MEDIA AND INTERPERSONAL EFFECTS

ON

ATTITUDE FORMATION AND BEHAVIOR*

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ABSTRACT

Based upon precise new measurement techniques derived from a theory
of attitude change first utilized by Woelfel and Haller in the study of
interpersonal influence, this article attempts to assess the relative effect-
iveness of major media and interpersonal sources over attitudes toward and
actual use of marijuana, a topic which had received considerable media
coverage among the populations surveyed prior to and during the research.
Based on data from a random sample of 341 students at 3 major U. S. and one
major Canadian university, the research indicates (a) that the theory and
its implied measurement system is sound, as evidenced by the unusually accurate
predictions of both attitude toward marijuana and actual frequency of usage
(respectively $R = .74$ and $.89$), and (b) that the effects of media are sub-
stantially less than those of interpersonal sources, primarily due to the
greater relevance of personal information.

There are several senses in which the question of media impact may be investigated. First, the question of the effect of media on entire societies and cultural systems may be examined (Bauer and Bauer, 1966; Blumer, 1948; Rogers, 1976; Weiss, 1969; Wirth, 1948). As a forerunner of what later became a popular view, Innis (1950) asserted that the nature of media technology prevailing in a society at any point in time strongly influence how the members of that society thinks and behaves. For example, the print media were ascribed with promoting cause-effect thinking in societies where print media dominate. It was reasoned that the technology of print forces a linear form of presentation either across or up or down a page. McLuhan (1964), borrowing heavily from Innis, portrayed television as a "cool" medium because of its capacity for such configurations of audiovisual stimuli elicits high but passive audience participation.

Second, the question of the effect of media on cities and communities is exemplified in the work of Atwood et. al (1978), Chaffee and Wilson (1976), Donohue et. al (1972) and Olien et. al (1978). Coleman (1957), in one of the earlier investigations, reported that the mass media are quite useful in crises such as floods or other disasters when people primarily need to know 'what to do,' are much less helpful in community disputes when people need to know 'what to think'. Along these same lines, Tichenor and Wackman (1971) have examined "community consensus" as an indicator of the role of local media in developing common value orientations within a subsociety.

A third approach, and certainly the most frequent, is the question of the effect of media on individuals (DeFleur and Ball-Rokeach, 1975). Attitude change or opinion change has been the most researched topic within this category. Also receiving considerable attention, and forming the basis of this study, is the topic of decision making (Berelson et. al, 1954; Edelstein, 1973; Grunig, 1976; Katz and Larzarsfeld, 1955). As a concept,

decision making implies a dichotomous—nominal classification of behavioral outcomes (e.g., to adopt or not to adopt a new drug; to vote or not to vote for a candidate). Such a classification of the dependent attitude requires a proportional mode of analysis, i.e., a breakdown of the proportions of persons who have or have not made the decision, performed the behavior, etc. Referring to their own work on decision making, Grunig and Disbrow (1977) pointed out the need for an improvement of the operational definitions. Specifically, they stated the need to move away from dichotomous scaling and to improve the measure of the referent criterion. Coleman, et. al (1966) reported that more physicians were influenced by personal sources than media sources, and thus adjudge personal influence more effective than media influence in that context. For any given individual in the sample, media tend to be classified as either effective or not effective in bringing about the decision. Furthermore, it is the cumulative effect of all media influences, or all influences from a single other person or set of other persons, that is compared—not the relative effectiveness of a single message sent by the various sources.

Certain behaviors and attitudes, however, may be construed as rates (e.g., number of cigarettes smoked per day) or psuedo-rates (e.g., favorableness toward smoking). With such a continuous characterization of dependent attitude and behavioral variables, an individual's attitude or behavioral rate may be construed as a vector, the magnitude of which may be assumed to be changed, however minutely, by every message relevant to the attitude, from whatever source. The extent to which the vector is changed by receipt of the message can be taken as a measure of the effectiveness of the message. When the same message is received from two or more sources, the extent to which the vector is shifted by each will serve as a measure of the effectiveness of the source. Such a mode of analysis allows for an exact determination, barring measurement error, of the relative effectiveness of any single message from any source

via any medium on an individual attitude for any individual or set of individuals. The purpose of this article is to estimate the relative effectiveness of the several media and other non-media information sources on such a per unit of exposure basis.

THEORY

The theory guiding this research assumes at the outset:

1. That some behaviors may be appropriately expressed as a continuous rate, e.g., frequency of performing an action per unit of time (Woelfel, et. al, 1971c).

2. That the rate of behavior is governed by the accumulated information the individual has relevant to that behavior controlling the physical circumstances of the behavior (what Haller has been called "Facilitation Variables" Haller, 1957.

