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LONG-RUN BEHAVIORAL EFFECTS OF A SOCIAL MARKETING PROGRAM

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Long-Run Behavioral Effects of a Social Marketing Program

Abstract

This paper presents a longitudinal consumer behavior study in a social marketing context. Voter acceptance of the Michigan Container referendum provided the authors with an opportunity to investigate the long run behavioral commitment of consumers to an innovative social marketing program. A pre-election probability sample of 306 consumers was followed by reinterviews thirty-two months later after the container law was seven months into implementation.

The application of marketing technology to the advancement of social causes is termed "social marketing." Also known as "idea marketing," social marketing has been well described (Kotler and Zaltman 1971; Lazer and Kelly 1973; Fox and Kotler 1980) and widely applied (Gaedeke 1977). Unfortunately, consumer behavior research relating to social marketing has not kept pace with either the conceptual or managerial developments.

A review of the consumer behavior literature reveals an abundance of empirical research having societal and/or public policy implications. Underlying many of these studies are social ideas that might be marketed to consumers. Examples include pollution abatement (e.g., Kinnear, Taylor, and Ahmed 1974), health and safety (e.g., Wright 1979), nutrition (e.g., Fine 1980), energy conservation (e.g., Walker 1980), and supplying human body parts for transplantation (Pessemier et al. 1977). While the existing research does provide valuable information for strategy development (especially in the area of segmentation and short run communications effects), few of the studies actually reflect the objectives of social marketing per se.

Social marketing objectives are said to involve either a "canalization" of existing attitudes and behaviors in a particular direction (Lazersfeld and Merton 1949) or fundamental changes in the values, beliefs, attitudes, or behaviors of some target market (Kotler and Zaltman 1971). In both cases, a relatively permanent change in consumers' thinking or behavior is implied. Since most of the past studies maintain a short-run focus and employ cross-sectional designs, they cannot actually portray canalization or other processes which lead to long-run changes in attitudes or behavior. Proper investigation of a social marketing phenomenon would seem to require a longitudinal design.

The fact that longitudinal studies of consumer behavior are relatively rare if often cited as a major weakness of this entire research discipline

(Jacoby 1976; Ferber 1976; Engel, Blackwell, and Kollat 1978, p. 577; Olson and Dover 1978). While the dynamic nature of consumer behavior is generally recognized, cross-sectional survey designs are most commonly used for research. These static methods are inappropriate for studying consumer behavior as a process (and also limit the researcher's ability to make causal inferences). Longitudinal studies of consumer behavior, to the extent they exist, have usually focused on the purchase of tangible products. Applications in the area of social marketing are even more rare (an exception is Oliver and Berger 1979; Oliver 1980).

A THEORETICAL PERSPECTIVE

The effects of social marketing can be conceptualized in terms of the learning theory concepts of stimulus, response, and reinforcement (Ray 1973; Nord and Peter 1980). For example, Rothschild (1979) argues that long-run behavior in both business and nonbusiness situations follows a simple paradigm:

$$S_1 \rightarrow R_1 \rightarrow S_2 \rightarrow R_2 \cdots_n$$

where:

S_1 = a communications stimulus

R_1 = the initial behaviorial response

S_2 = the reinforcer

$R_{2 \cdots n}$ = repeat behavior

According to Rothschild, S_1 (e.g., advertising) leads to R_1 which establishes the reinforcement contingency. If S_2 is perceived to be favorable (e.g., an equitable cost/benefit relationship), then R_2 is more likely to occur. He makes the point that S_1 can lead to short-run behavior but that S_2 is necessary for long-run behavior. Past consumer research in social marketing has tended to focus on the $S_1 \rightarrow R_1$ relationship, or on individual differences associated

with R, but not on the factors leading to repeat behavior (an exception is Scott 1977).

For social marketing phenomena, an important modification to Rothschild's paradigm might be an allowance for covert (cognitive or attitudinal) responses to the social idea itself. On the other hand, a distinction is sometimes made in social marketing between the "core" product or social idea and a tangible or "buyable" product that instrumentally serves the social cause (Kotler and Zaltman 1971). Thus, responses to a tangible product may be highly indicative of covert acceptance of the social idea in many situations.

A THEORETICAL MODEL

A theoretical model of consumer response to social marketing, reflecting both short- and long-run aspects, appears in the top portion of Figure A. This model extends Rothschild's basic paradigm by including some important intervening variables found in the comprehensive models of consumer behavior (Nicosia 1966; Howard and Sheth 1969; Engel, Blackwell, and Kollatt 1978). The model assumes that consumers behave in accordance with their expectations of reinforcement. Whether a consumer feels that supporting a particular social idea will lead to reinforcement depends on the consumer's motives (i.e., social and personal goals), predispositions (i.e., existing beliefs and attitudes), and the information (S_1) to which he/she is exposed. These factors interact during the information-processing and evaluation stages that precede behavior (R_1). For example, incoming information (S_1) that supports or opposes a social idea is processed selectively in accordance with the consumer's motives and predispositions. A social idea that is perceived as consistent with the individual's goals is likely to receive a favorable evaluation. Messages which are intended to affect that perception will be rejected if they are too

discrepant with the person's existing beliefs and attitudes (Sheriff, Sheriff, and Nebergall 1961).

The model assumes that a consumer who is reinforced for supporting a social idea will continue to support that idea (R_2). Rewards or punishments following the occurrence of the initial behavior are included as sources of information (S_2). Information processing and evaluation are again viewed as antecedents of behavior. As before, information processing is selective and subject to the influence of prior decision making and behavior as well as the consumer's motives and predispositions. Information processing at this stage often serves the cause of consistency restoration or dissonance reduction.

Insert Figure A About Here

The value of this theoretical model is that it emphasizes those aspects of consumer behavior which are of particular importance to social marketing. For example, predispositions are thought to play an important role in social marketing because they provide an opportunity for canalization. Success in social marketing will usually depend on the existence of at least one substantial market segment with latent demand for the social product. Information which indicates consistency between the social idea and the group's motives and predispositions establishes a basis for reinforcement and can trigger supportive behavior. If sufficient support can be obtained through canalization, other means (including forced compliance) may be relied on to affect the behavior of uninterested or opposing segments. In referendum situations, for example, if 51 percent or more of the voters (often a minority of eligible adults) can be persuaded through canalization to vote a particular way, the

consequences will be legally binding upon the entire population. A strategy of this type may be more effective and less costly than attempting to modify the attitudes and voluntary behavior of everyone through direct persuasion.

Another aspect of this theoretical model which has particular relevance for social marketing is its emphasis on the post-decision processes that influence repeat behavior. The point has already been made that the objectives of social marketing usually entail relatively permanent changes in cognition or behavior. Reinforcements must be provided to maintain these new behavior patterns over the long run. Therefore, it is incumbent upon social marketers to make sure their social products provide personal as well as societal benefits to potential adopters.

The emphasis on post-decision processes also reveals some of the problems and opportunities that arise when attempts are made to implement change strategies aimed at the disinterested segments. For example, if canalization fails, the consumer is likely to reject the social product. Furthermore, having made this decision, the consumer will attempt to acquire information that is consistent with his/her position and that further downgrades the desirability of the (unchosen) social product. Thus, evidence as to the benefits of the product will tend to be filtered out or distorted during information processing, making future attempts to change attitudes or behavior that much harder. School millage elections in support of public education may exhibit this pattern, especially in communities where proposals are made and defeated year after year.

