

Alcohol and Drug Education: Models and Outcomes*

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Knowledge-attitude-behavior and values-based models are analyzed with regard to their application to development and evaluation of drug education programs; theoretical problems of these models are identified. The experimental evidence regarding the application of these models to drug education is reviewed. Recommendations are made concerning theoretical, programming, and research implications for drug education and for health education in general.

Within the past ten years drug education has shown both remarkable vitality and disturbing weaknesses. Its robustness, reflected in a proliferation of programs, especially in schools, and its growing importance, are offset by several problems.

A weakness of drug education lies in its general failure to make explicit its underlying educational assumptions. Where assumptions have been made explicit, few attempts have been made to test them through assessment of program effectiveness. The effectiveness of drug education cannot be demonstrated convincingly unless such assessments are conducted; in the absence of these demonstrations the field is exposed to attack on the basis of cost/benefit economics, ideological differences, and inadequate research.

An analysis of current drug education will be undertaken here through examination of two common models employed in drug education: (1) a model based upon assumed linkages between knowledge, attitudes and behavior; and (2) a model based on the role of values as related to behavior, decision-making and self-concept. These models, and their sub-models, are frequently only implied in programs or program evaluation. Wong¹¹⁰ provides a brief discussion of these and other drug education models.

THE KNOWLEDGE-ATTITUDES-BEHAVIOR MODEL

One model commonly implied in drug education proposes a series of relationships between a person's knowledge about drugs, his/her feelings concerning drugs and his/her behavior relating to drugs. The knowledge-attitude-behavior model and its sub-models parallel theories of attitudes and attitude change that one finds in the social sciences, especially in social

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psychology; a large body of theory and knowledge exists, therefore, to which one can refer when considering this model of influence used in many drug education programs. Several sub-models will be considered individually in greater detail here.

Knowledge and Behavior

The first sub-model concentrates on the relationship between knowledge and behavior alone. It has been assumed, for example, that informing people about drugs is effective in preventing or reducing problems associated with drug use. This assumption is now less common in school drug education programs but is implied in many public education programs; such programs are frequently referred to as public awareness or information programs.

Research data to support the assumed educational impact of increased knowledge on drug use are scarce. This is not because knowledge about drugs and use of drugs are unrelated; they are, in fact, often positively related, so that drug users frequently,^{22,34,42,90} but not consistently,^{16,60,99} possess more accurate information about drug use than nonusers. Nor is the limited educational role of increased knowledge due to difficulties in increasing people's knowledge or awareness, an outcome which can be readily achieved.^{7,11,20,35,44,47,49,57,59,63,67,69,86,88,89,92,93,95-97,107,108,111}

Implications for health education programming. Use of a simple knowledge-influences-behavior model in developing health education programs is likely to have limited success. This is not to imply that knowledge is unimportant in determining health-related behavior, or that knowledge modification cannot be instrumental in producing the desired behavioral outcome. The research literature does, however, suggest that exclusive dependence on knowledge change is likely to have little behavioral impact.

Failure to produce behavior change through raising levels of knowledge may be due to the lack of a causal link between knowledge and behavior such that, although a correlation between knowledge and behavior may be found, no cause-effect relationship exists. It is, furthermore, not always clear whether knowledge leads to behavior or *vice versa*. Finally, even if a causal relationship were to exist, a change in knowledge would not necessarily lead to a change in behavior if other competing factors were ignored. The social sciences are replete with theory and research emphasizing the influence of noncognitive factors on behavior, e.g., personality, and social factors. In drug education research studies it has been demonstrated, for example, that removal of attitudinal contributions reduces the significant correlation between knowledge and intended drug use to insignificant proportions.⁴⁰

Attitudes and Behavior

A second component of the knowledge-attitudes-behavior model is the assumption that attitudes are closely related to behavior. A corollary of this, which is even more treacherous in its simplicity, is that attitude-change is related to behavior-change.

No review will be made here of the large volume of studies and theorizing concerned with the relationship between attitudes and behavior. Considerable debate has centered around this issue at least since La Piere's classic study.⁵⁴ Several excellent sources are available for those wishing to familiarize themselves with details of the conflicts in this area. No definitive resolution is presently available, although progress has been made in recent years in reconciling conflicting findings and developing a more satisfactory model incorporating attitudes and behavior. Some of the more notable attempts to review, explain, and integrate research of attitude-behavior relationships include Tittle and Hill,¹⁰⁰ Wicker,¹⁰⁵ McGuire,⁵⁸ Fishbein,³⁷ Ajzen and Fishbein,⁴ and Calder and Ross.¹⁹ These reviews suggest that little evidence exists to support the concept of attitudes as a discrete and stable entity having significant behavioral impact.

