utility-maximizing models (Downs, 1957; Riker and Ordeshook, 1968, 1974; Fishbein and Coombs, 1971; McKelvey and Ordeshook, 1972), minimax regret models (Ferejohn and Fiorina, 1974, 1975; Grofman, 1979), and alienation and satisfaction models (Brody and Page, 1973; Weisberg and Grofman, 1981)], all these approaches share the basic notion that, ceteris paribus, rational-choice voters with greater *net differential affect* toward the candidates and/or parties—and thus greater expected utility from the vote—will show higher rates of participation than voters with less affective differentiation toward the objects of choice.

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A competing model of turnout is based on notions of psychological involvement in electoral politics. This model also emphasizes that affect toward choice stimuli is important in creating conditions which stimulate vote participation but places greater stress on the "rootedness" of the actor in the political system as a source of his political involvement, where "rootedness" can be measured in part by the *complexity* of the actor's political cognitions.

The central distinction between the two models has to do with affect toward the choice situation. In the family of rational models differential affection toward the objects of choice increases the utility of the choice situation—the greater the perceived difference between the objects of choice, the greater one's motive for choosing at all. In contrast, models featuring psychological involvement as the key independent variable hypothesize that, irrespective of the difference perceived between the objects of choice, those with a higher degree of psychological involvement will turnout in greater proportion than those with lower levels of involvement.

This paper will examine these competing explanations of the sources of turnout by looking simultaneously at cognitive differentiation (utility difference) and psychological involvement as factors affecting turnout. We begin by developing a measure of hierarchy reflecting the distinctiveness in relative utility terms of the alternatives perceived by the voter. From the same basic data we will also construct a simple measure of the complexity of a voter's turnout relevant cognitions. We will then proceed to examine the separate and joint relationship of these measures to rates of participation in the seven presidential elections from 1952 to 1976.[1]

The chief advantages of our approach over that of earlier work are that it (1) generalizes straightforwardly to the multiparty-multicandidate case; (2) permits simultaneous consideration of utility and complexity factors; and (3) enables us to examine the effect of additional candidates on turnout.

STIMULUS DIFFERENTIATIONS IN TERMS OF SUBJECTIVE UTILITY JUDGMENTS

Consider an election with candidates or parties 1, 2, 3, etc. For any individual voting in a single-member constituency or for an office such as President of the United States, we can imagine the fraction of cues predisposing him to vote for the candidate of party i, if party j (and its candidate) were the only rival i was being compared with. Let us denote such pairwise comparison of parties or candidates i and j as P_{ij}.[2] For each voter we posit that the likelihood he will vote rather than abstain is based on the extent to which he perceives a clear-cut choice among competing candidates or parties, i.e., the extent to which candidates are seen to differ in

their (subjective) utility. We posit that the clearer the choice the more likely is turnout. What we require is a measure of the extent to which voters possess clear stimulus (utility) differentiation, based on the P_{ij} values.

Landau (1951a,b, 1953) has developed a measure of hierarchy based on the probability of dominance in pairwise contests. This measure has been used by a number of authors including Bartos (1967) and Chase (1974). We may apply it to measure the extent to which voters have a clear-cut choice.

First, we must define a new variable V_i as follows:

$$V_i = \sum_{j \neq i} P_{ij} \tag{1}$$

As we have defined V_i, it is the expected number of parties to which the voter will prefer party i when considering all possible pairwise comparisons involving party i. Landau's hierarchy index H is given in the m-party or candidate case by

$$H = \frac{12}{(m^3 - m)} \sum_i [V_i - (m\text{-}1)/2]^2 \tag{2}$$

In the two-party case, expression (2) reduces to

$$H = 2 \sum_i (V_i - .5)^2 \tag{3}$$

In the three-party case, expression (2) reduces to

$$H = .5 \sum_{i=1}^{3} (V_i - 1)^2 \tag{4}$$

Landau's hierarchy index H is 1 if and only if the dominance structure is that of a linear hierarchy, i.e., $V_1 = m - 1$, $V_2 = m - 2$, etc. The hierarchy index is 0 if and only if the dominance structure is egalitarian, i.e., $V_i = V_j$ or all i, j, which in our case means indifference among all candidates or parties. Thus H ranges from 0 to 1. Note also that in the two-party case, since the expected value $E(V_i) = V_i = .5$, H is a linear function of the variance of V_i.

