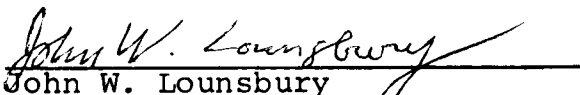
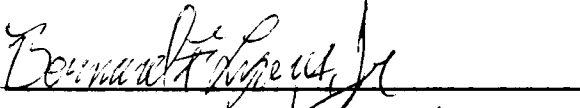
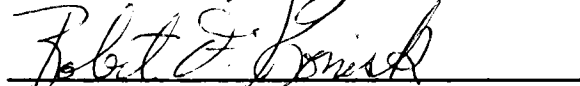


To the Graduate Council:

I am submitting herewith a dissertation written by Michael Paul Cook entitled "Application of Expectancy-Value Theory to Drug Use and Drug Use Intentions." I recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Psychology.


John W. Lounsbury
Major Professor

We have read this dissertation
and recommend its acceptance:

Accepted for the Council:


Vice Chancellor
Graduate Studies and Research

Thesis

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APPLICATION OF EXPECTANCY-VALUE THEORY TO DRUG USE
AND DRUG USE INTENTIONS

A Dissertation

Presented for the

Doctor of Philosophy

Degree

The University of Tennessee, Knoxville

Michael Paul Cook

December 1979

1406093

DEDICATION

To my parents

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ABSTRACT

The primary purpose of this study was to evaluate the use of two expectancy-value models in predicting intentions to use marijuana and tranquilizers. One model was developed by Martin Fishbein; the other, by Harry Triandis. Both have been found to predict behavioral intentions in several areas. A review of the drug use literature revealed few studies which have applied a well-researched model or theory of behavior to drug use.

Attitudes, beliefs, and behavioral intentions toward use of marijuana and tranquilizers were measured by administering a questionnaire to 484 college students and entering freshmen at The University of Tennessee, Knoxville. Attitudes toward the use of these drugs were measured by four semantic differential items. Expectancies and values were measured with respect to nine possible consequences of drug use. Two hundred and forty-five participants returned the questionnaire.

Multiple regression analyses were conducted separately for each model for each drug. All analyses yielded significant multiple correlations, although the Triandis model accounted for more of the variance in intentions to use both marijuana and tranquilizers than did the Fishbein model. It was hypothesized that the relative importance of

normative and affective components would differ, depending on the drug. This was not borne out by the results; in both cases, a stepwise multiple regression analysis revealed that the personal normative belief made the largest contribution to the variance in drug use intentions, the attitude toward the behavior made the second largest, and the expectancy-value component and social normative beliefs did not add uniquely to the variance.

The results indicated that intentions to use drugs can be best predicted using the Triandis model of interpersonal behavior. The particular significance of personal normative beliefs and attitudes may explain the failure of traditional drug education and drug abuse prevention efforts. The results are also consistent with a cognitive social learning approach to drug use.

TABLE OF CONTENTS

CHAPTER	PAGE
I. INTRODUCTION	1
Research on Drug Use	1
Social Psychological Approaches to Drug Use	4
Expectancy-Value Theory	7
Fishbein's Model	12
The Triandis Model	20
Comparison of the Two Models	21
Perceived Consequences of Drug Use	26
Purpose of the Study	28
Predictions	29
II. METHOD	31
Participants	31
Procedures	32
Survey Instrument	33
III. RESULTS	36
Response Rate	36
Demographic Data	37
Drug Use Inventory	41
Model Components	45
The Fishbein Model	45
The Triandis Model	51
The "Hybrid" Model	53
Predictions	56
IV. DISCUSSION	63
Overview and Interpretations	63
Limitations of the Present Research	68
A Cognitive Social Learning Approach to Drug Use	71
Suggestions for Future Research	78
Implications for Education and Prevention	83
V. SUMMARY	85
LIST OF REFERENCES	89

PAGE

APPENDICES	97
Appendix A	98
Appendix B	108
VITA	109

LIST OF TABLES

TABLE	PAGE
1. Consequences of Drug Use Found in the Literature	27
2. Overall Academic Average of Participants	38
3. College Affiliation of Study Participants	39
4. Number and Percentage of Participants Indicating Description of Place of Residence	40
5. Number and Percentage of Participants Endorsing Each Religious Affiliation	42
6. Number and Percentage of Participants Who Have Ever Used Each Type of Drug	43
7. Means and Standard Deviations of Number of Times Each Type of Drug Was Used in the Past Week, Month, and Six Months	44
8. Means and Standard Deviations of Fishbein and Triandis Models Components	46
9. Intercorrelations Among Components from Fishbein and Triandis Models and Intention to Use Marijuana	47
10. Intercorrelations Among Components from Fishbein and Triandis Models and Intention to Use Tranquilizers	48
11. Summary of Results of Stepwise Multiple Regression Analysis for Fishbein Model Components to Predict Intention to Use Marijuana	50
12. Summary of Results of Stepwise Multiple Regression Analysis for Fishbein Model Components to Predict Intention to Use Tranquilizers	52