Much research and speculation has been devoted to explanations of the poor predictive power of attitudes. To elucidate the problem and to highlight some of the solutions, several general statements about the attitude-behavior relationship can be made.

(1) A large number of definitions of attitudes have been proposed. In many of these definitions attitudes are: (a) seen to be hypothesized entities without tangible referents in the physical world; (b) considered to originate from previous experience, social influence, and/or individual needs; (c) derived from inferences from the objective world, either through direct observation of behavior or indirectly from the feelings and opinions expressed through speech or writing (e.g., attitude scales); (d) considered to possess an organization and balanced structure within the total complex of other attitudes and behavior; and (e) considered to have an impact upon behavior, at least to the extent of being predictive of later behavior even if not causally linked to that behavior.

(2) In addition to defining attitudes, there is a need for care in defining the behavior to which attitudes refer. Behaviors can be distinguished on the basis of how often they are repeated, their familiarity, and the range of alternatives from which they are drawn. It is also clear that repeated observations of a behavior will lead to higher correlations with attitude measures than will single observations.^{4,19,37,100}

(3) Situational factors play a significant role in relation to attitudes and behavior. These include the influence of social norms, situational restrictions on behavior, expected consequences of behavior, and similarity between attitude objects and situations.^{3,37,43,75,105}

(4) Poor relationships between attitudes and behavior also arise from the interference of competing attitudes and motives,^{6,80,105} the lack of requisite verbal, intellectual or social abilities,¹⁰⁵ and differences in difficulty of performing alternative behaviors.²¹

(5) Basic to the problem of attitude-behavior relationships is the problem of attitude measurement. Measures can range from the highly sophisticated and reliable to the very unsophisticated, nonstandardized and method-

ologically questionable forms of measurement.^{19,51} It is now realized that measures of attitudes-to-act (e.g., attitudes toward the use of drugs) are more valid than attitudes-to-object or situation (e.g. attitude toward the drug LSD). It is also clear that the more specific the attitude act (e.g., attitude to the use of LSD versus attitude to the use of drugs in general), the greater will be the predictive power of the attitude measure.^{6,37,48,73,75,104}

(6) There is evidence that the best predictor of future behavior is a person's stated intention to perform a behavior;⁴ the more specific the behavioral intention and the more closely related to the behavior, the greater will be the predictive power of behavioral intentions.

As a result of earlier failures to establish a consistent attitude-behavior correspondence, researchers have tested more sophisticated approaches. These have attempted to include an improved methodology (as suggested in the summary statements above), and a broader conceptualization designed to incorporate both better specification of the attitudinal referent and greater recognition of the contributions made by situational variables. With the inclusion of these variables considerable success has been reported in predicting behavior from attitude measures.^{37,51,65,75,106} Of special interest is Schlegel et al's⁷⁹ successful test of Fishbein's model in relation to adolescent alcohol use.

Attitude-change and behavior-change. The problems of establishing an attitude-behavior relationship are compounded when behavior-change is attempted through attitude-change. Evidence to support the expectation that behavior-change will result from changes in attitude is meager. There are very few published studies which present data with regard to this issue, and those which do are generally negative in their findings.^{19,36,72} The naivete of attempting behavior-change through attitude-change should be evident from the previous discussion. In addition to the problems already described, drug educators are frequently concerned with well-established patterns of behavior which are supported by social forces and are likely to be congruent with existing sets of attitudes. It is not surprising therefore, that even where attitudinal changes are achieved, corresponding behavioral changes do not necessarily follow, or, if they are initially exhibited, they will in time yield to better-established patterns of behavior.

To cast further doubt on the power of attitude-change in producing behavior-change, there is evidence demonstrating that attitudes are affected by behavior. Much of this evidence comes from investigations of cognitive dissonance and competing theories.^{1,48,58} This would suggest that a more effective medium for change might be via both direct and indirect behavior influence rather than through attitude change attempts.