3. That at any point in time, and controlling for previously gathered information, sources of such relevant information are wholly and only comprised of (a) self-reflexive activity, or direct personal observation, and (b) personal influence. Both sources may be direct or via media (Woelfel & Haller, 1971).

4. The resultant rate of behavior equals a _linear aggregate_ of all information received from all sources relevant to the behavior in question, controlling for physical circumstances. For the one dimensional case, the implications of these assumptions can be illustrated as follows:

   Let X & Z = Proposed rates of behavior (source of behavior influence) An incoming message about how many acts of a given type for a unit of time are appropriate to ego,

   M_x & M_z = The inertial mass of message X & Z; i.e., a weighting factor describing the effectiveness of message X and Z per unit of value.

Then assumption four implies the following proposition:

$$(A) \qquad Y = \frac{XM_x + ZM_z}{M_x + M_z}$$

Where Y = The resultant rate of behavior, equation (A) may be written:

$$(B) \qquad Y = X \frac{M_x}{M_x + M_z} + Z \frac{M_z}{M_x + M_z}$$

Expression (b) shows that the effect any variable has on the resultant rate of behavior is equal to the product of the value of the variable and the ratio of its inertial mass (or weighting factor) and the inertial masses of all the independent variables in the system.

But in the regression equation:

$$Y = b_1 X + b_2 Z + u$$

$$b_1 = \frac{m_x}{m_x + m_z} \qquad b_2 = \frac{m_z}{m_x + m_z}$$

Thus:

$$\frac{b_1}{b_2} = \frac{\dfrac{m_x}{m_x + m_z}}{\dfrac{m_z}{m_x + m_z}} = \frac{m_x}{m_z}$$

Assuming that information aggregation is linear, and in the one dimensional case, the relative effectiveness of two messages is given by the ratio of their inertial masses, which in turn is given by the ratios of their respective partial regression coefficients (unadjusted partial slopes). That is, when explained variance is high—a condition which is met when measurement error is low—the relative effectiveness of the various sources thus can be calculated very accurately.

These calculations are valid, however, only when all variables are wholly projected on a single vector. Such a condition would seem to be met when item wording and scaling are matched. Assuming level of educational aspiration (LEA), for example, as a dependent variable, then matched item wordings like "How favorable is <u>your father</u> to education?" "How favorable is <u>your mother</u> to education?" etc., would seem to constrain all the independent variables to the same one-dimensional vector space. The addition of an unmatched item; e.g., "How frequently do you participate in extra-curricular activities?" would seem to add a new complication. Although participation in extra-curricular activities probably exerts some force along the LEA vector, such is probably not its main effect, and consequently it is necessary to assume it exerts its force along a vector which lies at angle θ to the LEA vector. Assuming the inertial masses of LEA and Extra-curricular Activities (ECA) to be the same, as Figure 1 shows, the properties of ECA on the LEA vector is given by:

$$\Delta Y = \Delta X \cos \theta$$

Where   Y = LEA

   X = ECA

Where the inertial masses are not the same,
or are unknown, then the projection of X on
the Y vector is given by:

$$\Delta Y = \Delta X \frac{Mx}{My} \quad \cos \theta, \text{ and this readily yields:} \quad \frac{\Delta Y}{\Delta X} = \frac{Mx}{My} \quad \cos \theta$$

but since, $\dfrac{\Delta Y}{\Delta X} = b$, then:

(C)
$$b = \frac{\Delta y}{\Delta x} = \frac{Mx}{My} \quad \cos \theta$$

Equation (C), therefore, shows that the partial regression coefficient is capable of adjusting for the angle between vectors even when that angle and the ratio of inertial masses are unknown.

This may be interpreted in non-mathematical terms quite simply. Mx, the inertial mass of a message X, is in a nonprecise sense a measure of the potency of a given message, of known value, so that, for example, if two identically worded messages were received from two sources, S_1 and S_2, then $\dfrac{M_1}{M_2}$ would give the relative effectiveness of each source (strictly speaking, the _force_ contained in a message X, equals the product of its value and its inertial mass, or XMx). The angle θ, on the other hand, can be seen as a measure of the _relevance_ of the message to the attitude or behavior in question. Thus, in the one-dimensional case, where all angles θ_n^i are equal, the relevance of every message is equal by definition, and the unadjusted partial slopes give a direct measure of the inertial masses of every message provided the dependent variable is measured on the same vector. In the n dimensional case, the value of b equals the product of the per unit effectiveness of the message and its relevance. A zero value of such a message could mean either that the message was impotent (i.e., $M = 0$), irrelevant (i.e., $\theta = 90^{\circ}$ or 270°), or both.