TABLE

PAGE

13.	Summary of Results of Stepwise Multiple Regression Analysis for Triandis Model Components to Predict Intention to Use Marijuana	54
14.	Summary of Results of Stepwise Multiple Regression Analysis for Triandis Model Components to Predict Intention to Use Tranquilizers	55
15.	Summary of Results of Stepwise Multiple Regression Analysis for All Components to Predict Intention to Use Marijuana	57
16.	Summary of Results of Stepwise Multiple Regression Analysis for All Components to Predict Intention to Use Tranquilizers	58
17.	Summary of Regression Equations for Explaining Intention to Use the Target Drugs	59

CHAPTER I

INTRODUCTION

The purpose of the present study was to apply two expectancy-value models to the study of drug use. The models were Fishbein's attitude-belief model (Fishbein, 1967) and the Triandis model of interpersonal behavior (Triandis, Vassiliou, Vassiliou, Tanaka, Y., & Shanmugam, 1972; Triandis, 1977). There have been few attempts in the literature to study drug use from the framework of a well-researched model of behavior (such as expectancy theory) and little empirical effort to compare results of studies of use of more than one drug. The present study examined the use of two drugs, marijuana and tranquilizers, in the context of expectancy theory.

Research on Drug Use

Drug use, both in terms of illicit drug use and abuse of socially approved drugs, continues to be a serious social concern as the nineteen-eighties begin. Despite potential adverse consequences of the use of some drugs, the etiology or causes of drug use remain obscure. The research literature has accumulated to a great degree in several relevant disciplines (e.g., psychology, psychiatry, sociology, medicine). This literature has been reviewed

rather extensively (cf., Braucht, Brakarsh, Follingstad, & Berry, 1973; National Commission on Marihuana and Drug Abuse, 1972, 1973; Sadava, 1975), but it has not yielded a general explanation of drug use (Sadava & Forsyth, 1977a). Mahon (1974) reviewed the major theories of drug dependence and concluded that there is no single theory that can adequately describe this phenomenon.

Braucht et al. (1973) reviewed over one hundred studies of psychosocial correlates of deviant drug use in adolescence. They concluded that there are a number of very serious caveats to drawing conclusions from that literature. In addition to problems of sampling, research design, and measurement, Braucht et al. make the point that very little attempt has been made to imbed studies into a theoretical framework. There has also been little integration of social and psychological approaches to drug use. They also point out the lack of coordination among researchers studying different drugs, such as, hallucinogens, alcohol, or depressants.

Sadava (1975) conducted a conceptual and methodological review of research in the area of drug abuse. He described four basic approaches to the study of illicit drug use: sociocultural, psychopathological, functionalist, and social learning. A large portion of the studies which he reviewed were characterized by problems in sampling (e.g.,

use of institutionalized users, use-prone populations, and unrepresentative sampling procedures). He also criticized the field for an overall lack of refined and standardized measures and infrequent testing of hypotheses. Finally, Sadava pointed out that researchers in this area should begin to view drug use as a multidimensional phenomenon and should be attempting to formulate nomothetic laws.

The National Commission on Marihuana and Drug Abuse presented a comprehensive report to the President and Congress of the United States in 1972. This report, and the larger report that followed in 1973, summarized the existing knowledge on the etiology of marijuana use. The research was mainly correlational in nature and can be summarized as follows: children are likely to model substance use and abuse behavior from their parents and peers; and certain demographic variables are moderately related to drug use, such as sex, political and sexual attitudes, and family situation. The Commission concluded by stating that the process of acquiring attitudes and a social belief system favorable to drug use are "powerful complimentary factors which direct a young person toward marijuana use" (National Commission on Marihuana and Drug Abuse, 1972, p. 44).

More recently, Austin, Macari, and Lettieri (1979) have edited a representative collection of recent research on drug use. One hundred and thirty-four studies were reported

in the areas of family/peer influence, attitude change, personality, psychopathology, addict lifestyles, employment, criminal behavior, drug laws and the criminal justice system, sexual behavior, pregnancy, driving behaviors, death, and cocaine. A review of these studies do not indicate that the research in this field has dealt adequately with the serious problems outlined above. There is a dearth of research dealing with social and psychological constructs, with theories of behavior, and with explanatory models of more than one substance.

Social Psychological Approaches to Drug Use

A review of the literature yields few studies in which drug-taking is analyzed from the standpoint of a social psychological theory or model. It is surprising that there have been so few attempts to apply social psychological theory to drug use because the amount of effort and funding which have been applied to this social issue are staggering. The Alcohol, Drug Abuse, and Mental Health Administration alone will be spending about 238 million dollars on drug abuse and 134 million dollars on alcohol abuse for the 1980 fiscal year. Three exceptions are the studies by Cook, Lounsbury, and Fontenelle (in press); Jessor, Jessor, and Finney (1973); and Sadava and Forsyth (1977a).

Sadava and Forsyth (1977a) used a multivariate, longitudinal approach to studying drug use. Their study

was based on a person-environment interaction model of behavior (Endler, 1975; Mischel, 1973). This model emphasizes both stable and transitory aspects of both the environment and the person. Sadava and Forsyth measured aspects of the person which included the predispositional personality or "distal personal system" (values for conformity and independence, preference for risk, immediate vs delay of gratification orientation, and locus of control) and the "proximal personal system" (functions of cannabis use). The environment was also conceptualized as distal and proximal. Demographic variables such as age, college year, sex, and socioeconomic status comprised the "distal environment." The "proximal environmental" variables included measures of social support for use, absence of sanctions for use, availability of drugs, and familial models of use. They obtained a multiple correlation coefficient of .48 between the person and environment variables and a criterion measure of use of marijuana over a six-month period among 374 university students.