Drug education outcomes. Greater emphasis has recently been given, within drug education, to the attitude component of the knowledge-attitude-behavior model. The importance attributed to attitudes can be seen in the explicit and implicit objectives of the drug education programs, and in the attention given to attitudes as a dependent measure in program evaluations

and in surveys of drug use. Attitude measures have been obtained in most reported drug education evaluations; a number of reviews and summaries are available.^{2,9,15,35,39,62}

In general, drug-related attitudes have been found to change less readily than levels of knowledge. An extrapolation of results indicates roughly equal proportions of studies demonstrating one of four possible attitudinal outcomes. One group of studies showed little or no effect on drug-related attitudes.^{29,60,66,68,71,89,95,107} A second group showed changes toward more pro-drug attitudes.^{29,59,93,96,97} A third group of studies demonstrated attitudinal changes in predominantly antidrug directions.^{44,47,69,91,102,111} A final set reported mixed effects in changing drug-related attitudes (i.e., positive effects from only some subgroups receiving the same program).^{20,61,63,64,88,92,98}

Examination of studies reporting evaluation of behavioral impact revealed similarly mixed findings: little or no effect,^{28,61,66,68,89,95,97} negative effects (i.e., an increase in reported drug use after the program),^{20,29,59,86} positive effects,^{26,33,60,69,85} and mixed effects.^{24,44,56,67,93,96,107}

Care should be exercised in interpreting the above extrapolations since:

- (1) judgement has been exercised in categorizing the results as positive, negative, etc.;
- (2) interpretation of results sometimes differs from the author's (e.g., Rabinowitz and Zimmerli⁶⁹);
- (3) no weight has been given to methodological quality and problems (see Goodstadt³⁹);
- (4) programs have differed greatly in design and subject matter; and
- (5) differences may exist in the behavioral impact of smoking studies compared to other drug education studies—more of the smoking programs appear to fall into the positive or no-results categories.

Implications for health education programming. The theory and experimental findings regarding attitudes and behavior suggest several important conclusions for health educators.

(1) A distinction is required between two sets of relationships, the attitude-behavior relationship on the one hand and attitude-change—behavior-change relationship on the other. The existence of an attitude-behavior relationship will not ensure that behavior-change will follow from a change in attitudes. It is, therefore, hazardous to adopt attitude-change as an objective for education programs in the expectation that this will achieve the program's ultimate behavioral goals.

(2) When attempts are made to affect attitude and behavior changes, the two objectives (i.e., attitudinal and behavioral) must be clearly specified and be in correspondence with each other. In this way, the educator will develop objectives and programs directed to the same attitudinal and behavioral end. An example of congruence between attitudinal and behavioral objectives would be a program directed at (a) attitudes regarding the use of alcohol in the workplace, and (b) the consumption of alcohol in the workplace.

Incongruence would exist where, for example, the attitude referent was alcohol consumption in general while the behavioral objective was alcohol consumption in the workplace.

(3) Specification of, and congruence between attitudinal and behavioral objectives will automatically increase the likelihood that appropriate criterion measures will be employed, thus aiding in the evaluation of the program's impact.

(4) Where program objectives include attitudinal components, the focus of the attitude change should be directly related to behavior or action. Attitudes are most commonly employed to refer to an object, person, or state (e.g., alcohol, patients, health), but health programs would be more effective if they paid attention to attitudes regarding behaviors (e.g., attitudes toward drinking rather than toward alcohol, cancer check-ups rather than cancer, brushing teeth rather than cavities). Health programs should, furthermore, be as concrete and specific as possible in identifying these attitudes-toward-action. A program will, for example, be more effective if it deals with attitudes toward correct diet for three daily meals rather than toward diet in general. Similarly attention to attitudes related to specific preventive measures for children's diseases (e.g., vaccinations) would be more effective than attempting to influence general attitudes toward children's health.

(5) Health-related behaviors and attitudes do not exist in a vacuum. Their modification is dependent upon the inhibiting and facilitating influence of other behaviors, attitudes, and motivations. Changing of smoking or drinking patterns, for example, will only be successful if other social behaviors and attitudes are taken into account, reducing the resistances to change originating from these forces. Of special importance in this respect is the power of competing social and situational factors.

(6) In view of the expected continued role of attitudes in health education programs, it is essential that careful evaluation of outcomes be undertaken to ensure that both attitudinal and behavioral objectives are being met. These evaluations must include not only the requirements already enumerated but also attention to the quality of attitude measures. Assessment of attitudinal impact must include (a) assessment of the precise attitudes identified in the objectives and not a substitute or related attitude (a distinction must be made, for example, between attitudes toward alcohol, alcohol use, alcohol users, alcoholics, and treatment for alcohol problems); and (b) the use of valid and reliable attitude instruments.

