A PATH ANALYSIS TO TEST
A MODEL OF HELPING BEHAVIOR

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The concept of causation has been controversial among philo-sophers and scientists alike. For various reasons, many behavioral scientists oppose the use of causation. However, a cursory review of their work reveals the frequent use of terms that indicate or imply casual thinking, e.g., effect of reinforcement on subsequent behavior, determinants of helping behavior, proportions of variance attributed to certain independent variables. While the term causation may not be used, the idea for which it stands continues to have wide currency (Nagel, 1965). Scientists who wish to explain, predict or control human behavior must be able to identify the factors affect-ing the behavior, i.e., the causes of the behavior.

In recent years, many social psychologists have attempted to discover causes of helping behavior. The present study is one such attempt. It proposes a causal model of helping behavior. The model consists of a set of hypotheses that link specific variables in causal relation. To test the model, data are collected using a quasi-experimental design and then analyzed using the procedures of path analysis.

Similarity has appeared as a significant concept in helping behavior. While there have been numerous studies employing various measures of similarity between the potential helper and the person in need of help, ethnicity as a measure of similarity has not been adequately studied. Ethnicity implies similarity, by definition: "An ethic group consists of those who conceive of themselves as alike by virtue of their common ancestry, real or fictitious, and who are so regarded by others" (Shibutani and Kwan, 1965:47). Furthermore, ethicity is a realistic basis for categorizing people especially in ethnically heterogeneous societies. A number of experiments have demonstrated that a person's categorization of his/her social world into distinct social groups can be sufficient condition for introducing in his/her behavior certain forms of in-group favoritism and bias (Tajfel et al., 1971; Billig and Tajfel, 1973; Allen and Wilder, 1975).

Categorization of our social world on the basis of ethnicity forms the point of departure for rather far reaching inferences about social conduct. For example, one's inferences regarding conduct of a dependent person would be influenced by the ethnicity of that person. Cases in point are the inferences one makes about assignment of responsibility for dependency and evaluation of the attractiveness of dependent persons. These two inferences may consequently shape and dtermine the responsiveness of potential helpers.

Some measures of similarity are positively related to helping (Emswiller et al., 1971; Graf and Riddell, 1972; Sole et al., 1975; Karylowski, 1976; Krebs, 1975), while other measures have no independent effects on helping (Schopler and Bateson, 1965; Gruder and Cook, 1971; Karpienia and Zippel, 1974). Ethnic similarity, when properly manipulated,

to represent immigrant status, a variable whose effects may be confounded with those of ethnic similarity. Because the dependent person of same ethnicity is also of the same immigrant status as the respondent, it is possible that it is immigrant status and not ethnic similarity that may affect helping. To test this interpretation, the relative effects of ethnic similarity and immigrant status were compared using multiple regression analysis (cf. Kerlinger and Pedhazur, 1973). This procedure allows prediction of the values of the dependent variable, given that the dependent variable is a linear function of the independent variables. Results reveal significant effects of ethnic similarity but not of immigrant status on helping behavior.

For the lost-wallet situation, ethnic similarity has a Beta = .346, p < .05, and for the accident situation, a Beta = .425, p < .05. In contrast, immigrant status has a Beta = −.080 p > .05, for the former situation and a Beta = −.186, p > .05 for the latter. These results tease out the immigrant factor from the ethnic similarity variables and demonstrate that variation in helping behavior is attributable to ethnic similarity and not to immigrant status.

The interview also assessed attribution of responsibility, interpersonal attraction and helping behavior. Attribution of responsibility was measured using 2 scales. One was a 7-point scale, the points ranging from not personally responsible to personally responsible for the act that produced the dependency. For the first vignette, it was responsibility for losing the wallet while for the second vignette it was responsibility for the accident. The other was a 4-point scale, ranging from no responsibility to very much responsibility for being in the dependency situation. These 2 scales being highly associated (Gamma = .871, for the first vignette; Gamma = .510 for the second vignette) they were combined to form an attribution of responsibility index. Construction of the index involved 3 steps. The first step was a dichotomization of scores on each scale at the median. The scores were categorized into low, moderate, and high levels of respon-

sibility in the following manner. Scores below the median on both scales composed the low category. The moderate category consisted of scores which were below the median on one scale and above the median on the other scale. And scores above the median on both scales were assigned to the high category. Finally, the 3 levels of responsibility were dichotomized into high and low by collapsing categories to represent a distribution that is as close an possible to a 50-50 split.