Jessor, Jessor, and Finney (1973) reported on a longitudinal study of marijuana use by young people which applied a person-environment interaction model of problem behavior, similar to Sadava and Forsyth's (1977a) model. This framework has been applied to the areas of drug use, drinking and problem drinking, sexual experience, activist

protest, and general deviance including lying, stealing, and aggression (Jessor & Jessor, 1977; Jessor, 1974). The model consists of three levels: antecedent-background variables (e.g., parental ideology, home climate, socioeconomic status); social-psychological variables (e.g., values and expectancies related to achievement, independence, affection, self-esteem, locus of control, religiosity); and social behavior variables which include problem behaviors such as marijuana use, drinking, and sexual intercourse, as well as conventional behaviors such as church attendance and academic achievement. Multiple correlations of these predictors with marijuana involvement ranged from .55 to .70 in two separate studies (Jessor & Jessor, 1978).

The author conducted a recent study to apply Fishbein's (1967) attitude-belief model to the study of four drugs: amphetamines, marijuana, minor tranquilizers, and beer (Cook et al., in press). Results indicated that this model was useful in predicting use of all four substances, although the relative importance of attitudinal and normative components depended on the specific substance in question.

Sadava and Forsyth (1977b) reviewed 10 studies of initiation to cannabis use and concluded that a process of social learning and peer support was instrumental in explaining use of this drug (cf. Becker, 1968; Blum & Ferguson, 1969; Brown, Glaser, Waxer, & Geis, 1974; Carey,

1968; Goode, 1970; Jessor et al., 1973; Jessor, 1974). Prospective users in three studies (Goode, 1970; Jessor et al., 1973; Sadava, 1973) had favorable prior expectancies with respect to possible benefits and minimal adverse consequences.

Application of social psychological theories to drug use should contribute to the literature in a number of ways. First, this type of approach should identify relevant factors related to drug use. The approach should also identify the relative importance of these factors. But in addition to that, the social psychological approach should provide directions for intervention in the area of drug abuse problems. This would mean that variables which are found to be statistically important are also amenable to structured change. Variables such as sex, age, and socioeconomic status are not within the intervenor's power to change. Variables which are not as far removed from the behavior of interest, such as attitudes and cognitions related to drug use, may be more within the realm of a potential intervention.

Expectancy-Value Theory

Both Fishbein's model and Triandis' model use an expectancy-value approach to predicting behavior. This type of approach involves measuring people's perceptions of the

probabilities that various consequences of behavior may occur, and the values which they attach to these consequences. The researcher attempts to predict behavioral intentions or actual behavior from these measures.

The expectancy-value model emphasizes the importance of cognitive and affective factors in predicting and explaining social behavior. The Fishbein and Triandis models are similar in many respects; however, there are significant differences as well. There is ample evidence for the utility of each model in predicting a range of behaviors and behavioral intentions in the laboratory and the field. (See Ajzen & Fishbein, 1973, 1977, and Fishbein & Ajzen, 1975, for extensive reviews of the support for the Fishbein model; see Triandis, 1977, for a review of the research support for the Triandis model.)

Expectancy-value theories in general have received moderate support in the literature. Mitchell and Biglan (1971) reviewed research in the areas of verbal conditioning, attitudes, and industrial psychology which applied expectancy theories. They concluded that the evidence provides fairly good support for the hypothesis that behavior is related to the perception that it will lead to certain outcomes and the subjective values which individuals place on those outcomes.

One of the earliest expectancy-value theories is the social learning theory of Julian Rotter (1954). In his

theory, Rotter defined three basic terms which were used later in a similar fashion by Fishbein (1967) and Triandis et al. (1972). These were: behavior potential (behavioral intention), expectancy, and reinforcement value. Rotter explained the importance of expectancy in his seventh postulate:

The occurrence of a behavior of a person is determined not only by the nature or importance of goals or reinforcements but also by the person's anticipation or expectancy that these goals will occur. Such expectancies are determined by previous experience. (Rotter, 1954, p. 102)

Expectancy was defined by Rotter as the probability held by an individual that a particular reinforcement or outcome will occur as a result of the performance of a specific behavior in a specific situation. Expectancy was also considered independent of the value or importance of the outcome. Rotter gave considerable credit to Tolman (1934) as being the source for the concept of expectancy or anticipated reinforcement.

Reinforcement value of any reinforcement or outcome was defined by Rotter as the degree of preference for any reinforcement to occur if the possibilities of all reinforcements occurring were equal (i.e., if expectancy is held constant). Rotter further theorized that reinforcement value is consistent for any individual over time.