DATA

The Variables:

This theory assumes behavior to be controlled wholly and only by the information an individual has about his/her relationship to a potential

behavior. This body of information about relationships between self and behaviors and other objects is called the self conception. The theory distinguishes four main classes of variables which control or influence the flow of information to the individual: Interpersonal influence, or the influence of "significant others" (S.O.I.), the aspects of phenomenal reality relevant to the behavior in question to which the person is exposed (RPR); the pool of relevant information previously accumulated by the individual (other related attitudes, or ORA); and location of the individual in the social structure (structure factors). Thus, the location of the individual in the larger social structure is thought to influrence (a) the phenomenal situation in which the individual finds himself/herself (RPR) and the other persons to whom he/she is principally exposed (SOI). The information the person receives by direct observation of RPR and from significant others (SOI) is aggregated with the information previously accumulated (ORA) and, physical factors notwithstanding, results in behavior. The theory is represented diagramatically in Figure 2.

(FIGURE 2 ABOUT HERE)

In practice, both the influence of other persons and observations of RPR may be transmitted to the individual either directly or via media. Consequently, an additional variable is measured here—media information. One of the primary aims of the present research is to determine the differential effectiveness—if any—between these two modes of transmission. In order to do this effectively, a topic which was the object of both extensive media coverage and interpersonal conversation was highly desireable. Informal interviews with university students of all levels and content analyses of various print and electronic media over a period of several months—the study was initiated in 1969—indicated high levels of coverage in both areas, particularly for marijuana use, and this was the topic selected. The operationalization of the variables of the theory for the topic marijuana are as follows:

1. Interpersonal Influences (SOL) X_{23} through X_{26}, X_{38}.

Other persons may influence individuals, speaking broadly, in two ways: by what they _say_ (definers) and by what they _do_ (models) (Woelfel and Haller, 1971). The influence of model-type significant others (X_{23}) was measured by the following questionnaire item: How many of your friends smoke marijuana? The response scale was: (a) none, (b) few, (c) some, (d) many, (e) all or nearly all. Definer-type SOI was measured in two ways. First, for information specifically transmitted about marijuana, a three item index (X_{38}) was constructed, consisting of an item measuring exposure to friends (how frequently do you talk to your friends?), an item measuring coverage of marijuana (how frequently do your conversations with your friends involve marijuana use?). The response alternatives to the last item were (a) highly opposed to marijuana use; (b) opposed; (c) neither for nor against; (d) in favor of; and (e) highly in favor of marijuana use. This item was scored -2 for the first response, -1 for the second, 0 for neutral, +1 for favorable, and +2 for highly favorable. The first two items were scored from 0 (no exposure or no topic coverage) to +4 (nearly continuous exposure and nearly 100% topic coverage). Thus, the product of the three items is an index varying from -32 (nearly continuous intense negative SOI) to +32 (nearly continuous intense positive SOI). A zero score would result if (a) there was no reported contact with friends, (b) there was no discussion of marijuana among friends, or (c) coverage was neutral, i.e., niether favorable nor unfavorable.

Secondly, the individual was asked to estimate the political position of most of his friends on a five point continum (Radical Right, Conservative, Liberal, Left Radical, Revolutionary), X_{24}, and the attitudes of friends toward hippie dress styles, X_{25} (these two attitude areas were judged to be related to marijuana use in pretest interviews).

2. Relevant Phenomenal Reality (RPR), X_3 through X_{11}:

The specific aspects of concrete situations which one observes that influence him to smoke or avoid marijuana are difficult to isolate in general, but we presume they may be thought to vary (on college campuses at any rate) by contextual effects of the college attended, type of housing, and by year in school. X_3 and X_5 are the dummy variables for three of the four campuses in the sample; the fourth other is left out to avoid a singular partial matrix. X_6 is year in school, a five point variable scored from 1 (freshmen) to 5 (grad student). X_7 through X_{11} are, in order, dummy variables for residence in: X_7 = parent's home; X_8 = private apartment; X_9 = fraternity, X_{10} = dormitory, X_{11} = commune (an additional categore, other, is excluded from the analysis. Number of friends who smoke marijuana (X_{23}) is also, of course, an RPR variable, but has been classed as SOI for the comparison with media versus interpersonal sources intended here.

3. Media – X_{32} through X_{37}:

Within this theory, media are construed as extensions of the process of interpersonal influence and RPR, since media expose persons to the words and acts of people otherwise outside the circle of their family, friends, and acquaintances, and to aspects of phenomenal reality otherwise outside their purview. Six media are investigated here: Newspapers (X_{32}), magazines (X_{33}), radio (X_{34}), television (X_{35}), movies (X_{36}), and records or tapes (X_{37}). All are measured by a three item index identical in structure to the index used for assessing interpersonal influence (X_{38}). Thus, all media indices range from –32 to +32, and consist of the product of exposure, coverage, and bias.