For interpersonal attraction, a 7-point scale was designed, with a view to gain a general impression of the dependent person. The scale ranged from very unfavorable to very favorable impression of the woman. In addition, the dependent person was evaluated on 2 semantic differential scales: unfriendly-friendly and unlikeable-likeable. The high intercorrelation of scores on the 3 scales (Pearson correlation ranged from .566 to .700) warranted the construction of an index. Scores on each of the scales were summed to form the attraction index.

Helping the dependent person required the respondent to imagine herself in the position of a potential helper, so that her willingness to comply with requests for help represented her expressed intention to help. This was measured through 3 response alternatives: (1) no, I would not, (2) Yes, I might, and (3) Yes, I definitely would. All responses were dichotomized into no and yes responses.

A Path Analysis

Having described the causal model of helping behavior, the method of data collection, and the measurement of variables, we now turn to a path analysis (Spaeth, 1975; Kerlinger and Pedhazur, 1973; Land, 1969; Heise, 1969) of the data to test the model. The zero-order correlations among the four variables in the model are presented in Table 1. It is evident that each variable is significantly correlated with every other variable. The pattern of causal relations among the variables is displayed graphically in the path diagram in Figure 1.
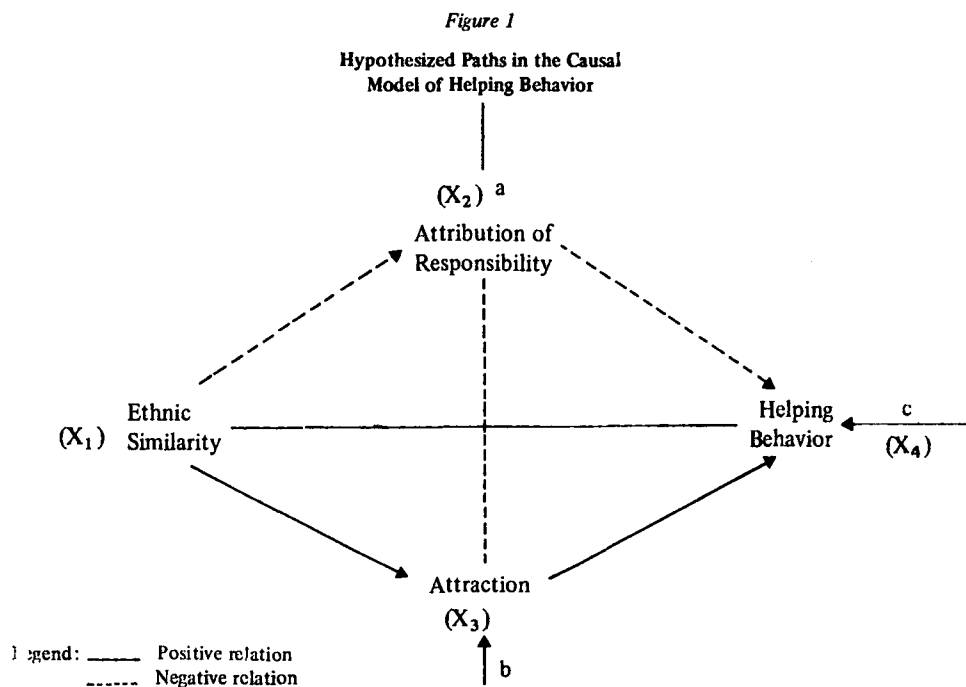
Figure 1

**Hypothesized Paths in the Causal
Model of Helping Behavior**

Legend: _____ Positive relation
         ------ Negative relation

Table 1

Correlation Matrix of Research Variables
for Two Dependency Situations*

I. *Lost Wallet Situation*

	Attribution of Responsibility	Attraction	Helping
Ethnic Similarity	−.363	.483	.307
Attribution of responsibility		−.622	.544
Attraction			.531

II. *Accident Situation*

	Attribution of Responsibility	Attraction	Helping
Ethnic Similarity	−.477	.618	.305
Attribution of Responsibility		−.568	.513
Attraction			.462

* Gamma $<$ .01

In the model, ethnic similarity, is an exogenous variable, whose variation is assumed to be determined by causes outside the causal model. The other 3 variables are endogenous variables whose variations are determined by exogenous and/or endogenous variables in the model. Since it is not possible to account for the total variance of any one variable, residual variables are introduced to indicate the effects of variables not included in the model. In Figure 1, a, b, and c are residual variables.