Rotter defined behavior potential as the potential for a given behavior to occur in a particular situation. The

situation is one defined by a particular set of reinforcements. Rotter stated that the potential for a given behavior to occur in a particular situation is a function of the expectancy of occurrence of all potential reinforcements of this behavior, and the values of these reinforcements (Rotter, 1954). He proposed the following formula:

$$\underline{B.P.}_{x,s_1,r(a-n)} = f[\underline{E}_{x,s_1,r(a-n)} \& \underline{R.V.}_{(a-n)}]$$

where

$\underline{B.P.}_{x,s_1,r(a-n)}$ = behavior potential of behavior x in situation 1 with respect to all potential reinforcements (a to n),

$\underline{E}_{x,s_1,r(a-n)}$ = expectancy of occurrence of all potential reinforcements of behavior x in situation 1, and

$\underline{R.V.}_{(a-n)}$ = reinforcement values of reinforcements a to n.

The potential of behavior x's occurring in situation 1 in regard to all potential reinforcements for which the individual has expectancies is a function of the expectancies of the occurrences of these reinforcements (a to n) in situation 1, and the values of these reinforcements. (Rotter, 1954, p. 109)

Rotter did not specifically state that there was a multiplicative relationship between expectancy and value in

postulating this formula. He did indicate, however, that available data supported the use of such a multiplicative relationship.

There are a number of points of departure from Rotter's social learning theory which have been taken by more recent theorists such as Fishbein and Triandis. For example, Fishbein and Triandis use a subjective probability to estimate expectancy whereas Rotter uses what he calls internal probability (Lewin, 1951) to assess the expectancy component. This distinction is a semantic one, in that Rotter wanted to emphasize that individuals are constantly trying to increase the predictive power of their internal probability estimates by making more objective estimates. When Fishbein and Triandis use a subjective probability estimate, they are acknowledging that expectancies may have little relation to empirical contingencies.

Both Fishbein and Triandis differ from Rotter's expectancy formulation with the addition of a new component: subjective norm and social factors, respectively. Both terms are somewhat similar and acknowledge the importance of normative factors in determining behavioral intentions. Other ways in which these two models differ from Rotter's model and from each other will be discussed below, following a brief description of each model.

Fishbein's Model

All measures of attitudes by definition are to some degree a measure of affect for or against an object, event, person, or behavior. Following Thurstone (1931), Fishbein and Ajzen (1975) have simply defined an attitude in just those terms—evaluation of an object—and have explored the relationship of this variable with other commonly confused concepts, particularly intentions, beliefs, and behavior.

Beliefs

Fishbein's model is founded on the concept of beliefs. A belief is a subjective probability that a relation exists between an object, event, behavior, or another belief; and a particular attribute. For example, a belief about marijuana might be: marijuana is enjoyable. In this case, there is a strong relation between an object (marijuana) and a particular attribute (enjoyable). Beliefs are sometimes formed through direct observation. Fishbein and Ajzen (1975) call these descriptive beliefs. The more common type of belief is called an inferential belief (Fishbein and Ajzen, 1975). In this case, an individual would come to believe that marijuana was enjoyable through making inferences from observations of other's behavior or from other sources of information such as media. The complete set of a person's beliefs serves as an informational base that determines

his/her attitudes, intentions, and behaviors. Thus, Fishbein is essentially emphasizing an information processing approach to attitudes.

Attitudes

In order to arrive at an attitude, it is necessary to look at the salient beliefs a person has about the object in question. Following the information processing literature (e.g., Miller, 1956; Mandler, 1967), an individual is probably capable of attending to or processing only five to nine bits of information at a time; accordingly, Fishbein contends that an attitude is determined by approximately five to nine salient beliefs about the attitude object.

In order to arrive at an evaluation of an object (i.e., an attitude), not only the beliefs themselves (i.e., the subjective probabilities) but also the evaluation of the attributes in question (their perceived values) are taken into account. Fishbein (1967) introduced an expectancy-value definition of attitude. He proposed that a person's attitude toward an object is a function of the most salient beliefs that the person has about that object and the person's perceived values of the belief attributes. Fishbein introduced the following formula:

$$\underline{A} = \sum_{i=1}^n \underline{b}_i \underline{e}_i$$

where A = an attitude,

b_i = subjective probability of belief (i.e., the perceived probability that the attribute is related to the attitude object, and

e_i = evaluation of attribute i .

Fishbein and Ajzen (1975) have shown that most measures of attitude take these two variables (b_i and e_i) into account implicitly and combine them in an expectancy-value formula to arrive at an attitude score.

For example, we could measure an individual's attitude toward marijuana in this way. First, we would determine the individual's salient beliefs about marijuana. These might include statements such as: "marijuana is enjoyable," and "marijuana is dangerous." The subjective probabilities of these two beliefs could be measured by asking the individual to rate the likelihood of each statement on a seven-point scale, ranging from "very likely" to "very unlikely."

The next step would be to determine the value which the individual places on the belief attributes: "enjoyable" and "dangerous." The individual could be asked to rate each attribute on an evaluative semantic differential scale such as "good/bad" (Osgood, Suci, & Tannenbaum, 1957).

These results, along with the results of other beliefs about the object, marijuana, could be combined by multiplying each probability or expectancy with the respective

value, and then summing these products. This expectancy-value score would be a measure of the individual's attitude toward marijuana.

Another model which is very similar to the Fishbein (1967) model of attitudes is Rosenberg's (1956) instrumentality-value model. Rosenberg summed the products of instrumentalities and values to account for an attitude toward an object. Instrumentality was the probability that the object would lead to or block attainment of a particular goal, and value was the satisfaction related to attaining the goal.