A look at some three-party examples will help clarify the reasonableness of H as a measure of the "clear-cutness" of utility differentiation in multialternative choices.

I	II	III
$P_{ik} = .8$	$P_{ik} = .9$	$P_{ik} = 1.0$
$P_{ij} = .7$	$P_{ij} = .8$	$P_{ij} = 1.0$
$P_{jk} = .6$	$P_{jk} = .7$	$P_{jk} = .5$
$P_{ki} = .2$	$P_{ki} = .1$	$P_{ki} = 0$
$P_{ji} = .3$	$P_{ji} = .2$	$P_{ji} = 0$
$P_{kj} = .4$	$P_{kj} = .3$	$P_{kj} = .5$

In our three-party example, for Case I,

$$H = \frac{[(.5)^2 + (.1)^2 + (.4)^2]}{2} = .21 \tag{5}$$

for Case II

$$\mathrm{H} = \frac{[(.7)^2 + (.1)^2 + (.6)^2]}{2} = .43 \tag{6}$$

Finally, for Case III,

$$H = \frac{[(1.0)^2 + (.5)^2 + (.5)^2]}{2} = .75 \tag{7}$$

For voters in the 1952, 1956, 1960, 1964, 1972, and 1976 elections we have used the voter's partisan attitudes toward Republican and Democratic candidates and the parties to define P_{ij}, V_i, and thus H. [See Note 2 for details of the operationalization, and Kelley and Mirer (1974) and Grofman and Mackelprang (1974) for similar applications.]

Hypothesis 1. The higher an individual's H value, the more probable is his voting rather than abstaining.

Table 1 shows the relationship between H and turnout for the seven presidential elections, with H treated as an ordinal polychotomous variable. Except for 1972, as predicted, the higher the H value, the higher the turnout. In Fig. 1, we have aggregated data for all seven elections and plotted percent turnout as a function of H; these seven-election averages are displayed against the background of the 95 percent confidence intervals around the means. Turnout increases monotonically with H.[3]

STIMULUS COMPLEXITY AND TURNOUT

As our measure of perceived stimulus complexity, we will use the total

TABLE 1. Hierarchy (Candidate Differentiation) and Self-Reported Turnout: Data from U.S. Presidential Elections 1952-1976[a]

	Level of Hierarchy, *H*						
Election	Low	2	3	4	High	Tau c	Gamma
1952	63.9	79.2	80.1	87.8	92.6	.22	.44
1956	59.0	69.2	76.4	78.1	86.3	.21	.32
1960	60.0	70.4	86.4	90.9	89.6	.26	.30
1964	68.5	66.7	78.8	83.0	88.1	.18	.32
1968	62.2	73.0	80.5	78.4	83.8	.14	.25
1972	70.7	71.4	74.0	83.1	70.7	.01	.02
1976	60.1	65.9	72.3	81.2	81.3	.19	.30

[a] Entries are percent reporting having voted. Levels of hierarchy are grouped in sample quintiles.

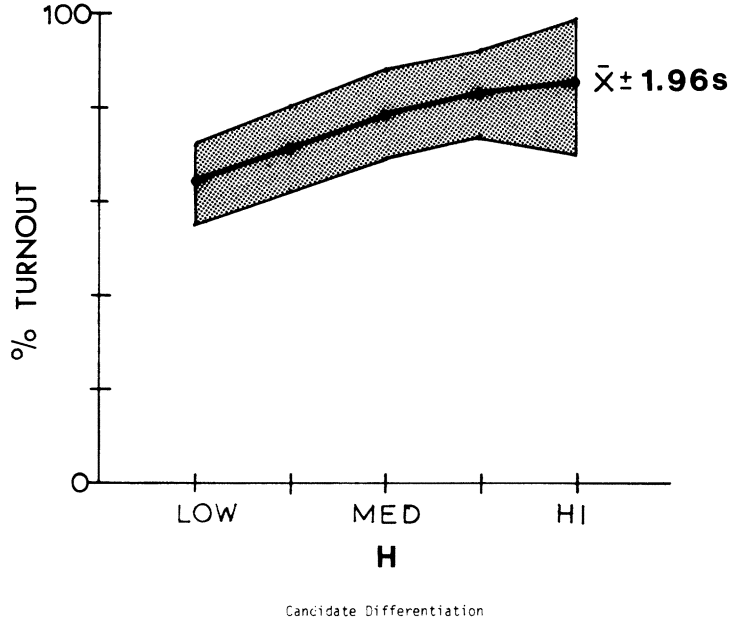

Fig. 1. Self-reported turnout as a function of hierarchy (candidate differention): combined data from U.S. presidential elections 1952-1976.