On the other hand, similar mechanisms may underlie an important social marketing strategy for producing attitude change. Where canalization is successful, all consumers may be required to engage in new behaviors. A referendum outlawing the use of studded snow tires might be an example. If

the behavior proves to be neither harmful nor costly (e.g., it produces no accidents) and possibly even rewarding (e.g., the nonstudded tires are less expensive), even those originally opposed may eventually develop favorable attitudes toward the social idea in an effort to maintain consistency. Strategies of this type have been discussed elsewhere (Scott 1977; Rothschild 1979). The strategy is more likely to succeed when consumers can attribute their behavior at least partly to their own volition.

To better understand some of the processes reflected in Figure A, the consumer behavior surrounding a successful social marketing campaign was examined. The research approach involved the development of a causal model utilizing a longitudinal data base. Familiar concepts of consumer behavior research that seemed to fit within the theoretical framework were employed.

THE PRODUCT

The core product in this research was a social betterment cause, namely environmental protection. The buyable product was the Michigan container deposit law. In the 1976 general election the voters of Michigan approved by a substantial margin (64 percent to 36 percent) a proposal to require refundable cash deposits for soft drink and beer containers. The law went into effect in November of 1978. Michigan is one of seven states that currently have such a law. The Michigan law involves recycling through the existing channels of distribution. Prior to the election, returnables accounted for only 15 to 25 percent of the soft drink and beer container purchases in the state.

THE CONSUMER BEHAVIOR

Two aspects of consumer behavior surrounding the Michigan deposit law are of particular interest. The first aspect pertains to the consumer's

decision to support or oppose the law in the 1976 election. This can be likened to a purchase decision and corresponds to the $S_1 \rightarrow R_1$ relationship in Rothschild's paradigm. The second important aspect is the consumer's experience with and evaluation of the recycling system after implementation and the decision whether to support the law in a subsequent referendum. This can be likened to a repurchase decision and is represented by the $S_2 \rightarrow R_2$ relationship.

Both the purchase and repurchase aspects of consumer behavior relating to the Michigan law were examined in previous research. A study of voting preference was undertaken (Crosby, Taylor, and Kinnear 1980; Crosby, Gill, and Taylor 1981; Crosby and Gill 1981) to understand why consumers would impose on themselves a major change in their marketplace behavior. Research on consumers' postimplementation satisfaction was undertaken (Crosby and Taylor 1980), because there was some uncertainty about consumer reaction to the inconvenience and higher costs of the deposit system (Leigh and Warshaw 1977). Up to this point, however, the purchase and repurchase aspects of consumer behavior have not been treated as an integrated behavioral process.

A third, potentially interesting aspect of consumer behavior concerns the level of actual compliance with the law following implementation. Do consumers recycle their containers as desired by the law's advocates or do they circumvent the law by purchasing beverages outstate or continuing to discard their containers despite the expense of the deposit? These are obviously important questions, but for purposes of this research they appear subordinate to the issue of electoral support and were not dealt with directly. However, secondary information (Ann Arbor News October 14, 1979) does suggest a high level of compliance with the law by Michigan consumers.

THE MARKETING CAMPAIGN

Proponents of the Michigan deposit law were organized under the United Conservation Clubs of Michigan. Their marketing objectives included gaining passage of the law and continued support for it after implementation. Their environmental objectives included reducing litter and conserving resources. Accomplishment of the marketing objectives required an appropriate mix of product, price, promotion, and place that would simultaneously increase the perceived benefits (reinforcements) and decrease the perceived costs (lost reinforcements, punishments) of supporting the law. The chosen avenue for accomplishing the environmental objectives was to increase the cost of discarding containers relative to the cost of recycling.

Important product decisions included the actual wording of the law, since confusion about its nature might result in consumer rejection while imprecision or omissions might lead to circumvention. Pricing included a determination of the deposit amount (5¢ to 20¢, depending on container type) and the decision to refund the entire deposit upon container return. Determining the optimum deposit amount is a difficult decision because a price that is too low will not stimulate consumer returns, while a price that is too high makes new containers more attractive to bottlers (Gudger and Bailes 1974). Distribution included the decision to employ the existing forward channels as reverse channels, which maximized the locational convenience of recycling points but severely strained retailer facilities (Tanner 1979). As might be expected, promotion also played a key role in the environmentalists' marketing program. Publicity and personal selling were heavily weighted in the promotion mix, which stressed the themes of litter reduction, resource conservation, and potential savings in terms of lower beverage production costs and lower litter collection costs.

Opponents of the law, mainly affected trade groups, conducted an extensive media campaign stressing the added costs and discounting the benefits of the law. They argued that prices would rise, unemployment would rise, consumers would be inconvenienced, and that the law would not significantly reduce litter. Following passage and implementation of the law, opponents focused their efforts at mounting a petition campaign to put the deposit law issue back on the ballot. Their opposition to the law and their efforts to overturn it were widely publicized in news reports.

AN APPLIED MODEL

Selected components of the theoretical model are represented in an applied version (lower portion of Figure A) which attempts to describe consumer response to the Michigan deposit law over time. Dashed lines connect the theoretical components to their applied counterparts. Arrows indicate the assumed direction of causal flow (left to right). Concepts appearing in the applied model were selected from the literature on the basis of their relevance to the topic and their capacity to represent components of the theoretical model. The applied model was empirically examined using data from a two-wave survey of Michigan consumers. Wave I was conducted just prior to the 1976 election. The same respondents were interviewed again in Wave II, conducted six to eight months after implementation of the law.

The Wave I portion of the applied model is a reduced version of a path model previously developed and tested (Crosby and Gill 1981). The logic of this portion of the model is more fully explained in the earlier paper and only summarized here. Essentially, ecological concern is thought to be one of two important latent demand factors underlying support for the law. Ecological concern is viewed as a relatively central attitude lying close to the

individual's values. A causal linkage is postulated to exist between ecological concern and Wave I voting preferences. The justification is that ecologically concerned consumers (ECC's) would perceive a more favorable cost/benefit relationship in voting for the deposit law than non-ECC's. Concern about soft drink and beer container litter is thought to be the other important latent demand factor underlying support for the law. Like ECC's, consumers who are concerned about these forms of litter would also perceive a more favorable cost/benefit relationship in voting for the deposit law. Unlike ecological concern, litter concern involves a much more specific attitude object. It is assumed that the more general attitude of ecological concern exerts a causal influence on the specific attitude of litter concern via a stimulus generalization process. An important caveat, however, is that ecological concern is but one of several possible causes of litter concern and that some non-ECC's may be very concerned about litter.

Other motives and predispositions, in addition to ecological concern and litter concern, undoubtedly had some influence on consumers' voting preference. Previous findings indicate that supporters of the law were also less alienated, less concerned about the impact of the law on prices and unemployment, and more likely to be voluntary users of returnables (Crosby, Gill, and Taylor 1981). When all six predictors were included in a stepwise regression, 40 percent of the variance in voting preference was accounted for. Unfortunately, there is a complex set of causal relationships among these predictors (Crosby and Gill 1981) which makes it impractical to include all six in the applied model. Ecological concern and litter concern were selected for inclusion because of their relationship to the appeals used in the social marketing campaign conducted by the environmentalists.