4. Other Related Attitudes (ORA), X_{12} through X_{15}, X_{26} through X_{31}:

Judgments about what attitudes other than those specifically mentioning marijuana are related to its use were made primarily on the basis of a pilot study of 69 students at a large midwestern university. The following attitudes are measured on five point Likert-type scales: Attitudes toward individual rights (X_{26}); attitudes toward armed revolution (X_{27}); political position (X_{28}); attitude toward the harmfulness or helpfulness of marijuana (X_{29}); and attitude toward hippie dress styles (X_{30}). Variables X_{27} and X_{29} are isomorphic with friends' attitudes, variables X_{24} and X_{25}. Additionally religious affiliation is included as a measure of basic attitude clusters potentially relevant to marijuana use by means of the dummy variables X_{12} = Catholic, X_{13} = Protestant, X_{14} = Jew, X_{15} = Atheist/Agnostic. A fifth category, other is not included in the analysis.

5. Structural Variables $(X_1, X_2, X_{16}$ through $X_{21})$:

Structural variables refer to those variables which identify an individual's location in the larger social structure. The major variables included in this study are: Sex (X_1), age (X_2), region of country raised measured by the dummy variables East (X_{16}), South (X_{17}), Midwest (X_{18}), and West (X_{19}). A large residual category (part of the sample is Canadian) is left out of the analysis. Additionally, Family SES is measured by the Prestige Scores of Fathers (X_{20}) and Mothers (X_{21}) occupation as scored by the Duncan revision of the NORC Scale (Duncan, 1961).

6. The Dependent Attitude (Self-Conception, $X_{39})$:

The theory proposed here suggests that the attitude ultimately governing behavior consists of the relationship an individual sees to exist between himself and the behavior in question. The formulation judged most satisfactory theoretically in this context was "To what extent do you consider yourself a marijuana user?" followed by the response alternatives (a) not at all, (b) very little, (c) somewhat, (d) to a large extent, (e) to a very large extent. Although theoretically acceptable, this variable is

very similar to (and highly correlated with r = .84) the behavioral measure

used here, resulting in some difficulty of interpretation to be discussed

shortly. Such a difficulty exists primarily because the dependent behavior

(rate of marijuana use) is self reported.

7. The Dependent Behavior (X_{40}):

Frequency of marijuana use is self reported on the six item scale:

0 = never, 1 = less than once a month, 2 = more than once a month, 3 = about

once a week, 4 = more than once a week, and 5 = several times a day. This

level of accuracy was assumed sufficient for self-reports.

SAMPLE

Data were collected by anonymous mailed questionnaires from four

major universities, three in the U.S.A. and one in Canada. Three hundred

forty-one fully completed questionnaires were obtained from six hundred mailed

out--a good response since (a) sample members are asked to self-report a

~~felony~~ crime, and (b) anonymity prevented follow-up on non-respondents.

~~Because of the legal and political implications of data concerning large~~

~~scale felony violations, full sample descriptions will be provided to~~

~~sociologists upon request, and are not reproduced here~~.

RESULTS

Table 1 shows the results of the regression of rate of marijuana

use on all the independent variables. While the multiple correlation is very

high (.893), a great deal of caution in interpretation is

(TABLE 1 ABOUT HERE)

warranted for several reasons: First, there is a question of redundancy

resulting from the similarity between the self-conception measure (X_{39}) and

the behavioral measure (X_{40}). Removing the self-conception measure from

the equation yields R = .74, still very high. Even excluding the possibility

of redundancy, the relationships among the variables, particularly the

self-conception (X_{39}) and behavior (X_{40}) is clearly nonrecursive, since many

of the variables, while no doubt influencing the behavior, are probably also determined in part as a result of the behavior; i.e., a person comes to conceive of himself as a marijuana smoker no doubt partly as a consequence of finding himself smoking. Similarly, if we are to assume that the focal individual's behavior is influenced by the behavior of his friends (X_{23}), we must also assume that the process works as well in reverse. Suffice it to say that many of the variables no doubt stand in reciprocal causal relationships with the dependent variable, and the regression equations presented here should not be taken as recursive causal models, but rather as evidence for net relationships between each of the variables and the dependent variable controlling for all the other variables. Nevertheless, the magnitude of the inter-relationships is sufficient to indicate that these variables tap quite effectively into the process at work in forming the behavior.