TABLE 2. Total Number of Responses to Open-Ended Party (Candidate Questions, *T*) and Self-Reported Turnout: Data from U.S. Presidential Elections 1952-1976[a]

	T											
Election	0	1	2	3	4	5	6	7	8	9	Tau c	Gamma
1952	25.9	38.3	52.8	53.8	73.8	67.3	68.8	77.4	84.5	90.1	.32	.48
1956	37.4	43.5	41.3	54.8	57.8	76.5	72.4	79.6	86.1	85.6	.32	.46
1960	39.1	47.5	54.7	74.1	75.0	77.5	75.8	86.7	88.9	94.8	.29	.49
1964	39.5	63.2	54.2	62.7	74.7	67.6	76.7	82.1	85.2	90.8	.23	.38
1968	40.7	50.0	56.1	51.2	55.4	56.3	69.4	70.5	79.8	87.9	.27	.44
1972	37.7	58.7	60.3	60.0	61.1	74.8	75.8	80.6	86.6	77.2	.23	.33
1976	34.9	55.8	50.9	56.7	67.9	66.9	70.2	80.0	79.5	90.9	.31	.43

[a] Entries are percent reporting having voted. *T* values 0 to 5 represent actual number of responses; $T = 6$ groups, 6 and 7 responses; $T = 7$ groups, 8–9 responses; $T = 8$ groups, 10–14 responses; and $T = 9$ groups, more than 14 responses.

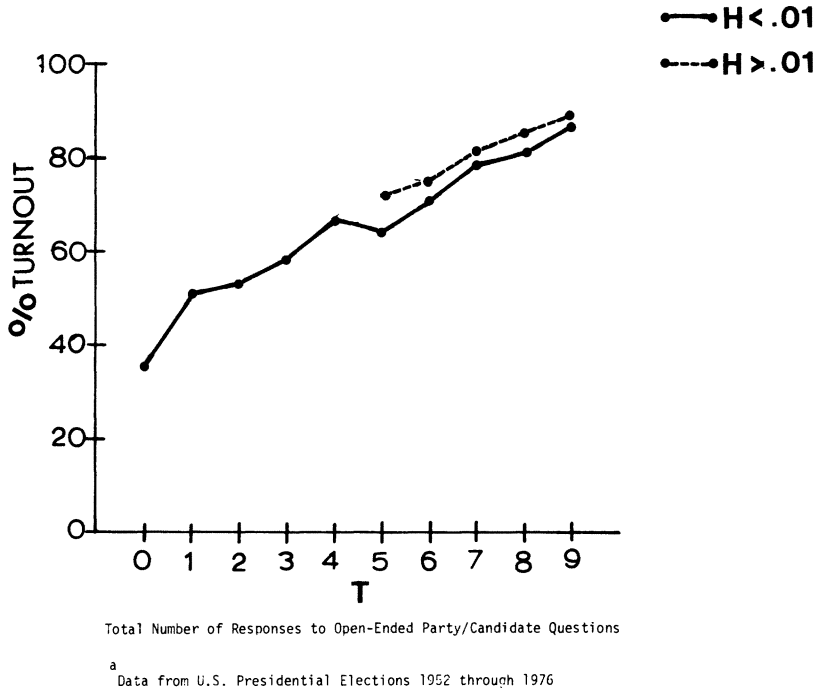

Fig. 2. Self-reported turnout as a function of complexity of voter perceptions (T), controlling for degree of candidate differentiation. Data from U.S. presidential elections 1952–1976.

number of responses *(T)* given to the open-ended like-dislike party-candidate probes. (See Note 2.)

Hypothesis 2. The higher an individual's T value, the more probable is his voting rather than abstaining.

Table 2 substantiates our expectation that turnout and perceived stimulus complexity are positively associated. In each of the seven elections, those who are, by our definition, more aware (i.e., have higher T values) are more likely to vote, and Hypothesis 2 is thus confirmed.