The next link in the applied model suggests that consumers' perceptions and evaluations of the deposit law after implementation (Wave II) were affected by their initial preferences and underlying predispositions (Wave I). This implies a causal influence that spans approximately two and one-half years. Consumers' Wave II perceptions and evaluations, in turn, are assumed to be important determinants of repeat behavior (R_2) on the grounds that consumers will continue to do what they are reinforced for doing. The exact nature of the relationship between the Wave I and Wave II variables will depend on the prevalence of certain psychological mechanisms.

According to both assimilation-contrast theory (Sherif and Hovland 1961) and psychological consistency theory (McGuire 1966), those consumers who were favorably disposed toward the deposit law in Wave I would tend to have more favorable perceptions and a more favorable evaluation of the law in Wave II. This is the prediction of assimilation-contrast theory as long as there is not a great deal of discrepancy between the actual and expected effects of the law (e.g., Anderson 1973; Olson and Dover 1976; Swan and Combs 1976). This is also the prediction of consistency theory, to the extent that prior attitudes and preferences regarding the law reflected a high degree of commitment. Whether the conditions actually favored assimilation or contrast cannot be determined from the data, because there was no comprehensive measurement of expectations in Wave I. However, previous assumptions about the centrality of ecological attitudes and their relationship to voting preference seem to suggest important cognitive consistency effects.

A basic tenet of consistency theory is that people resist change in strongly held beliefs and attitudes and do so through selective information processing (Engel, Blackwell, and Kollat 1978). Inconsistency is said to result in irritation, anxiety, or tension which the individual seeks to avoid

(Bem 1970). Thus, consumers who were against the law in Wave I and possibly low in ecological concern would attempt to screen out information about the law's beneficial effects following implementation. For example, they might not attend to or perhaps disregard stories indicating a 70 to 80 percent reduction in beverage container litter because of the law (Ann Arbor News October 14, 1979). They might also fail to perceive actual changes in the amount of litter present in the environment. Therefore, opponents of the law in Wave I would perceive the law as less effective in Wave II because of this selective information processing. In an opposite manner, Wave I supporters would be more inclined to screen out information about the law's negative effects and would perceive it as less costly in Wave II.

H1: A preference to vote for the deposit law in Wave I is associated with favorable perceptions about the outcomes of the law in Wave II.

The Wave II portion of the applied model incorporates many of the same assumptions as the Fishbein Intentions Model (Fishbein and Ajzen 1975; Ryan and Bonfield 1980) and other models of consumer choice (Lutz and Bettman 1977). This is in keeping with recent attempts to integrate the research on postconsumption evaluative responses with the research on preconsumption attitudes (La Tour and Peat 1979). A fundamental assumption of most attitude models is that people respond to stimuli (e.g., the deposit system) according to the hierarchy: cognition→affect→behavior. This hierarchy of response is the basis for the causal ordering of the Wave II variables (Figure A).

Consumers' experiences under the deposit system are presumed to have directly affected their cognitions. These cognitions would take the form of beliefs or perceptions about the outcomes of the law. Beliefs can be viewed as the building blocks of attitude (Fishbein 1967). Previous research has

shown that consumers' beliefs about the convenience of the law, and their beliefs about its effectiveness, were most predictive of their attitudes toward the law following implementation (Crosby and Taylor 1980). Also, factor loadings suggested that consumers perceived the law in terms of a trade-off between convenience and reduced litter. To a lesser extent, it was also possible to predict consumers' attitudes toward the law from their beliefs about the law's impact on beverage prices. However, there was a general consensus among respondents that prices had increased, which may have diminished the predictive power of these beliefs. It has been noted elsewhere (Porter 1978) that convenience and litter reduction are factors of great importance to consumers in evaluating deposit laws.

In terms of reinforcement, inconvenience may be considered an important cost of the deposit law. Here, inconvenience refers to an additional burden of time and effort which must be expended by the consumer. Along with money, time has been viewed as an important and valued input in consumption activities (Schary 1971). The deposit law imposes on consumers certain time-consuming reverse channel functions including storing (accumulating), transporting, and returning (exchanging) containers. These functions were not required under the throwaway system and are likely to be viewed as sources of inconvenience. Environmental protection is the principal reward associated with the deposit law. Environmental protection entails both societal and personal benefits. The personal benefit is a reduction in unsightly litter.

Consumers' beliefs about the outcomes of the deposit law are postulated to have a causal influence on their affective responses. Evaluative processes are assumed to underlie this linkage. Consumers evaluate their perceptions in terms of their values and goals, and this process results in attitude formation or change. Postconsumption evaluative responses are also influenced by

expectations (e.g., Cardoza 1965; Olshavsky and Miller 1972; Anderson 1973; Olson and Dover 1976; Swan and Combs 1976). However, there is reason to believe that performance or outcome evaluations, and not the confirmation/disconfirmation of expectations, account for most of the variance in postconsumption attitudes (La Tour and Peat 1979).

Satisfaction with the deposit system and Michigan's need for this type of law are the two variables which represent postconsumption affective responses in the applied model. There is support for the notion that satisfaction is simply an evaluative response to one's consumptive experiences (Olson and Dover 1976; Czepiel and Rosenberg 1977; La Tour and Peat 1979). It may be the case that satisfaction primarily reflects the personal component of the evaluative response, that is, the rewards and costs as viewed from the individual consumer's perspective. However, Michigan consumer/voters were acting in a dual role, which might imply there is also a societal component to their evaluative responses. Michigan's need for the law is the variable intended to represent this societal component of attitude in the applied model.

H2: Consumer satisfaction with the deposit law is positively associated with perceptions that the deposit system is convenient and effective in reducing litter.

H3: An opinion that Michigan needs this type of law is positively associated with perceptions that the deposit system is convenient and effective in reducing litter.

The final linkage in the applied model connects consumers' attitudinal responses to their voting preferences on a hypothetical referendum. Consistency theory suggests that positive attitudinal responses would result in a preference to vote for continuation of the deposit system. Consumer behavior

theory also postulates that the probabability of engaging in a similar buying act will be increased if there are positive consequences to the act of purchase and use (Engel, Blackwell, and Kollat 1978, p. 493). Westbrook and Cote (1980) have suggested that the construct of satisfaction implies that the consumer would be inclined to repeat the purchase choice if it were necessary to go back to the original purchase situation. A feeling that Michigan needs a law of this type also implies a willingness to continue with the deposit system because it is good for the state.

H4: A preference to vote for the deposit law in Wave II is positively associated with consumer satisfaction with the deposit system and an opinion that Michigan needs a law of this type.