Attitude toward the Behavior

If we were to measure the subjective probability of a set of salient beliefs and their respective attributional values, sum the products of each as above and predict an overt behavior, we may not be very successful. One reason is that the beliefs concern an object, not a behavior. Thus, when looking at prediction of behavior, the attitude to be measured should be an attitude about the behavior (A-act). In this case, the attitude object is the behavior (e.g., using marijuana) rather than the object itself (e.g., marijuana). A-act is assessed as above but by summing the products of the beliefs about the consequences of performing the behavior (rather than the beliefs about the object) and the evaluations of these consequences. Models proposed by

Tolman (1932), Rotter (1954), and Atkinson (1957) have used similar formulations (expectancy $\times$ value) in attempting to account for overt behavior. In a similar fashion, Edwards (1961, 1962) used subjective probability (expectancy) and utility (value) to predict the subjective expected utility of a given behavior. He assumed that there was a direct relationship between the subjective expected utility and overt behavior.

Using the example given previously the individual would be asked to rate the likelihood of occurrence of the consequences of using marijuana (i.e., the beliefs about the behavior). These might include such beliefs as "using marijuana leads to an enjoyable feeling," and "using marijuana leads to getting arrested." The values of these consequences (i.e., the values of the belief attributes) could be measured on an evaluative semantic differential scale as in the first example given above. These measures would then be combined in the expectancy-value formula to give a measure of the individual's attitude toward using marijuana. This attitude may differ from the same individual's attitude toward marijuana.

Subjective Norms

Another reason for a lack of correspondence between attitude and behavior may be a lack of provision for external influences to affect the individual behavior.

Fishbein's model is completed with the addition of two more factors: subjective norms and intention.

The normative component assesses the social environment of the individual with respect to a particular behavior or class of behaviors. Again, an expectancy formulation is used, where subjective norm is a function of the beliefs that a person has about the expectations of reference groups or significant others towards that person performing a given behavior, and the person's motivation to comply with the particular referent. Fishbein (1967) presented the following formula:

$$\underline{SN} = \sum_{i=1}^n \underline{b}_i \underline{m}_i$$

where $\underline{SN}$ = subjective norm,

$\underline{b}_i$ = the normative belief or beliefs that a reference group or an individual thinks he/she should or should not perform the behavior, and

$\underline{m}_i$ = motivation to comply with the particular referent.

This formula was later simplified (Ajzen & Fishbein, 1969) by dropping the motivation to comply term because it did not add any predictive power to the equation.

To extend the example, the subjective norm of an individual with respect to using marijuana could be measured by asking the individual about friends' and parents' expectations concerning his/her use of marijuana

(e.g., "To what extent do your friends think you should use marijuana?").

Behavioral Intentions

The attitude toward the behavior and the subjective norm are the two components, which, when added together, yield a prediction of a behavioral intention. The following formula is used (Fishbein, 1967):

$$\underline{BI} = (\underline{A-act})\underline{w}_1 + (\underline{SN})\underline{w}_2$$

where $\underline{w}_1$, $\underline{w}_2$ = empirically determined weights, and

$\underline{BI}$ = intention to perform the behavior.

In our example, combining the individual's attitude toward using marijuana with his/her subjective norm associated with using marijuana would result in a measure of the individual's intention to use marijuana.

In reviewing the attitude research literature, Fishbein and Ajzen have found substantial support for this model (Ajzen & Fishbein, 1973; Fishbein & Ajzen, 1975). For example, they reviewed ten studies which found high multiple correlations between $\underline{A-act} + \underline{SN}$ and behavioral intentions. The average multiple correlation in these studies was .81 (Ajzen & Fishbein, 1973).

Behavior

The Fishbein model is used to predict a behavioral intention. Fishbein and Ajzen (1975) noted, however, that behavioral intentions are probably the simplest and most efficient means of predicting overt behavior. This prediction will be accurate if three conditions are met.

1. The intention and the behavior correspond to a high degree in their level of specificity.
2. The intention is stable over time.
3. The behavior is completely or nearly completely under the volitional control of the person.

A number of studies have found strong relationships between intention and behavior. In a recent study, Hom, Katerberg, and Hulin (1979) found that intention to reenlist in the National Guard was significantly correlated with actual reenlistment behavior ($r = .67$, $p < .05$). Fishbein and Ajzen (1975) reviewed a number of other studies which supported their contention that intention is highly correlated with overt behavior.

The present study used behavioral intention as the criterion measure rather than overt behavior because an actual measure of drug-taking behavior would be difficult, if not impossible, to obtain in a natural setting. It would also be unethical to provide the opportunity to use illicit drugs in a laboratory setting.

The Triandis Model

There are two multiple linear regression equations in the Triandis model (Triandis et al., 1972). One equation is used to predict actual behavior; the other is an equation which is used to predict an individual's behavioral intention. The first equation, shown below, states that an individual's behavior is a function of the strength of the habit of emitting the behavior, the behavioral intention to emit the behavior, and the presence of various facilitating factors or conditions.

$$\underline{P} = \left[\underline{H}\underline{w}_h + (\underline{BI})\underline{w}_i \right] \underline{F}$$

where $\underline{P}$ = the probability of the behavior occurring,
 $\underline{H}$ = the habit strength,
 $\underline{BI}$ = behavioral intention,
 $\underline{F}$ = facilitating conditions, and
 $\underline{w}_h, \underline{w}_i$ = empirically determined weights.