The causal model is a linear, recursive one. This means that the relationships are linear and the causal flow is assumed to be unidirectional, i.e., there are no reciprocal causations or feedback loops.

The postulated causal and non-causal relationships among the variables may be represented by a set of structural equations. Each dependent variable is represented by an equation consisting of the variables upon which it is assumed to be dependent and a residual variable not under consideration in the model.

When all variables are expressed in standard form (Z-scores) the structural equations are

$$Z_2 = p_{21}Z_1 + a$$
$$Z_3 = p_{31}Z_1 + p_{32}Z_2 + b$$
$$Z_4 = p_{41}Z_1 + p_{42}Z_2 + p_{43}Z_3 + c$$

A path coefficient indicates the weight of the direct effect of a predictor variable on a dependent variable. When the variables are expressed in standardized form, each coefficient estimates the amount of change in standard deviation units of the dependent variable that is produced by a unit standard deviation change in the predictor variable(s).

The path coefficients for the causal model applied to the lost wallet and the accident dependency situation appear in Figures 2 and 3, respectively. These coefficients are reproduced in Table 2 along with the unstandardized partial regression coefficients and standard estimate? The examination of Figures 2 and 3 and Table 2 reveals strong support for the hypothesized

Figure 2

Path Coefficients* in the Causal Model of
Helping Behavior For the Lost Wallet Situation

*Beta < .05

Table 2   9
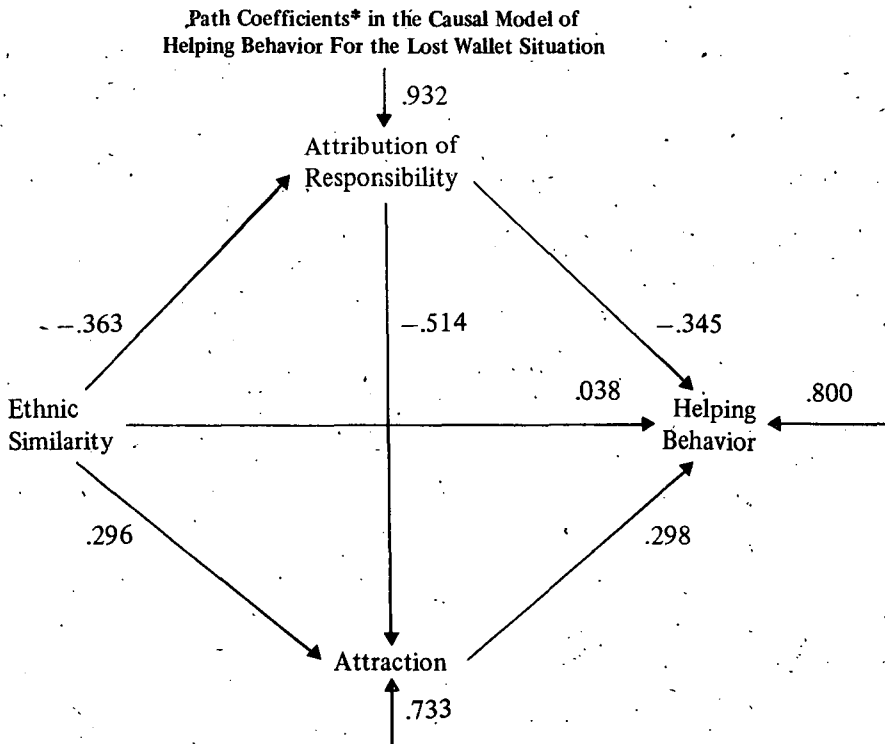
Path Coefficients, Unstandardized Regression Coefficients
and Standard Errors of Model Paths for Two Dependency Situations

I. Lost Wallet Situation

Dependent Variable	Predictor Variable	Path Coefficient	Unstandardized Regression Coefficient	Standard Error
Responsi- bility $R^2 = -.132$	Similarity	− .363*	− .370	.089
Attrac- tion $R^2 = .462$	Responsibility Similarity	− .514* .296*	− .515 .302	0.75 0.76
Helping $R^2 = .360$	Responsiblity Attraction Similarity	− .345* .298* .038	− .344 .296 .384	.097 .103 0.38