PROCEDURE

Wave I Survey

Telephone interviews were conducted with 306 Michigan consumers, eighteen years old and over, between October 23 and October 30, 1976. The last interview was conducted three days before the general election in which voters approved the Michigan deposit law. The sample was selected using a two-stage random digit dialing procedure (Frankel and Frankel 1977; Groves 1978). A randomization procedure was used to select from multiple eligible adults within the same household. The calling was done from a central location. Interviews were completed with 61 percent of those who were contacted and determined to be qualified. A comparison of the sample demographics with census figures indicated the sample was representative of the adult population. A comparison of the voting intentions data with the actual election results suggested the attitudes of respondents were representative of voter attitudes. Specific details on these comparisons are reported elsewhere (Crosby, Gill, and Taylor 1981).

Wave II Recontact Survey

The Michigan deposit law was implemented statewide in December 1978. A second telephone survey was conducted in May to July 1979, which was six to eight months after implementation and thirty-one to thirty-three months after Wave I. Efforts were made to recontact all of the respondents from Wave I. Respondents who had moved within the state were recontacted at their forwarding addresses. Of those interviewed in the first wave, 130 (43 percent) participated in Wave II. Another 172 respondents were contacted for the first time in Wave II using the same sampling method as in Wave I. The statistics reported in this paper are based on the 107 respondents who participated in both survey waves and for whom the researchers obtained complete data on all the variables.

The demographics of the recontact sample were compared to the demographics of the entire Wave I sample. No significant differences were detected, which indicated that the recontact group was a representative subsample of the original 306. Also, the attitude item responses of those contacted in both waves were compared to the responses of the 172 contacted only in Wave II. No significant differences were detected, which allayed any fear of a testing effect.

Measures--Wave I

An ecological concern index (ECI) was formed by averaging standardized responses to seven items measuring attitudes toward environmental protection. Specific items included in the index are described in Crosby, Gill, and Taylor (1981). This index is similar to an earlier version of the ECI (Kinnear and Taylor 1973), although the current version is strictly attitudinal in nature. High scores indicate concern about environmental protection and low scores indicate an absence of concern. Cronbach's alpha for this index is .600.

Concern about beverage container litter as a source of pollution, an opinion highly specific to the deposit law, was measured by the LITTER index. Separate items measured the importance of beer containers and the importance of soft drink containers as a source of pollution (i.e., a major, minor, or negligible source). After standardization, these items were averaged. High scores indicate concern about beverage container litter as a source of pollution and low scores indicate an absence of concern. Cronbach's alpha is .72.

To measure voting preference regarding the deposit law (VOTE 1), respondents were exposed to a statement of the law as it would appear on the ballot and then asked, "If the election was held today, would you vote yes or no on the deposit law?" Responses to this question were coded yes = 1 and no = 0.

Measures--Wave II

The convenience index (CONV) measures the perceived convenience of the channel tasks which the deposit law imposes on consumers. The index was formed by summing three belief items dealing with the convenience of accumulating and storing containers in the home, transporting them to the store, and exchanging them once inside the store. Individual belief items were scaled: very convenient = 4, fairly convenient = 3, fairly inconvenient = 2, very inconvenient = 1. Cronbach's alpha for this index is .782.

The efficacy index (EFF) measures the perceived effectiveness of the deposit law in reducing litter. The index was formed by summing two belief items dealing with the law's effectiveness in reducing litter from all sources and the law's effectiveness in reducing beer and soft drink container litter. Individual belief items were scaled as follows: has eliminated litter almost entirely = 4, has led to a major reduction in litter = 3, has led to a minor reduction in litter = 2, has had almost no effect on litter = 1. Cronbach's alpha is .738.

A single item measuring satisfaction with the deposit law (SATIS) was scaled as follows: very satisfied = 5, somewhat satisfied = 4, neither satisfied nor dissatisfied = 3, somewhat dissatisfied = 2, very dissatisfied = 1. The other attitudinal measure asked respondents if they felt Michigan needed a law of this type (NEED). Responses were coded yes = 1 and no = 0.

The Wave II measure of voting preference (VOTE 2) asked respondents to suppose that "as a result of a petition drive, you again have the opportunity to vote on the deposit law. If the election was held today, would you vote to continue with the deposit system or to abolish it and go back to old system?" Responses were coded as follows: continue with deposit system = 1 and return to old system = 0.

METHOD OF ANALYSIS

The use of structural equations to analyze causal models is an approach gaining widespread application in marketing and consumer behavior research (e.g., Lehmann et al. 1974; Monroe and Guiltinan 1975; Oliver and Berger 1979; Teas, Wacker, and Hughes 1979; Harrell, Hutt, and Anderson 1980; Bagozzi 1980). Path analysis is a special case of structural equation analysis that is frequently used in social science research (e.g., Duncan 1966; Land 1969; Blalock 1970; Kerlinger and Pedhazer 1973; Goldberger and Duncan 1973; Duncan 1975). Path analysis is a method for estimating relationships in a causal model and for testing how well the model actually fits the data. Causal relations cannot be deduced from this method because other, untested models may fit the data equally well. However, the method can be used to find the logical consequences of a set of causal assumptions (Wright 1921, p. 557). Path analysis was the chosen method for analyzing the applied model in Figure A.

The assumptions of path analysis include: a recursive system (i.e., unidirectional causal flow), no unobserved variables, no errors on the observed variables, and all the assumptions applicable to linear regression analysis. Although the ordinal scaling of the indices might result in a slight bias (Bohrnstedt and Carter 1971), there appeared to be no serious violations of the path analysis assumptions. The procedures used to perform the path analysis parallel those of Teas, Wacker, and Hughes (1979).

RESULTS

Univariate descriptions of some of the endogenous variables[1] offer insight as to the success of the social marketing campaign. Results obtained in Wave I indicated that 62 percent of this sample favored the deposit law, which is very close to the actual proportion of voters who supported the law in 1976 (64 percent). By Wave II, 78 percent of this sample said they favored the deposit law. This is a statistically significant increase ($p < .01$), based on a test of the difference between proportions involving the same individuals. Other univariate results were: CONV ($\bar{x} = 7.84$, $\hat{\sigma} = 2.42$), EFF ($\bar{x} = 5.38$, $\hat{\sigma} = 1.37$), and SATIS ($\bar{x} = 3.81$, $\hat{\sigma} = 1.27$). By dividing each mean by the number of items in the index and rounding to the nearest integer, it is possible to interpret these results. On the average, respondents rated the deposit system as "fairly convenient" and thought it had led to "a major reduction in litter." Overall, they were "somewhat satisfied" with the deposit system. Finally, 71 percent of the respondents said that Michigan needed a law of this type.

Bivariate correlations between each of the variables in the applied model are reported in Table 1. These figures provide tests of the hypotheses, but only in terms of the association between the variables. All of the hypotheses were supported by significant correlations ($p < .05$).

Insert Table 1 About Here

A "pragmatic approach" (Kerlinger and Pedhazar 1973, p. 318) was used to estimate the path coefficients in the causal model. According to this approach, the first step involves an ordinary least squares regression of each variable on all the variables of a higher causal order.[2] The next step is model trimming, where nonsignificant paths are deleted from the model. This involves eliminating from each regression those predictors with a nonsignificant ($p < .05$) beta coefficient. The regression equations are then reestimated using only those predictors found significant in the first analysis. The resulting standardized regression coefficients are referred to as path coefficients.[3] Figure B is a path diagram showing the path coefficients estimated by this pragmatic approach. Curves without arrows in Figure B, represent completely spurious or noncausal association between variables of the same causal order. The covariation between these variables is assumed to be strictly a function of their mutual dependence on one or more variables. Not all of these common causes are necessarily specified in the model.