The second, shown below, states that behavioral intention is a function of the following four components: (1) the attitude toward the behavior; (2) the expectancy-value component, i.e., the probabilities and values associated with the consequences of the behavior; (3) the social normative beliefs; and (4) the degree to which the individual believes he/she should perform the behavior.

$$\underline{BI} = (\underline{A-act})\underline{w}_a + (\Sigma \underline{P}_{-c} \underline{V}_{-c})\underline{w}_c + (\Sigma \underline{NB})\underline{w}_n + (\underline{PNB})\underline{w}_p$$

where $\underline{A-act}$ = attitude toward the behavior,
 $\Sigma \underline{P}_{-c} \underline{V}_{-c}$ = the sum of the products of the
 expectancies and values of the salient
 consequences as perceived by the
 individual,
 $\Sigma \underline{NB}$ = the sum of the social normative beliefs
 (i.e., the perceived appropriateness of
 performing the behavior for a member of
 important reference groups),
 $\underline{PNB}$ = the personal normative belief (i.e., the
 degree the person feels he/she should
 perform the behavior), and
 $\underline{w}_a, \underline{w}_c, \underline{w}_n, \underline{w}_p$ = empirically determined weights.

The present study was primarily concerned with the second equation. This equation is similar to the Fishbein (1967) equation to predict behavioral intention.

Comparison of the Two Models

Behavioral Intentions

Both models are similar with respect to the conceptualizations of behavioral intentions. Fishbein and Ajzen (1975) have conceptualized behavioral intentions as a belief about oneself (i.e., a perceived relation between

oneself and a particular behavior). This is measured as a subjective probability in much the same way that Triandis suggests [as a probability from 0 to 1.0, or from very unlikely (1) to very likely (7)].

Expectancy-Value Component

Both models are equivalent with respect to the expectancy-value component. There is no difference between the $b_i e_i$ measure of the Fishbein model and the $\frac{P}{C} \frac{V}{C}$ measure of the Triandis model. Perceived consequences of a behavior are determined and then the values and expectancies of each consequence are measured. Expectancies are measured as a subjective probability (0 to 1.0) and values are typically measured on a semantic differential scale (-3 to +3).

Affect and Attitudes

Fishbein and Ajzen (1975) have shown evidence that an attitude may be measured by using the expectancy-value formulation ($b_i e_i$). They have used $b_i e_i$ interchangeably with a simple measure of affect toward the object or behavior. The Triandis model used both a simple measure of affect toward the behavior and the $\frac{P}{C} \frac{V}{C}$ component as predictors in the multiple regression equation. Triandis has argued that both measures are necessary and provide independent information for predicting behavioral intention

(Triandis et al., 1972; Triandis, 1977). Both Fishbein and Triandis operationalize the affective component by using one or a small number of evaluative semantic differential items (Osgood et al., 1957).

Osgood and his associates developed the semantic differential technique and found that there are three major dimensions which can be ascribed to most concepts: evaluation, activity, and potency. The good/bad scale was consistently the best exemplar of the evaluative dimension and has been used most often as a measure of attitude (Fishbein & Ajzen, 1975; Triandis, 1977).

Norms

Fishbein and Triandis both emphasize the importance of a normative component in their respective models. They differ considerably, however, in how they conceptualize and measure this component. Fishbein suggests measuring normative beliefs about particular referents (e.g., parents, peers), whereas Triandis suggests that normative beliefs should be measured as the perceived appropriateness of the behavior for a specific social group. Fishbein has also used a factor of motivation to comply with the particular referent, but in later studies he has dropped the use of this measure (cf. Ajzen & Fishbein, 1969).

Personal Normative Beliefs

The Triandis model includes a measure of the individual's belief about what he/she ought to do concerning the behavior of interest. Fishbein has deleted this component from the model because it is highly correlated with behavioral intention. Ajzen and Fishbein (1969, 1970) suggest that the personal normative belief measure was merely an alternative measure of behavioral intention.

Behavior

Triandis and Fishbein differ in how they perceive the correspondence between behavior and behavioral intention. Ajzen and Fishbein (1973) concluded that behavioral intention is a good predictor of behavior in most cases, if the appropriate measure and time frame are used. Triandis, as mentioned above, has theorized that habit strength and facilitating conditions influence the relationship between behavioral intention and behavior.

One final difference between these two models is in purpose (Triandis, 1977). Fishbein's model attempts to account for the most variance with the fewest variables. Fishbein is looking for the most economical prediction of behavior. In contrast, Triandis is attempting to account for the most variance. He states, "that accounting for all variance is important because even a small amount of

variance may be socially important, if the phenomenon is a critical one" (Triandis, 1977, p. 232).

In summary, the Fishbein and Triandis models use similar components in a somewhat similar equation. There are important differences, however.