II. Accident Situation

Dependent Variable	Predictor Variable	Path Coefficient	Unstandardized Regression Coefficient	Standard Error
Responsi- bility $R^2 = .227$	Similarity	− .477*	− .486	.084
Attrac- tion $R^2 = .479$	Similarity Responsibility	.449* − .354*	.458 − .354	.079 0.78
Helping $R^2 = .307$	Responsibility Attraction Similarity	− .378* .275* − .044	− .378 .275 − .452	.098 .109 .104

*p < .05

relations in the causal model for both dependency situations. Ethnic similarity had negative effects on attribution of responsibility (causal relation II). It accounted for 13.2 percent of the variation in responsibility in the lost wallet situation and 22.7 percent in the accident situation. Attraction was affected negatively by attribution of responsibility (causal relation VI) and positively by ethnic similarity (causal relation IV). The two predictors together explained 46.2 percent of the variation in attraction in the lost wallet situation and 47.9 percent in the accident situation. Helping behavior was affected negatively by attribution of responsibility (causal relation III) and positively by attraction (causal relation V). However, the path coefficient representing the relation of ethnic similarity to helping was not significant (causal relation I). All three predictors accounted for 36.0 percent of variation in willingness to make a call for a dependent person and 30.7 percent of variation in responsiveness to a telephone survey.

The heart of path analysis is the decomposition of zero-order correlation coefficients into direct effects and indirect effects. The 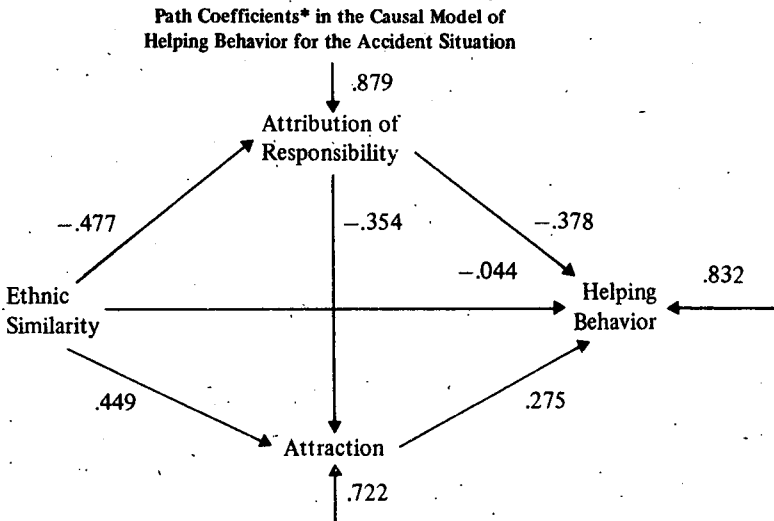direct effect between a predictor variable and a dependent variable constitutes that part of their zero-order correlation that is not influenced by other variables in the causal model; indirect effects constitute those parts of the correlation that are accounted for by causally mediating variables in the model. The decomposition of the zero-order correlations among the 4 variables in the causal model of helping behavior is represented by the following equations:

$$r_{12} = p_{21}$$
$$r_{13} = p_{31} + p_{32}p_{21}$$
$$r_{23} = p_{32} + p_{31}p_{21}$$
$$r_{24} = p_{42} + p_{41}p_{21} + p_{43}p_{32} + p_{43}p_{32}p_{21}$$
$$r_{34} = p_{43} + p_{41}p_{31} + p_{41}p_{32}p_{21} + p_{42}p_{32} + p_{42}p_{31}p_{21}$$
$$r_{14} = p_{41} + p_{42}p_{21} + p_{43}p_{31} + p_{43}p_{32}p_{21}$$

For the lost wallet situation, the coefficients for the above equations are:

$$r_{12} = -.363$$
$$r_{13} = .296 + .187 = .483$$
$$r_{23} = -.514 - .017 = .621$$
$$r_{24} = -.345 - .014 - .153 - .032 = -.544$$
$$r_{34} = .298 + .011 + .007 + .177 + .037 = .530$$
$$r_{14} = .038 + .125 + .088 + .056 = .307$$

Figure 3

**Path Coefficients* in the Causal Model of
Helping Behavior for the Accident Situation**

*All coefficients are significant at the .05 level except the ethnic similarity to helping behavior path coefficient (−.044)