Insert Figure B About Here

Included in Figure B are adjusted R^2 values indicating the proportion of variance in each of the endogenous variables explained by the regressions (after trimming). The model accounted for 63 percent of the variance in VOTE2 and an average of 20 percent of the variance in the other endogenous variables A comparison of the R^2 values for the trimmed and untrimmed regression models revealed a minimal loss in explanatory power from the elimination of non-

significant predictors: VOTE2 ΔR^2 = .00, SATIS ΔR^2 = -.02, NEED ΔR^2 = -.03, CONV ΔR^2 = .00, EFF ΔR^2 = -.01, VOTE1 ΔR^2 = .00, LITTER ΔR^2 = .00. A large sample chi-square test used to test the adequacy of the restricted model was found to be nonsignificant (p = very large).[4]

All of the hypotheses except H2 were supported by significant, direct causal paths linking the appropriate variables. In the case of H2, SATIS was directly affected by CONV (p_{24} = .42) but not by EFF, as was hypothesized. In addition to the hypothesized relationships, other direct causal paths were uncovered. Specifically, ECI and NEED were connected by a direct causal path involving an inverse relationship (p_{38} = -.1678). Also, unanticipated direct paths connected VOTE2 to CONV (p_{14} = .2874) and to EFF (p_{15} = .2107).

From an analysis of Figure B, structural equations were developed that could be used to decompose the total association between each variable and those that causally precede it. Using the relationships depicted in Figure B, the total association between variables was decomposed into its direct and indirect components.[5] The sum of the direct and indirect effects is the total causal effect of one variable on another. The results summarized in Table 2 were obtained by substituting the path coefficients of the trimmed model into the structural equations.[6]

Insert Table 2 About Here

On the assumption that the model is correctly specified, the total causal effect among pairs of variables can be found in Column D of Table 2. In terms of the variables assumed to have a causal influence on VOTE2, convenience perceptions (CONV) and Wave I voting preference (VOTE1) appear to be most important. The total causal effect of CONV on VOTE2 is .5157, about half of

which is direct and half indirect through SATIS and NEED. The fact that VOTE1 had the next largest causal effect on VOTE2 (.3661) is especially noteworthy, considering that thirty-one to thirty-three months separated these measurements. The influence of VOTE1 is entirely indirect and exceeds that of SATIS, NEED, and EFF, which were all measured at the same time as VOTE2. Still, the influences of SATIS, NEED, and EFF are substantial and in the expected directions.

A comparison of the attitudinal variables, SATIS and NEED, reveals two different patterns of causal influence. While both attitudes are strongly affected by the perceived convenience of the system (CONV), only NEED is causally influenced by EFF (.2816). Another difference is that VOTE1 appears to exert a stronger, indirect causal influence on NEED (.3044) than on SATIS (.2024). Finally, there is the unexpected direct link from ECI to NEED. Further analysis of ECI's causal influence on NEED indicates both direct and indirect effects. The direct effect provides a negative contribution (-.1678), while the indirect effect is positive (.1176). It appears that the positive component cancels the negative, resulting in the low observed correlation between ECI and NEED. Over 70 percent of the variance in both attitudes is unaccounted for by the model. A higher portion of the variance could have been explained by including other beliefs, which were measured in Wave II, as additional predictors (Crosby and Taylor 1980). However, this would have made the causal model and the structural equations underlying Table 2 unfathomable.

Of those variables specified in the model, VOTE1 appeared to exert the main causal influence on both convenience perceptions (.4772) and efficacy perceptions (.3993). While the influence of VOTE1 is statistically significant and relatively strong in both cases, most of the variance in the beliefs is attributable to variables outside the model. The respondents' attitudinal

predispositions, in terms of their ecological concern and concern about litter, appeared to exert an indirect causal influence on their Wave II perceptions that was entirely mediated by Wave I voting intentions.

The two concern variables accounted for approximately 25 percent of the variance in VOTE1. Again, this figure could have been improved by including other predictors known to be significant but at the cost of greater model complexity (Crosby, Gill, and Taylor 1981; Crosby and Gill 1981).

The negative direct relationship between ECI and NEED, in combination with a positive indirect effect, appeared to be a finding of potential importance for developing a more comprehensive theoretical framework. To better understand the nature of this relationship, an additional analysis was performed. As shown in Table 3, the sample was divided into four groups according to Wave I ECI scores (below/above the mean) and Wave II attitudes regarding Michigan's need for this type of law (don't need/need). These groups were then profiled in terms of their mean scores on the other cognitive and attitudinal variables and their voting preferences in Wave I versus Wave II. The last row of the table reports the size of each group.

Insert Table 3 About Here

The large number of high ECI scorers who later said there was a need for this type of law (n = 39) probably accounts for much of the positive, indirect relationship between ECI and NEED. In general, the attitudes and beliefs of this group were internally consistent in exactly the manner predicted by the model. They scored high on litter concern ($\bar{x}$ = .43), tended to evaluate the deposit system favorably ($\bar{x}_4$ = 9.15 = fairly convenient; $\bar{x}_5$ = 6.05 = major litter reduction), and were somewhat satisfied with the law ($\bar{x}_2$ = 4.26). Not

surprisingly, 90 percent of this group preferred the deposit law in both waves. Also contributing to the positive, indirect relationship were the respondents in the low ECI/don't need group (n = 17), whose attitudes and beliefs were consistently negative. They scored low on litter concern ($\bar{x}_7 = -.70$), tended to evaluate the deposit system unfavorably ($\bar{x}_4 = 5.70$ = fairly inconvenient; $\bar{x}_5 = 4.18$ = minor litter reduction), and were neither satisfied nor dissatisfied with the law ($\bar{x}_2 = 2.94$). Of this group, 65 percent were opposed to the deposit law in both waves.

The negative, direct relationship between ECI and NEED can probably be traced to the low ECI/need group (n = 37). The attitudes and beliefs of this group are quite inconsistent with their predispositions. In addition to low ECI scores, this group scored low in litter concern in Wave I ($\bar{x}_7 = -.41$). However, their Wave II responses indicated a relatively favorable evaluation of the deposit system ($\bar{x}_4 = 7.97$; $\bar{x}_5 = 5.42$) and they were somewhat satisfied with the law ($\bar{x}_2 = 4.00$). The negative, direct relationship between ECI and NEED appears to represent the influence of some variable or process outside the model which is producing this inconsistency. It is important to note that 41 percent of this group were opposed to the deposit law in Wave I but said they would vote for it in Wave II. Therefore, whatever process is producing the inconsistency must have taken place in the time between the first and second waves of measurement. It is this group's change of heart that accounts for most of the 16-percentage-point increase in deposit law support among the entire sample.

INTERPRETATION

It is apparent from the results that the social marketing campaign for the Michigan deposit law was highly successful. First, the environmentalists

succeeded in gaining passage of the law despite intense opposition. Second, there continued to be a high level of consumer support for the law after implementation. More interesting, perhaps, is the indication that support for the law actually grew during the period of implementation. By examining the path model and relationships among the variables, an explanation can be provided for these results.