1. The normative component is defined differently by Triandis and Fishbein.
2. Triandis includes a personal normative belief; Fishbein does not.
3. Fishbein assumes that the affect toward the behavior is equivalent to the sum of the perceived expectancies of the consequences multiplied by the values of the consequences. Triandis includes both the affective and expectancy-value components as separate components in his model.
4. Triandis has added two other variables which influence the relationship between behavior and behavioral intention: facilitating conditions and habit strength. Fishbein has concluded that behavioral intention may be used alone to predict behavior.

Jaccard and Davidson (1975) performed a comparative analysis of the Fishbein and Triandis models while examining social psychological factors related to family planning intentions. Fishbein's model accounted for an average of

65.28% of the variance in behavioral intentions and the Triandis model accounted for an average of 62.73% of the variance in behavioral intentions.

Jaccard and Davidson used a sign test to compare population estimates of the mean square error in 18 separate comparisons to statistically test the accuracy of prediction of the two models. The Fishbein model had a lower population mean square error than the Triandis model in 14 of the 18 comparisons ($p < .05$). However, the authors concluded that the two models were similar with respect to accuracy of prediction of family planning intentions.

Both the Fishbein and Triandis models should be studied and compared across different behaviors, settings, and subjects in order to make definite statements about the relative utility of these models. The present study provided additional information about these two models by comparing them in the study of college student drug use.

Perceived Consequences of Drug Use

Perceived consequences of drug use must be ascertained in order to apply an expectancy-value model to the study of this behavior. The drug use literature was reviewed and empirical support was found for nine perceived consequences of drug use (see Table 1). The consequences used in this study were: escaping from problems, feeling good, gaining

Table 1

Consequences of Drug Use Found in the Literature

Study	Consequences Found*	Drugs Studied
Babst, Koval, & Lipton (1976-1977)	a,b,c,d,e,f,g,h,i	Alcohol All drugs
Bowker (1974)	c,d	Alcohol Cannabis Hallucinogens
Cook, Lounsbury, & Fontenelle (in press)	d,e,f	Alcohol Cannabis Stimulants Tranquilizers
Deren & Des Jarlais (1977)	e,f	All drugs
Friedman, Friedman, & Levin (1974)	d,e,f	Alcohol Cannabis Hallucinogens Stimulants Tranquilizers
Sadava & Forsyth (1977a)	a,b,c,d,e,f,h,i	Cannabis All drugs
Shearn & Fitzgibbons (1973)	a,b,d,e,f,g,h,i	Cannabis Hallucinogens Opiates Stimulants Tranquilizers
Stokes (1974)	d,e,f	Alcohol Cannabis Hallucinogens Stimulants Tranquilizers

* a = escaping from problems, b = feeling good, c = gaining acceptance from friends, d = getting arrested, e = physical damage to your body, f = psychological problems, g = reducing tension, h = satisfying your curiosity, and i = self-awareness or insight.

acceptance from friends, getting arrested, physical damage to your body, psychological problems, reducing tension, satisfying your curiosity, and self-awareness or insight.

Purpose of the Study

The primary purpose of the present study was to develop a model of intention to use drugs by applying the Fishbein model and the Triandis model to the use of two drugs: marijuana and tranquilizers. These two drugs have been chosen as representative because their legal status is illegal and controlled, respectively.

Based on the literature cited above, there is a justification for applying a social psychological model such as the expectancy-value approach to the area of drug use. Previous research has found that perceived consequences of drug use are related to the use of drugs. Expectancy-value theory would be an approach which would use perceived consequences to predict drug use, and may lead to an explanatory model. The use of Fishbein's and Triandis' models, in particular, would yield empirical data concerning the relative importance of social and cognitive factors related to intentions to use drugs. This type of data would have implications for drug education and prevention efforts.

The secondary purpose of the present study was to compare the efficacy of the Fishbein and Triandis models in

the area of drug use. Both models have been used to study a range of behaviors; however, there has been little attempt to study deviant and illicit behavior. The present study attempted to determine which model can best explain the variance in intention to use each of the target drugs.

Predictions

The following predictions were made with respect to the purposes of the present study:

1. Both Fishbein and Triandis models will yield significant multiple correlation coefficients in explaining the variance of intention to use marijuana and tranquilizers.

2. Based on previous comparisons of these two models applied to other behaviors (Jaccard & Davidson, 1975), I predicted that Fishbein's model will explain more of the amount of variance in intention to use each drug than will Triandis' model. This was done by comparing the R^2 values produced by applying multiple regression techniques for each model and for each drug.

3. The relative contributions of cognitive versus normative factors will change, depending upon the drug being studied; that is, the relative size of the standardized regression coefficients will be different. The following specific predictions were made on the basis of previous research (Cook et al., in press): (a) With respect to

marijuana, cognitive factors (i.e., the expectancy-value component) will contribute more to explaining the variance of drug use intention than normative factors. (b) With respect to tranquilizers, normative factors will contribute more to explaining the variance of drug use intention than cognitive factors.

4. An additional purpose of the present study was to develop a "hybrid" model of drug use by entering the components from both the Fishbein and Triandis models in a step-wise multiple regression. The results of this analysis are significant multiple regression equations for explaining the variance in intention to use marijuana and tranquilizers.