Table 1 also shows that, as the theory predicts, the effects of information flow variables are almost completely mediated by the attitude variables. Of those variables showing substantial beta coefficients, three are attitude variables, X_{39} (self-conception, B = .75), X_{27} (attitude toward revolution, B = .11) and X_{12} (Catholic, B = .13). Of the remaining three, two, X_5 (the dummy variable indicating attendance at the university with by far the highest rate of marijuana use, B = .14), and X_7 (the dummy variable indicating residence at home, B = -.10) can be interpreted as facilitational variables which govern access to marijuana. Table 2, on the other hand, which takes the self-conception variable (X_{39}) as the dependent

(TABLE 2 ABOUT HERE)

variable, shows the substantial relationships predicted by the theory between the information flow variables, particularly interpersonal variables, and the self-conception. X_{23} (friends' behavior, B = .29), X_{24} (friends' political position, B = .12), and X_{38} (the calculated index of friends' opinions, B = .17)

are all consistent with the hypothesis that information obtained from friends

exerts influence over the focal individual's self conception. Media show

almost no effect, with only magazines showing a significant figure at the first

decimal place (X_{33}, B = -.12) but note also that the sign is negative, i.e.,

the effect of magazine coverage, such that it is, is opposite that intended.

The only other variables showing a net relationship worth noting are

attitudinal variables X_{30} (attitude toward marijuana, B = .29) and X_{31}

(attitude toward hippie dress, B = -.16, which coefficient is negative but

the item is scored negatively, i.e., low scores equal favorable attitudes),

which is consistent with the hypothesis that incoming information is aggregated

with information already gathered relevant to the topic.

It is essential to note (due to the non-recursive character of

the variables) that while a net relationship between any independent variable

and the dependent cannot be taken as conclusive evidence of a causal link, the

absence of any such net relationship is fairly substantial evidence that a

causal link does not exist, or that effects are very small. This is clearly

the case with media in this study. The effect of a change of extent of

favorable coverage from television of one standard unit, for example, could

not exceed a change of two hundreths of a standard unit in self-conception, and

might well be less. In unstandardized form, this would indicate that

changing an individual's self-conception one point on the five point scale

(X_{39}) would require well over a hundredfold increase in the value of the

television index. This is not to say that television (to continue the example)

is without effect, since an increase of a hundredfold is not outside the range

of the television variable if one assumes that a unit message may easily be

received a hundred times in a reasonable period. But within the same period,

four unit messages from friends' behavior would equal this effect ($\frac{b_{23}}{b_{35}} = \frac{.23}{.01}$ = 23;

i.e., the impact of friend's behavioral example is roughly 23 times as great as

the impact of a television messate). Of course, the regression coefficient

for friends' behavior can't be taken at face value and is probably smaller

than indicated here due to the non-recursive nature of the system, but we

think it very unlikely that the discrepancy in effect would disappear alto-

gether if perfect measurements were to be made.

More appropriate comparisons can be made between the index of

friends' coverage (X_{38}) and media indices, since all are measured on the

same scale. The net relationship of friends' testimony is four times as great

as is that of newspapers $\left(\frac{b_{38}}{b_{32}} = \frac{.024}{.006} = 4\right)$, .75 times as great as magazines

$\left(\frac{b_{38}}{b_{33}} = \frac{.024}{-.036} = -.75\right)$ but the effect of magazines is opposite of what is

intended, eight times as great as radio $\left(\frac{b_{38}}{b_{34}} = \frac{.024}{.003} = 8\right)$, 2.6 times as great

as television $\left(\frac{b_{38}}{b_{35}} = \frac{.024}{.009} = 2.6\right)$, eight times as great as movies

$\left(\frac{b_{38}}{b_{35}} = \frac{.024}{.003} = 8\right)$, and twice as great as records and tapes $\left(\frac{b_{38}}{b_{36}} = \frac{.024}{.012} = 2\right)$.

If it is true (and it should be remembered that the data presented

here are suggestive rather than conclusive) that a given message is generally

more effective when delivered by friends than by media, then the gross effect

of media versus interpersonal sources will depend on the amount of exposure

an individual has to the various sources. Table 3 shows the mean score for

individuals on the item, "How frequently do you...(read newspapers, read

magazines, talk with friends, etc.). Responses are recorded on a five

point scale where 0 = not at all, 1 = few hours a month, 2 = few hours a week,

3 = few hours a day, and 4 = nearly all the time (movies are scaled 0 = not

at all, 1 = once a month, 2 = once a week, 3 = twice a week or more).

(TABLE 3 ABOUT HERE)

Table 3 shows that sample members report spending substantially more time interacting with friends than attending to media. Since the mean score of three for friends corresponds to a few hours of exposure a day, while the mean score for media (excluding movies, which is scaled differently) is exactly two, or a few hours a week, the sum of all media exposure is less than, or at best approximately equals the total exposure to friends, taking into account the apparently lower per-unit effectiveness of media messages, it would seem clear that the gross overall effect of media is substantially less than the effect of communication with friends. Since this measure <u>excludes</u> the effect of friends' modeling behavior (as expressed in X_{23}). The gross effect of friends on the attitude of individuals would seem to exceed the effect of media quite considerably.