While the path model does not provide proof of causality, the causal ordering of many of the variables seems fairly clear. Given the timing of the measurements, all of the Wave I variables can be assigned a higher causal priority than the Wave II variables. That is to say, while the Wave I variables may or may not be the cause of the Wave II variables, the Wave II variables could not have affected those measured in Wave I. The causal ordering among variables measured in the same wave is, however, more ambiguous, since subjectivity is involved in assessing the validity of the causal assumptions within waves. The objective evidence consists of statistical support for the associational hypotheses and the adequacy of the restricted model. The subjective evidence consists of a judgment that the theoretical arguments are basically sound. Given the evidence, it was concluded that the model is of value in understanding the evolution of consumer support for the deposit law.

Support for the law in Wave II was found to depend on consumers' beliefs about the outcomes of the law and their attitudes toward the law (which stem from their beliefs). A large portion of the variance in voting preference (almost two-thirds) was accounted for by two beliefs (CONV, EFF) and two attitudes (SATIS, NEED). Possibly of some theoretical significance is the finding that the effects of the beliefs on preference were not entirely mediated by the attitudes. In part, this may be attributable to the nature of the preference measure which logically seems to lie somewhere between attitude and

behavioral intention. On the other hand, the argument has been made that attitudes do not completely mediate the effects of information processing under conditions of active problem solving (Lutz 1978). On the assumption that many of the respondents had not previously decided on whether to support continuation of the law, these conditions are likely to have existed at the time of the Wave II survey.

The separate contribution of satisfaction and need to voting preference raises the issue of whether attitude, in social marketing situations, is a unitary construct. One interpretation of the results is that attitude toward the deposit law is an unobservable variable and that satisfaction and need are observable variables representing that construct (i.e., multiple indicators). A different interpretation is that consumers evaluate social ideas from two perspectives: what is good for society and what is good for themselves. These perspectives may not always coincide. The different patterns of causal influence on satisfaction and need provide support for the second interpretation. The direct linkage of satisfaction with convenience, but not with efficacy, may imply that satisfaction is primarily influenced by personal considerations. Michigan's need for this type of law was linked to convenience but also to efficacy and ecological concern, which might suggest that societal considerations have a greater influence.

Of the two belief measures, convenience perceptions were found to be more critical than efficacy perceptions in determining consumer attitudes and voting preferences (i.e., the total causal effect of CONV exceeded EFF for SATIS, NEED, and VOTE2). This could imply that consumers attach greater importance to those rewards and costs that have a personal impact. Alternately, consumers may have had greater confidence in their ability to judge convenience than in

the effects of the law in reducing litter, and consequently attached greater weight to the convenience perception.

Whether the focus is on the causes of attitudes or of preference, it is clear that reinforcement plays an important role. Those who perceived the law as providing favorable outcomes had favorable attitudes and wanted the law retained. Those who perceived the law as providing unfavorable outcomes had unfavorable attitudes and wanted the law abolished. Still, it is evident from the modelling results that the nature of this reinforcement depends on the consumer's predispositions (indirect effects of ECI and LITTER on CONV and EFF) and previous decision making (direct effects of VOTE1 on CONV and EFF). It can be argued, for example, that the contingencies of reinforcement are not entirely controlled by external forces. Once having made a decision, either pro or con, consumers then acquire information to reinforce their decision. Because this information serves as the basis for beliefs, those beliefs will tend to support the original decision. This might be termed a cognitive-learning theory interpretation of the $R_1 \rightarrow S_2$ connection in Rothschild's paradigm.

As noted earlier, the linkages between the Wave I variables and the Wave II beliefs might also be explained as assimilation or consistency effects. These explanations are quite compatible with the cognitive-learning theory interpretation given above. Presumably, those who favored the law in Wave I expected the deposit system to be more convenient and effective than those who opposed it. According to assimilation theory, consumers' judgments about the deposit system in Wave II would be anchored by their Wave I expectations. Thus, supporters of the law in Wave I would perceive it as more convenient and effective in Wave II. Consistency effects could also account for the results. According to this explanation, consumers would develop beliefs about the out-

comes of the law consistent with their Wave I attitudes and preferences. Thus, to avoid psychological tension, supporters of the law in Wave I would perceive it as more convenient and effective in Wave II.

Regardless of which psychological mechanism best accounts for the Wave I → Wave II belief linkages, the fact remains that approximately four-fifths of the variance in both beliefs was accounted for by factors outside the model. This implies that beliefs were still subject to a considerable amount of external influence. As a general matter, it is perhaps not unreasonable to expect some degree of independence between beliefs and predispositions. Without this independence, consumer dynamics would be a vacuous term and consumer behavior would be nothing more than the perpetuation of the status quo. As a rule, marketers assume that beliefs can be modified via information or experience and that belief change gives rise to attitude and behavior change.

In the path model there was some indication of attitude change, in terms of the negative direct relationship between ECI and NEED. The special analysis of this relationship (Table 3) revealed that it was mainly attributed to individuals who scored low on the ECI index in Wave I but who said there was a need for such a law in Wave II. Other evidence supporting the attitude change interpretation comes from that fact that 41 percent of this group switched from opposition in Wave I to support for the law in Wave II. Exactly what mechanism accounts for these changes is less clear. This group did evidence relatively favorable beliefs about the deposit system. It is possible that through exposure to new information, beliefs that were favorable to the deposit law were formed or modified. Attitude change would then follow from belief change so as to maintain internal consistency. The question remains as to how new information, favorable to the deposit law but in conflict with this group's predispositions and preferences, could bypass the cognitive filtering process.

A strong possibility exists that behaviorally induced changes in beliefs and attitudes account for some of the shift in voting preference among the low ECI/NEED group. Forced compliance and participation in the recycling system may have produced a more favorable opinion toward the deposit law. Two theories which accept the premise that behavior is often the cause of beliefs and attitudes are dissonance theory (Festinger 1957) and self-perception theory (Bem 1965; 1972). Dissonance theory postulates that when an individual is induced to engage in a behavior inconsistent with his beliefs or attitudes this produces a state of tension ("dissonance"). The individual is motivated to reduce that tension, often by adjusting beliefs and attitudes until they conform with the behavior. Thus, behavior change can lead to belief and attitude change. Along similar lines, self-perception theory argues that individuals view their own behavior and make inferences about their beliefs and attitudes from these external cues. Again, this suggests that behavior change can lead to belief and attitude change. The effects predicted by dissonance theory and self-attribution theory are most likely to occur when the behavior cannot be attributed to external force.

The conditions surrounding the implementation of the Michigan law are somewhat favorable to behavior-induced changes in beliefs and attitudes. Clearly, recycling beverage containers represented a behavior change for most Michigan consumers. However, consumers would not be inclined to attribute this behavior to their own (pro-recycling) beliefs and attitudes unless they perceived themselves as having some choice in the matter. Those who voted for the law in 1976 would tend to view their behavior as more voluntary. Those who originally opposed the law may recognize that they still retain the option of discarding containers (albiet at the expense of the deposit). To the extent they perceive themselves as having this choice yet participating in recycling,

the behavior could be viewed as somewhat voluntary. It is possible, too, that over a two-and-a-half-year period, some of the law's original opponents may have forgotten how they actually voted and now think of themselves as supporters of the law from the beginning.