Behavior

Paradoxically, "behavior," which is the most obvious component in the knowledge-attitude-behavior model, is not free of difficulties. Allusion has already been made to the need for specification of target behaviors, and the necessity for ensuring that attitude targets are defined in a compatible fashion. Further consideration of behavior, especially as used in psychological theories

of attitudes, leads to the identification of a behavioral tendency (i.e., conative) component of attitudes. It has been found that this behavioral tendency, frequently operationalized as a stated intention or expectation to behave in a particular manner, is the strongest component and best predictor of future behavior.^{37,51,65} Evidence linking attitudes with (a) intentions to use drugs, (b) previous use, and (c) subsequent use comes from studies by Fejer and Smart,³⁴ Goodstadt,⁴⁰ and Matthews and Piper.⁶⁰

Implications for health education programming. This background, and the discussion of behavior in the earlier section suggests that health-related behavior may be influenced by leading a person to participate in behaviors, especially those which lead to changes in behavioral intentions. This presents a paradox, since it is being suggested that behavioral change may be produced through stimulating behavioral change. The paradox is resolved, however, through the processes and stages by which the behavioral influence is exerted. Rather than attempting to produce the full change in one step, several smaller steps can intervene. These steps may take the form of an expressed desire to change, an expressed intention to change, a small behavioral expression of or commitment to change, a larger public demonstration of change, and so forth. Examples of the processes by which these can be brought about include individual counseling, group interaction, debates, role-playing, essay writing, exhibiting a visible commitment to behavior (e.g., via buttons or posters), and assisting in eliciting the behaviors from others (e.g., through volunteer work).

Very little attention has been given to achieving health program objectives through a well-planned series of behavioral changes. There is a wealth of experience with these techniques from clinical settings, as well as from experimental social psychology experiments, which should provide a basis for exploration in health programming.

VALUES-BEHAVIOR MODEL

Simultaneously, from several converging points in the social sciences, philosophy, and education, there has recently emerged an awareness of the potential role of values as they guide and influence behavior. Trust in the concept of values in education and psychology is evident from the prominent position claimed for values in health education guidelines and curriculum outlines, and also from the popularity of values-oriented workshops, seminars and publications. Emphasis upon values appears to have developed partly as a result of dissatisfaction with traditional methods of education in its effort to deal with human behavior.

Unfortunately for education in general and for drug education in particular, there is confusion in thinking and practice regarding values. There is, in addition, relatively little research evidence to support the assumed central role of values as employed in education. This renders the values approach open to scrutiny and questioning to which few satisfactory responses are presently available. The pervasiveness of values across

disciplines is, itself, an interesting phenomenon, but without an appreciation for its many dimensions and roles, values is likely to be an underused or misused concept.

Educational Concepts of Values

Attempts, in psychology, to remedy the deficiencies in the attitude-behavior relationship have led to a reassessment of the influence of values on behavior. Values are seen to resemble attitudes in many respects, being abstractions from observable behavior, socially influenced, and having influence on behavior. They are, however, considered to be less numerous, more profound, and more enduring and are postulated to account for the organization of attitudes as well as behavior.^{73,74}

Haynes and Matthews⁴⁵ have summarized four approaches to the study of values, covering the philosophical, sociological, psychological, and educational aspects of values. The fact that a concept emanating from various disciplines should concern itself with differing issues or be defined in different fashions would not be of concern if (a) the relevance of each discipline to each other were minimal and (b) agreement within disciplines were substantial. Unfortunately, neither of these two conditions is satisfied. As suggested by Haynes and Matthews,⁴⁵ there are direct consequences for health education arising from an appreciation for the sociological and psychological configurations of values—attempts to change values in isolation from sociological and psychological forces are doomed to suffer serious set-backs.

A more thorough-going “analysis of valuation strategies in social science education materials” by Bond¹² led him to several very disturbing conclusions. He first classified educators’ views on valuing into ten competing, sometimes mutually exclusive, categories, and concluded from analyses of educators’ differing views that little agreement exists regarding the nature and definition of values and valuing except for a general, and he believed, misperceived distinction between facts and values. Bond points out that many philosophers do not accept the distinction between values and facts, but, rather, believe that values have cognitive qualities amenable to rational analysis. This contrasts sharply with the categorization, predominant in educational circles, of values as being “affective” and included under “affective education.” Bond concluded that the exclusion of a rational element from values leaves the concept and field of values open to all the confusion arising from subjective treatment of the phenomenon.