CONCLUSION

The data presented in this paper seem to support but do not necessarily confirm that (a) attitudes and behaviors are primarily controlled by the receipt of information; (b) on a per message basis, interpersonal sources are more effective than media sources in establishing attitudes related to behaviors; (c) the cumulative gross effect of interpersonal influence considerably exceed the cumulative gross effects of each of the media apart and all the media collectively; and (d) a simple linear aggregation model provides a very good fit to the data.

Our findings, pertaining to the relative impact of interpersonal as distinct from media sources in establishing attitudes, are in accord with past theorizing on this topic. It has been noted elsewhere (Chaffee, 1972) that the media probably predominate in transmitting information about "news" topics such as nuclear energy, but more personal sources (who are likely to have had relevant experiences) are used when a personal "consumer" topic

is involved. Following this line of thinking, since consumption (e.g. marijuana smoking) is partly a matter of defining one's social self, other persons (significant others) would be able to offer appropriate consumption patterns that the media cannot. Also, some matters may not be dealt with by the media in adequate enough detail to appease personal information needs. For instance, the audience for specific details on marijuana use (or the effects thereof) may not be large enough to command intensive coverage by a general audience medium. Or, the media may avoid the presentation of sufficient information about sensitive topics such as marijuana smoking, out of fear that they might offend some audience members while informing others. Whether the same outcomes would be obtained if we varied the topics along a continuum of, say, "newsness" awaits further research.

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TABLE 1

39th Order Partial Regression Coefficients Predicting
Frequency of Marijuana Use

	Variable Name	Type Variable	b	β
X_1	Sex	Structural Variable	-.01	-.00
X_2	Age	Structural Variable	-.00	-.01
X_3	Sample 1	Structural Variable	.23	.08
X_4	Sample 2	Structural Variable	.12	.04
X_5	Sample 3	Structural Variable	.41	.14
X_6	Year in School	Structural Variable	.02	.02
X_7	Residence (home)	Structural Variable	.34	-.10
X_8	Residence (apartment)	Structural Variable	-.22	-.09
X_9	Residence (fraternity)	Structural Variable	-.20	-.03
X_{10}	Residence (dormitory)	Structural Variable	-.06	-.02
X_{11}	Residence (commune)	Structural Variable	-.56	-.07
X_{12}	Catholic	Related Attitude	.43	.13
X_{13}	Protestant	Related Attitude	.15	.05
X_{14}	Jew	Related Attitude	.25	.06
X_{15}	Atheist/Agnostic	Related Attitude	.21	.08
X_{16}	Raised in East	Structural Variable	.29	.15
X_{17}	Raised in South	Structural Variable	-.01	-.00
X_{18}	Raised in Midwest	Structural Variable	-.08	-.04
X_{19}	Raised in West	Structural Variable	.03	.01
X_{20}	Father's Occupational Prestige	Structural Variable	-.01	.04
X_{21}	Mother's Occupational Prestige	Structural Variable	-.00	-.00

TABLE 1 (Continued)

Variable Name	Type Variable	b	β
X_{22} City Size	Structural Variable	-.02	-.02
X_{23} Friends' Marijuana Use	Interpersonal Influence (SOI)	-.03	-.03
X_{24} Friends' Political Position	Interpersonal Influence (SOI)	.07	.04
X_{25} Friends' Attitude Toward Dress	Interpersonal Influence (SOI)	-.05	-.04
X_{26} Friends' Attitude Toward Individual Rights	Interpersonal Influence (SOI)	.00	.00
X_{27} Attitude Toward Religion	Related Attitude	.14	.11
X_{28} Philosophy of Life	Related Attitude	-.07	-.05
X_{29} Political Position	Related Attitude	-.13	-.07
X_{30} Perceived Harmfulness of Marijuana	Related Attitude	-.02	-.01
X_{31} Attitude Toward Dress	Related Attitude	.10	.09
X_{32} Newspaper Index	Media	.01	.05
X_{33} Magazine Index	Media	-.00	-.02
X_{34} Radio Index	Media	.00	.01
X_{35} Television Index	Media	-.00	-.08
X_{36} Movie Index	Media	.05	.10
X_{37} Record and Tape Index	Media	-.00	-.02
X_{38} Friends Index	Interpersonal Influence	.01	.08
X_{39} Self-Conception	Attitude	.96	.75