IMPLICATIONS

The results of this study would seem to have some general implications for the management of social marketing campaigns. First, it is apparent that the political device of a referendum can be an important element in a social marketing strategy, as was the case in Michigan. Still, the effective use of this device requires an understanding of how the market can be segmented in terms of predispositions and how the referendum is likely to affect attitudes and behavior over time. An advantage of a campaign centered on a referendum is that the needs of the entire market do not have to be addressed. Instead, the social idea must simply appeal to enough of the market to get the legal measure passed. This was true in the case of the Michigan deposit law where only 54 percent of the eligible adults voted on the proposal. Given that 64 percent of the voters favored the deposit law, this means that 35 percent of the adults (.54 x .64 = .35) were able to significantly affect the buying behavior of the state's entire consumer population. It should be noted, however, that although this strategy appears viable, it is not without philosophical and ethical overtones. To paraphrase the words of Alexis de Tocqueville, there is some danger that this strategy could produce a "tyranny of the minority" if widely used.

Implementation of a referendum measure seems to offer an important opportunity to expand support for the social idea. The strategy at this point is to capitalize on the psychological reactions naturally taking place. For

example, those who originally backed the law will be under some internal pressure to justify their decision and will be receptive to information that reinforces that decision. To consolidate their support, the social marketer should provide information stressing the favorable outcomes of the referendum. Having established this foundation of support, other groups can then be added as the law is implemented. New behaviors required by a law may lead to new (or changed) beliefs and attitudes that make the social idea more attractive to those who originally opposed it. Essentially, this is a social change process whereby "stateways change folkways" (Bem 1970; Rothschild 1979). Underlying this social change process is the psychological notion that sometimes "it is easier to act yourself into a new way of thinking than to think yourself into a new way of acting" (Mehrabian 1970, p. 143).

There are some specific tactics by which the social marketer can facilitate the attitude change process. Again, information calling attention to the favorable outcomes of a law would be important. Promotion should also involve appeals for voluntary cooperation so that compliance can be achieved with a minimum of force. Education programs might also be undertaken to provide consumers with an efficient behavioral repertoire for coping with the law.

Perhaps most important to success in this type of social marketing campaign is that within the constraints of achieving its social objectives the law should provide maximum personal benefits and minimum personal costs to the individual. For instance, in this study it was particularly evident that convenience perceptions had a strong influence on consumers' evaluations of the deposit law and their desire to retain it. While marketers of products and services have long understood the importance of personal factors such as convenience, these factors are often overlooked in social marketing and public policy programs.

CONCLUSION

Marketing and consumer behavior perspectives are useful for managing and studying social change processes. Segmentation is the starting point for designing social marketing strategies that will effectively canalize existing predispositions. Strategic use of the political system can increase the leverage of social marketing efforts. Social marketing objectives are most likely to be achieved when proper attention is given to postdecisional evaluative processes and the effects of personal rewards on repeat behavior.

FOOTNOTES

[1]ECI is the only exogenous variable in the applied model. Its variability is assumed to be determined by causes outside the model. All the others are endogenous variables whose variation is explained by exogenous or endogenous variables in the system.

[2]i.e., variables that precede it in the causal model. In Figure A, these are all the variables which lie to the left of the variable specified as dependent in the regression.

[3]Path coefficients (Pij's) express the direct effect of a higher-order causal variable on a lower-order causal variable. A direct effect is that part of the association between the variables that is not transmitted via intervening variables (Alwin and Hauser 1975).

[4]A model is said to be restricted when one or more of the direct paths is assumed to be zero. The number of zero paths equals the number of restrictions.

[5]Indirect effects are those which are transmitted by variables specified as intervening between the cause and effect of interest.

[6]In all, there were twenty-six structural equations, one for each of the relationships appearing in the first column of Table 2. Some of these equations contained ten or more compound terms. Because of the number and complexity of these equations, they are not reported in this paper. Readers who are interested in the technical details are encouraged to write the authors for a copy of the structural equation system.

Table 1

Bivariate Correlations between Variables in the Applied Model

	VOTE2 (X_1)	SATIS (X_2)	NEED (X_3)	CONV (X_4)	EFF (X_5)	VOTE1 (X_6)	LITTER (X_7)	ECI (X_8)
VOTE2 (X_1)	1.00	.56	.64	.64	.56	.41	.15[a]	.20
SATIS (X_2)		1.00	.41	.42	.35	.27	.25	.17
NEED (X_3)			1.00	.49	.42	.39	.22	.03[a]
CONV (X_4)				1.00	.46	.48	.17	.27
EFF (X_5)					1.00	.40	.23	.30
VOTE1 (X_6)						1.00	.46	.39
LITTER (X_7)							1.00	.41
ECI (X_8)								1.00

[a]not significant @ $p < .05$

Table 2

Decomposition of Total Association

Relationship	Observed Correlation (A)	Direct Effect (B)	Indirect Effect (C)	Total Causal Effect (D = B + C)
r_{21}	.5631	.2362	--	.2362
r_{31}	.6444	.3186	--	.3186
r_{41}	.6402	.2874	.2283	.5157
r_{51}	.5581	.2107	.0897	.3004
r_{61}	.4057	--	.3661	.3661
r_{71}	.1457	--	.1342	.1342
r_{81}	.1974	--	.0879	.0879
r_{42}	.4241	.4241	--	.4241
r_{52}	.3469	--	--	--
r_{62}	.2658	--	.2024	.2024
r_{72}	.2466	--	.0741	.0741
r_{82}	.1691	--	.0778	.0778
r_{43}	.4877	.4022	--	.4022
r_{53}	.4167	.2816	--	.2816
r_{63}	.3865	--	.3044	.3044
r_{73}	.2168	--	.1116	.1116
r_{83}	.0238	-.1678	.1176	-.0502
r_{64}	.4772	.4772	--	.4772
r_{74}	.1742	--	.1750	.1750
r_{84}	.2651	--	.1843	.1843

Table 2 Continued

Decomposition of Total Association

Relationship	Observed Correlation (A)	Direct Effect (B)	Indirect Effect (C)	Total Causal Effect (D = B + C)
r_{65}	.3993	.3993	--	.3993
r_{75}	.2276	--	.1464	.1464
r_{85}	.3014	--	.1542	.1542
r_{76}	.4634	.3667	--	.3667
r_{86}	.3861	.2357	.1505	.3862
r_{87}	.4103	.4103	--	.4103

Table 3

Data Relating to the Nature of the Relationship between ECI and NEED

Variable Means	Low Ecological Concern (Wave I)		High Ecological Concern (Wave I)		ANOVA	
	Don't Need (Wave II)	Need (Wave II)	Don't Need (Wave II)	Need (Wave II)	F	Prob.
LITTER[a] ($\bar{x}_7$=)	-.70	-.41	-.07	.43	8.41	<.01
CONV ($\bar{x}_4$=)	5.70	7.97	6.43	9.15	13.06	<.01
EFF ($\bar{x}_5$=)	4.18	5.42	4.86	6.05	10.25	<.01
SATIS ($\bar{x}_2$=)	2.94	4.00	3.07	4.26	7.11	<.01
Voting Preferences						
Wave I / Wave II						
No / No	65%	5%	36%	0%		
Yes / No	12	3	14	2	χ^2 = 66.66	
No / Yes	17	41	14	8	p < .01	
Yes / Yes	6	51	36	90		
	100% (N=17)	100% (N=37)	100% (N=14)	100% (N=39)		

[a]LITTER is a standardized index with mean of zero and standard deviation of one.