It is obvious that there were no indirect effects for the correlation of ethnic similarity and attribution of responsibility. Looking at the correlation of ethnic similarity and attraction, we see that 61 percent (.296/.483) was due to direct effects and 39 percent to the mediation of attribution of responsibility. For the correlation between attribution of responsibility and attraction, a huge 83 percent. ($-.514/$ $-.621$) was direct and the remainder was spuriously brought about by the joint association of attribution of responsibility and attraction with ethnic similarity. The attribution of responsibility-helping behavior link had 63 percent ($-.345/-.544$) due to direct effect and the remainder due to the combined effect of attraction as a mediating variable and spurious effect of ethnic similarity as a common predictor variable. Turning to the correlation between attraction and helping behavior, we see that slightly more than half (56 percent=] .298/.530) of the total effects was direct; a big portion of the total indirect effects is spuriously brought about by the joint association of attraction and helping behavior with attribution of responsibility. Finally, the correlation between ethnic similarity and helping behavior was ascribed mainly to indirect effects; only 12 percent was direct, 41 percent was due to the mediation of attribution of responsibility and 29 percent, the mediation of attraction.

A similar analysis for the data on the accident dependency situation is in order. The decomposition equations are as follows:

$$r_2 = -.477$$
$$r_3 = .449 + .169 = .618$$
$$r_3 = -.354 - .214 = -.568$$
$$r_1 = -.378 + .021 - .097 - .059 = -.513$$
$$r_1 = .275 - .019 - .007 + .133 + .080 = .462$$
$$r_1 = -.044 + .180 + .123 + .046 = .305$$

Thus, more than 2/3 (73 percent) of the correlation between ethnic similarity and attraction was due to the direct effect. Sixty-two percent of the correlation between attribution of responsibility and attraction was due to direct effect, while 38 percent was spurious.

A substantial percentage (74%) of the correlation between attribution of responsibility and helping was direct. The attraction-helping behavior relationship had 60 percent of its correlation due to direct effect and the remainder to indirect and spurious effects. The correlation between ethnic similarity and helping was due mainly to the mediating effects of attributions of responsibility (59 percent) and attraction (40 percent).

It is evident that the results of the decomposition analysis was consistent for both dependency situations. More importantly, five of the six hypothesized causal relations in the helping model were brought about by direct effects. It was only the ethnic similarity to helping behavior link that was explained mainly by the intervention of attribution of responsibility and attraction.

Looking at the unstandardized regression coefficients on Table 2, one finds noticeable differences in the magnitude of some coefficients. One is that the regression coefficients for three relations are consistently higher in the accident situation than in the lost wallet situation. These are the relations between ethnic similarity and attribution of responsibility, ethnic similarity and attraction, and attribution of responsibility and helping behavior. Another difference is the higher coefficient for the relation between attribution or responsibility and attraction in the lost wallet than in the accident situation. Both of these differences may be a function of the nature of the dependency situations. A woman who had lost her wallet and consequently asked for help was assigned more responsibility for her dependency than a woman whose negative outcome resulted from an accident. This is evident from the respondents' evaluation of the dependent person on a 7-point careless-careful scale. The woman who lost her wallet was given a mean rating of 2.72 while the woman who had an accident had a mean of 5.60. Respondents might have perceived the particular accident situation as an occurrence over which the victim had little control while losing a wallet evoked internal attributions of careless-

ness to the dependent person. It appears that the effects of ethnic similarity on attribution of responsibility to helping are more pronounced in situations where a person becomes dependent despite her carefulness. Nevertheless, it is notable that both situations lend support to the proposed causal model.

The results of the study lend support to a causal model consisting of three chains of relationships. One chain is that ethnic similarity affects attribution of responsibility which in turn determines helping. Another is that ethnic similarity influences attraction which has consequences for helping behavior. The third is that ethnic similarity affects attribution of responsibility, which influences attraction, which in turn determines helping behavior.

The utility of the causal model of helping behavior has been demonstrated on female Filipinos, using helping situations, where help is directed to a person who explicitly asks for it, and the type of help needed involves a minimum of time and effort and no monetary costs on the part of the helper. Is is left to future research to determine the utility of the model on various ethnic groups and among males and between the sexes. And it is interesting to find out if the model will be supported under conditions of spontaneous help, monetary help, and help that is costly in time and effort.

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