Drug education outcomes. A search of the relevant literature related to values, especially as these are employed in drug education, suggests a number of conclusions:

(1) Values have been incorporated into a large number of general affective educational programs, many of which have included values concerning oneself and other people, decision-making, and so forth.^{94,101}

(2) Many programs in health education and especially in drug education have followed trends in education by directing attention to values and

decision-making; these include: programs emphasizing values and decision-making;^{10,13,14,24,26,31,63,76,91,93,102} and programs placing additional emphasis on the development of positive self-esteem.^{5,27,29,30,38,77,109}

(3) Values-based programs have sometimes been directed at teachers rather than students.^{57,81}

(4) Whereas the objectives of many programs include statements regarding the role of values, not all programs deal with values directly in the program or assess the program's impact on values.^{57,63}

(5) Results from the very few programs which have been evaluated are inconclusive because of (a) their scarcity; (b) their methodological problems; and (c) conflicting or ambiguous results. A few positive results of values-based drug education programs have been demonstrated^{26,29,81} while several mixed results have also been reported.^{14,24,30,77}

This failure of research to examine the effect of programs on values is made worse by a failure to examine the next link in the hypothesized chain, namely the relationship between value-change (or changes in value priorities) and drug-related behavior-change. Modification in general values (e.g., regarding happiness or health) is not a sufficient objective for drug education programs if a positive relationship between value-change and drug behavior-change is not also demonstrated.

Implications for health education programming. The shortage of research into the roles and impact of values in general education and health education is serious in view of the conflicting theories and approaches to the topic. Some of the issues involved are summarized below.

(1) Bond has raised some of the significant questions to be researched, including the need to identify the varied aspects of values and valuing, especially those that are suitable for inclusion as topics in curricula, and the need to tie these topics to appropriate levels of students' cognitive development.

(2) The relative contributions of values, decision-making, positive self-esteem and other interdependent variables require examination. It is evident from scrutiny of the approaches taken by values educators that many programs include all three elements while program formats and structures place differing emphasis on the constituent processes. Learning and practicing decision-making skills may, for example, be more or less important than clarifying one's values, or developing a positive self-image. Perhaps all three elements are essential, and their mix will depend upon the characteristics of the students. Little information is available to shed light on these issues.

(3) The relationship between values and drug use (and other health-related behaviors) requires clarification. We need to know which values are associated with these behaviors, with their absence, and with their change. At present, only a few clues are available from: (a) studies of value-profiles,^{23,74} (b) the general work on valuing and the hypothesized confusion of values among young people,^{70,82} (c) studies emphasizing particular values such as risk-taking,²⁵ (d) the few evaluated values-based programs (see above for

summary regarding drug education), and (e) the use of values-dissonance approaches to altering behavior.^{91,102}

(4) Associated with the previous issue is the problem of values-clarification versus values-teaching or learning. What alternatives exist when a person's predominant value(s) are supportive of undesirable health behavior? Should one maintain a strict hands-off policy, and permit the person to experience both the positive and negative consequences of his valuing, choosing, and behaving? Should the same approach be taken when desirable values have not begun to develop or are in an immature stage of development?

(5) In a similar vein, what are the implications of self-esteem for health education? The role of self-esteem in behavioral problems, including academic performance, has been researched.^{18,32,52,53,55,77} Evidence for the beneficial effects of raising self-esteem as an effective process in health education is almost totally lacking³⁰ (see Kohn⁵⁰ for a review of the relationship between self-esteem and drug use). Even if there were an association between drug use or abuse and low self-esteem, the conclusion could not be validly drawn that raising self-esteem will ameliorate the behavior problem.

(6) Special elaboration of one of Bond's recommendations is required. Due to the hiatus between psychology, education, and health education, health educators have ignored the role of the cognitive and moral development in education. The educational and psychological literature contains much research on the significance of stages of cognitive and moral development, derived especially from the work of Piaget and Kohlberg (see Hoffman,⁴⁶ for an extensive review). Whereas the relevance of this work to moral education has been recognized^{8,87} only two studies have been uncovered which discuss cognitive and moral development as they relate to drug education.^{14,17} Of concern, for example, is the appropriateness of teaching decision-making, values-clarification, or positive self-esteem at an early age; it may be that, prior to the age of 12 years, efforts to develop decision-making skills, including valuing, may be inappropriate. The question then arises: what can or should be done at earlier stages of development in order to prepare young people for later, more advanced stages?

(7) Finally, the relationship between values and attitudes requires further study. This and other discussions have considered them separately. In spite of theoretical links established between the two hypothesized variables,⁷³ little experimental work has examined, for example, the role of values in determining attitudes, or the predictability of specific behaviors (e.g., drug use) on the basis of values versus attitudes.