$R = .893$ $R^2 = .80$ $N = 341$

TABLE 2

**38th Order Partial Regression Coefficients Predicting
Conception of Self as a Marijuana User**

Variable Name	Type Variable	b	β
X_1		-.05	-.02
X_2		-.01	-.05
X_3		.11	.05
X_4		.07	.03
X_5		.21	.09
X_6		.01	.02
X_7		.02	.01
X_8		.02	.00
X_9		-.05	-.01
X_{10}		-.19	-.08
X_{11}		-.04	-.07
X_{12}		-.08	-.03
X_{13}		-.17	-.03
X_{14}		.03	.10
X_{15}		-.11	-.05
X_{16}		.10	.07
X_{17}		-.23	-.07
X_{18}		.08	.05
X_{19}		.17	.09
X_{20}		-.01	-.06
X_{21}		-.01	-.05
X_{22}		.02	.03

TABLE 2 (Continued)

Variable Name	Type Variable	b	β
X_{23}		.23	.29
X_{24}		.17	.12
X_{25}		-.04	-.04
X_{26}		.02	.03
X_{27}		-.04	-.05
X_{28}		.10	.09
X_{29}		.03	.02
X_{30}		.32	.29
X_{31}		-.13	-.16
X_{32}		.01	.03
X_{33}		-.04	-.12
X_{34}		.00	.01
X_{35}		.01	.00
X_{36}		.00	.00
X_{37}		.01	.07
X_{38}		.02	.16

$R = .74$ $R^2 = .55$ $N = 341$

TABLE 2 (Continued)

Variable Name	Type Variable	b	β
X_{23}		.23	.29
X_{24}		.17	.12
X_{25}		-.04	-.04
X_{26}		.02	.03
X_{27}		-.04	-.05
X_{28}		.10	.09
X_{29}		.03	.02
X_{30}		.32	.29
X_{31}		-.13	-.16
X_{32}		.01	.03
X_{33}		-.04	-.12
X_{34}		.00	.01
X_{35}		.01	.00
X_{36}		.00	.00
X_{37}		.01	.07
X_{38}		.02	.16

$R = .74$ $R^2 = .55$ $N = 341$

TABLE 3   Mean exposure to media and interpersonal conversation
in a four-university sample (N = 341)

MEDIUM	MEAN EXPENSE	σ
Newspapers	2.3	.87
Magazines	1.8	.77
Radio	2.3	.92
Television	1.6	.95
Movies*	1.0	.56
Records & Tapes	2.0	.11
Friends	3.0	.85

*See text for scaling differences.

$y \: (LEA)$

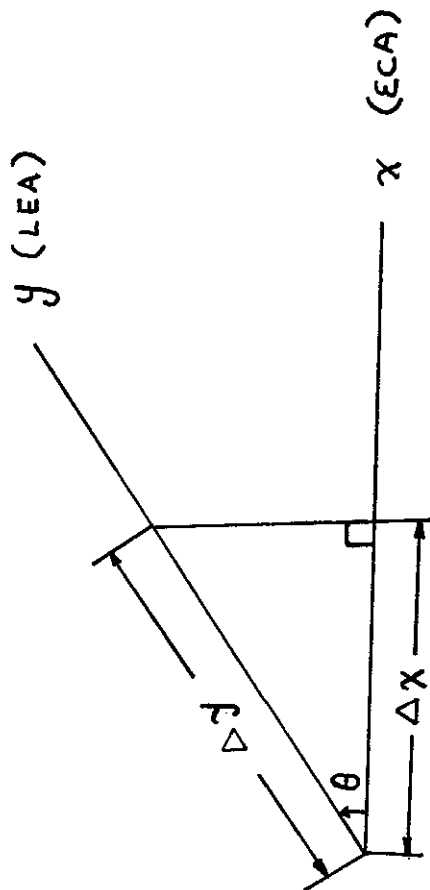$x \: (ECA)$

Δr

θ

Δx

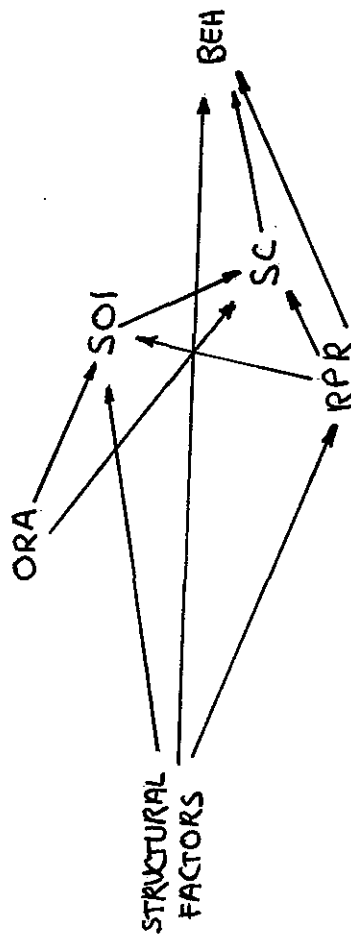FIGURE 1. PROJECTION OF ECA ON LEA.