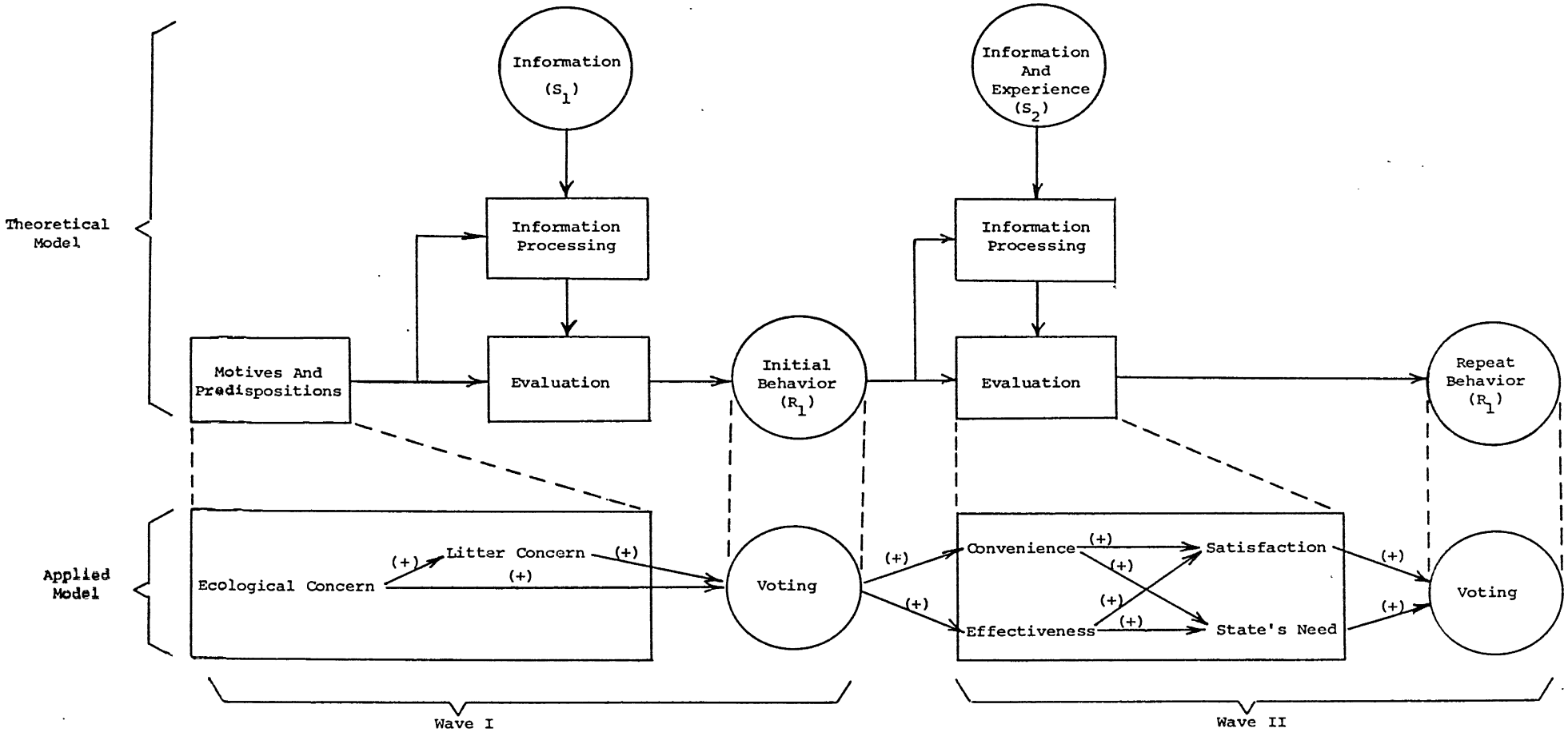

Figure A. Model of the Long-Run Effects of Social Marketing

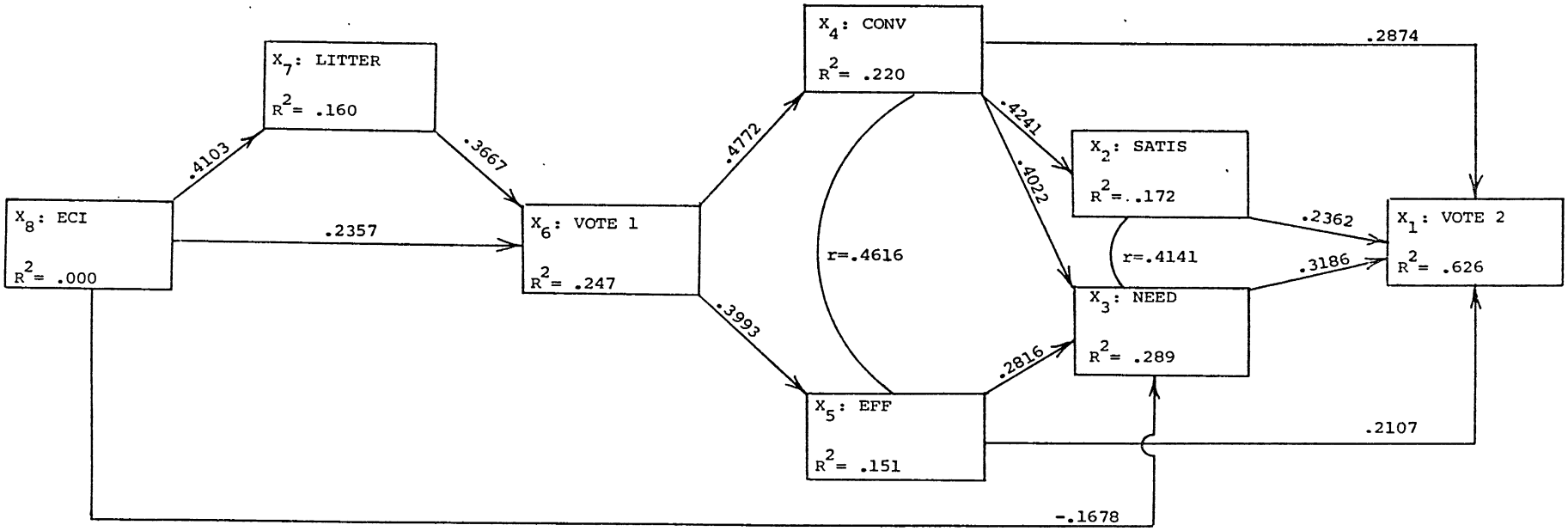

Figure B. Two - Wave Path Model

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