A more productive approach to values in education would be to take a broad view, incorporating and unifying the several origins of the concept—philosophical, sociological, psychological, and educational.

From the viewpoint of drug education, and other aspects of health education, values may be best subsumed under the umbrella of moral education;⁸ the two are not identical—moral education includes values, but values education does not encompass all moral education. From this

standpoint, moral education would include the philosophical, sociological, psychological, and educational issues associated with values. Philosophical questions would include those dealing with ethics: the origin and determination of ideas and judgements of right and wrong. Sociology would shed light on the social origins of values and would protect against focusing too narrowly on the individual. Psychological considerations would assist in identifying the relative impact of values versus other influences on behavior, and help in emphasizing the importance of cognitive and moral development. Finally, education would help identify, develop, and implement the processes by which values can be acquired, modified, and made a more effective source of personal direction. These, and other considerations of values, assume a more profound appreciation for the complexity of values as entities inferred from behavior and as they relate to other variables, both individual and social.

A value-based drug education program would then: (1) attempt to deal with the ethical nature of values; (2) discuss and take action to deal with the social role of values in relation to drug use (or other health-related behaviors), especially as exhibited through peer-pressure; (3) utilize social forces as a positive influence to reinforce values and to initiate new values; (4) recognize the individual and personal nature of values and their idiosyncratic configurations; (5) give an opportunity for the influence of non-affective (i.e., cognitive) aspects of values; and (6) employ the many available educational processes for clarifying values, learning new values, making decisions, and reinforcing self-esteem.

SUMMARY AND CONCLUSIONS

This paper has examined the current status of drug education in particular and other health education more generally from the perspective of two major models. These models are based respectively (1) upon assumed knowledge-attitudes-behavior linkages, and (2) upon aspects of values theory, including valuing, decision-making, and concepts of self-esteem. It must be emphasized that whereas a broad view of the person and the factors that influence behavior has been attempted, this effort has by no means exhausted alternative models of influence. Two important sources of influence not considered in this presentation are (1) non-social environmental influences (e.g., geographical influences), and (2) non-attitudinal and non-value individual-difference variables (e.g., other personality factors). The two approaches selected for attention, however, are pervasive in current health education programming.

Review of the knowledge-attitudes-behavior model has led to negative conclusions regarding the power of knowledge and attitudes in inducing changes in behavior. Associations (even where positive) between knowledge (e.g., about drugs), attitudes (e.g., toward drugs) and behavior (e.g., drug use) do not justify concluding that alterations in knowledge or attitudes will result in the desired behavioral change. A further distinction was made between attitude-behavior relationships and the relationship between attitude-change

and behavior-change: successful demonstration of the former relationship does not imply that the latter relationship will also be found. Research has led attitude theorists to greater appreciation of the impact of social norms and competing motivations than in the past. There is also evidence that behavioral intentions are the best predictors of future behavior, and that behavior influences attitudes more than attitudes alone influence behavior.

Drug education has followed a general, but increasingly outmoded trend in the social sciences by placing an excessive faith in the knowledge-attitudes-behavior model. Efforts of drug educators have been as disappointing as their predecessors, producing little impact through the use of this simple model. Hope with respect to the value of attitudes lies in taking a more sophisticated view, incorporating the elements proposed by attitude theorists.

An analysis of values education led to findings similar to those with respect to attitudes. Especially notable was the confusion in conceptualization and implementation of values-based programs. A compounding problem was the dearth of research necessary for a clear understanding of the role of values and their educational impact especially as related to health behaviors. Several important areas for research were identified, and a recommendation was made that a more extended view of values be taken to include its ethical implications, its sociological aspects, the psychological dynamics involved in values and behavior and the educational processes available for their clarification, strengthening, change, and innovation. These conclusions are particularly important in view of the widespread acceptance of values and related concepts within general education. It was recommended that greater attention be paid to the significance of stages of moral and cognitive development and it was suggested that values might be more effectively subsumed under moral education.

The parallels between the discussions of the knowledge-attitudes-behavior and the values-behavior models are striking. In both instances there was evidence of failure in the predictive value of existing models; there was a call for a broader perspective, a more sophisticated model of man. There is also a need for more research to answer the many crucial questions concerning both underlying dynamics and impact. Unfortunately, these same weaknesses characterize the history of much health education,⁴¹ suggesting a need for a closer association between drug education and the social sciences. As long as drug education and health education continue to operate in isolation, they will continue to repeat the errors made by others in theory and practice, always at least one step behind—it is time to catch up!

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