FIGURE 2   DIAGRAMATIC REPRESENTATION OF THEORY

Manuscript #3-368

Recommendation: Resubmit following substantial revisions.

On pages 6-7 and in Figure 2 the author(s) present an outline of the
expected relationships among several variables hypothesized to be causally
prior to behavior: self conception (SC), significant other influence (SOI),
and relevant phenomenal reality (RPR) are all presented as endogenous
variables within the system, along with behavior. Why then conduct a
standard multiple regression in which the items measuring SOI, and RPR are
independent variables and behavior (or alternatively, SC) is the only
dependent variable? It would seem to me that some sort of causal
modeling is called for in which you set up structural equations for each
of the endogenous variables.

There are two other minor trouble spots as far as the theory is
concerned: (1) if, as the authors say, "behavior ... (is) ... controlled
wholly and only by the information an individual has about his/her relationship
to a potential behavior" (pp. 6-7) then why aren't SC and BEH linked
in Figure 2?; (2) why is the model presented as recursive on p. 7 and
in Figure 2, and then described as nonrecursive on pp. 12 and 14?

It wouldn't be much of a problem to collapse over the RPR items,
SOI items, etc. and do a path analysis. What concerns me most about this
paper is that we have data (somewhat elderly data at that) with
no reliability estimates. Furthermore, I don't see any easy way of
getting reliability estimates for the two dependent variables, since
each is measured by only one item.

In the event that the authors could address themselves successfully
to the issues raised above, I have a number of additional complaints
about the form and style of the manuscript:

(1) The questions raised on the first two pages seemed to be
totally irrelevant to the ultimate content of the paper. Besides, I don't
see that "decision-making" has "implied" a dichotomous-nominal classifica-
tion of behavioral outcomes for some time now. The little Penguin
paperback Decision-making published about 1967 contains a number of
reprinted articles by econometricians on stochastic models of decision.
At any rate, we certainly don't have to argue for anymore upgrading
measurement beyond the nominal level.

(2) The presentation of the Woelfel and Haller theory is very sketchy:
point #2 on page 3 is incomprehensible in its current form.

(3) The equations on page 4 are trivial. All of this could be put in a few succinct sentences in which you show the relationship of "intertial mass" to b.

(4) There seem to be some errors or typos at the bottom of page 5 which could be very confusing to the reader. For example, on line 21, the properties of ECA on the LEA vector? don't you mean the projection? Also, shouldn't that be $\Delta Y = \Delta X \cos \Theta$? and $Y = L E A$, $X = E C A$?

(5) If and when the manuscript is resubmitted, the authors should be careful to:

(a) use the A.P.A. Style manual as a guide to the correct form for references;

(b) include all the relevant information in the Tables (see Table 2), even though it has been given before;

(c) remove all institutional identification (see Figures 1 and 2 where the name of the author's (or someone's) institution is plainly evident;

(d) clean up the comma faults and sentences in which words or phrases have been left out, such as page 1, paragraph 1, last sentence, and paragraph 2, page 1, second sentence.

The attached paper 3-368 (it doesn't have a title) is a clear presentation of the Woelfel approach, which is then illustrated by a study of marijuana use. I like the writing style, the data-handling, and the interpretation. It ought to be published, in my opinion.

But I do have some cavaets which I suggest the author(s) ought to consider for revision.

1. The article is hung on the peg of mass media effects, and almost none are found. This paper could also have been hung on the peg of the importance of peer influence on marijuana use, a strong, consistent finding of past research. But almost none is found here either. This is very puzzling, and ought to be explained. At least, the peer influence research ought to be cited:

Denise B. Kandel (1973), "Adolescent Marijuana Use: Role of Parents and Peers," Science, 181: 1067-1070; and (1978), "Homophily, Selection, and Socialization in Adolescent Friendships," American Journal of Sociology, 84: 4270436. The work cited by Kandel here will lead to other research on peers and marijuana.

2. I feel the math formula given on pp. 3-6 add little to the presentation, and turn off most readers, who either will not understand them, or if they do, see them as simple and redundant with the prose.

3. I should think that the social modeling theory of Albert Bandura should be referred to on top of page 8. Unfortunately, peers' marijuana use is not a very important predictor of the respondent's use either.

The above suggestions, if accepted, would make this paper a better example of sound scholarship.

I'll hope to see this paper in print soon.