DIFFERENTIATION AND COMPLEXITY

We can compare the effects of candidate differentiation *(H)* on participation for voters with different levels of complexity *(T)*. Figure 2 displays average turnout percentages as a function of T for the 40% of the sample with a low level of differentiation ($H < .01$) among the parties and candi-

dates, and for the 60% of the sample that sees a clearer choice ($H \geq .01$). Even controlling for complexity of the voters' stimuli perceptions, those who see clearer differences are more likely to participate. However, the differences, though uniform, are small and statistically suspect.[4] Based on this comparison we are reluctant to argue that *differential* affect toward the parties and candidates *independently* stimulates participation, and we would certainly reject the claim that differential affect is a necessary condition for turnout.[5]

NOTES

1. The data utilized in this study were made available by the Inter-University Consortium for Political and Social Research. Neither the original collectors of the data nor the consortium bear any responsibility for the analyses or interpretations presented here.
2. When this measure is operationalized, we shall define P_{ij} (where, for example, i and j are the Democratic and Republican candidates) in terms of the *number* of positive and negative responses to the parties or candidates on the SRC open-ended party-candidate, like-dislike questions. To be specific, we take the number of positive responses to the Democratic party or candidate and then add the number of negative responses to the Republican candidate or party and subtract from this sum the sum of the positive Republican party-candidate responses and the negative Democratic party-candidate responses. Since we require P_{ij} to be a proper fraction, and since the total number of responses recorded differed from time to time—40 in 1952, 1956, 1960, 1964, and 1976; 24 in 1972; and 50 in 1968 (with the addition of Wallace as a candidate)—we divide by the total number of responses available to the respondent. The numerator of this fraction was employed by Kelley and Mirer (1974) in their study on the relationship of differentiation to turnout.
3. Using H we can consider whether the presence of Wallace in the 1968 race increased or decreased turnout. Intuitively, one might argue that third-party candidates should increase turnout by raising the utility of the election for previously unmotivated voters. On the other hand, our models suggests conditions under which third-party (and fourth- and fifth-party, etc.) candidates can depress turnout by reducing the clarity of the choice situation, i.e., by reducing the hierarchic ordering of voter preferences and thus giving rise to intransitivities in preferences which generate abstention. Expressions (3) and (4) make it clear that a third-party candidate increases a voter's probability of voting if

$$\begin{aligned} {}^1/_2\,[(P_{12} + P_{13} - 1)^2 + (P_{21} + P_{23} - 1)^2 + (P_{31} + P_{32} - 1)^2] \\ > 2\,[(P_{12} - .5)^2 + (P_{21} - .5)^2] \end{aligned} \tag{8}$$

   Since $P_{ij} = 1 - P_{ji}$, we may reexpress Equation (8) as

$$P_{13}^2 + P_{32}^2 + P_{12}P_{13} + P_{13}P_{23} + 3P_{12} > P_{13}^2 + P_{12}P_{23} + 2P_{13} + P_{23} \tag{9}$$

   Expression (9) does not appear particularly enlightening, but we can show that there are values which will permit it to be satisfied. For example, if $P_{12} = P_{21} = .5$, while $P_{13} = 1$ and $P_{23} = 0$, H increases from 0 to $1/4$. On the other hand, if $P_{12} = 1$, while $P_{23} = P_{13} = .5$, H decreases from 1 to $1/4$.

   We may use expression (9) to determine the impact of the Wallace candidacy in 1968 on turnout. We have plotted the values of H for the two-party contest between Humphrey and Nixon against the three-way race including Wallace. We find most of the values are below the 45° line (data not shown). Hence we conclude that, *for the bulk of the respondents the Wallace candidacy clarified choice and, thus, increased turnout.*
4. Under the hypothesis that greater hierarchy will be associated with higher turnout, none

of the observed differences is significant at the .05 level; t tests (with 12 df) on the five pairs of means produce the following results:

	T				
	5	6	7	8	9
Difference in average % vote	8.0	4.2	.8	4.3	2.1
t test	1.25	1.46	.02	1.60	.55
P_t (df = 12)	.20	.10	.50	.10	.50

5. Negative findings of a similar sort with respect to a rational choice approach to turnout are reported in Weisberg and Grofman (1981).

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