CHAPTER II

METHOD

Participants

Participants were drawn from two sources: approximately 1,000 undergraduate full-time students living in The University of Tennessee residence halls, and approximately 2,000 high school graduates attending summer orientation to prepare for entrance at The University of Tennessee. A systematic sample of 125 men and 125 women was selected from the residence hall students, and two groups of 125 orientation students were randomly selected from the twelve summer orientation sessions. This yielded a sample of 500 potential participants.

The sample size of 500 students was chosen for the following reasons:

1. Past experience has shown that a sample of 500 will yield about 200 to 250 returned and useable questionnaires (Cook et al., in press).
2. A useable sample size of 200 will allow for valid employment of up to 10 predictors in a multiple regression equation, with a case-to-predictor ratio of 20:1 (Cohen & Cohen, 1976).

Participants were volunteers and no remuneration was provided.

Procedures

A questionnaire was mailed to each residence hall student in the sample. Each questionnaire was accompanied by a cover letter stating the purposes, instructions for completion, and instructions for returning the questionnaire through the campus mail system; as well as an addressed return envelope. Participants were assured of complete anonymity; they were asked for no identifying information on the questionnaire.

These potential participants were asked to complete and return the questionnaire within one week of receipt, at which time a reminder letter was sent to all participants to ask them to return the completed questionnaire at that time if they have not already done so.

Questionnaires were administered to all participants in the two orientation sessions by the student orientation aides. The aides read a statement of purposes, instructions for completion, and asked those willing to participate to return the completed questionnaires directly to them in a sealed envelope.

Survey Instrument

The survey instrument was a questionnaire composed of six sections as described below. A copy of the questionnaire is given in Appendix A.

Demographic Information

Participants were asked to give their age, sex, marital status, major, college, grade point average, religious affiliation, degree of religious commitment, and size of home town.

Drug Use Inventory

This section assessed the degree to which participants use a variety of drugs. Items included whether the participant has ever used each of ten categories of drugs and what the extent of current use is by the participant. The following categories of drugs were assessed: alcohol, amphetamines, barbiturates, cocaine, hallucinogens, marijuana, opiates, tobacco, tranquilizers, PCP, and methaqualone.

Drug Use Intentions

Participants were asked to indicate their intentions about the use of the two target drugs: marijuana and tranquilizers. The two questions in this section were:

1. "If I have my way, I intend to use (marijuana, tranquilizers) in the next six weeks."

2. "All things considered, including your own intentions and also other factors, how likely are you to really use (marijuana, tranquilizers) in the next six weeks"?

Each item was assessed on an anchored seven-point scale; the anchors were "very likely" and "very unlikely."

Attitudes

This section consisted of a set of five evaluative semantic differential items for use of each target drug. The semantic differential items were: good/bad, pleasant/unpleasant, rewarding/punishing, interesting/boring, and safe/dangerous. Each item was measured on a seven-point scale ranging from -3 to +3.

Perceived Consequences of Use

There were two sets of perceived consequences of drug use—one for each target drug. Participants were asked to indicate the likelihood of occurrence of each consequence on a seven-point anchored scale ranging from 1 (very unlikely) to 7 (very likely). Participants were also asked to indicate the perceived value of each consequence on an evaluative semantic differential item—a good/bad scale ranging from -3 to +3, with a zero midpoint.

The nine perceived consequences were: feeling good, escaping from problems, getting arrested, physical damage to

the body, psychological problems, reducing tension, satisfying curiosity, self-awareness or insight, and approval of friends.

Normative Beliefs

Social normative beliefs were measured in two different ways, to conform to both the Fishbein model and the Triandis model. Items for the former read as follows: "My (close friends, parents, classmates) think that I should use (marijuana, tranquilizers)." Participants were asked to respond on a scale from 1 to 7 with "definitely do not" and "definitely do" as anchors.

Items for the Triandis model read as follows: "It is socially acceptable for (college students, high school students, other members of my family) to use (marijuana, tranquilizers)." Participants were asked to respond on a seven-point strongly agree-strongly disagree scale.

Personal normative beliefs were measured with an item asking if the participant personally thinks it is okay to use (marijuana, tranquilizers), on a seven-point agree-disagree scale.

CHAPTER III

RESULTS

The results of this study are presented below in the following manner. First, the response rate to the survey instrument is given. Next, descriptive statistics of demographic items are presented. Results of the drug use inventory are reported next. Finally, descriptive statistics, simple correlations, and multiple regression analyses are reported for data collected for: (1) the Fishbein model, (2) the Triandis model, and (3) the "hybrid" model.

The stepwise multiple regression analyses were conducted separately for dormitory residents ($n = 134$) and for orientation participants ($n = 111$). Results were similar and all of the following analyses and results are based upon the combined sample of 245 respondents.

Response Rate

One hundred and thirty-four questionnaires were returned by dormitory residents, out of 234 which were distributed. This resulted in a response rate of 57.3% for dormitory residents.

One hundred and eleven questionnaires were returned by orientation participants, out of 250 which were distributed.

This yielded a response rate of 44.4% for orientation participants.

The overall response rate for the study was 50.6%. A total of 484 questionnaires were distributed and 245 completed questionnaires were returned. All of the following results are based on the sample of 245 respondents.

Demographic Data

Age

Ages of participants ranged from 17 to 35 with a mean of 19.39 and a standard deviation of 2.56. The median age was 18.41. Most participants (96.3%) were between the ages of 17 and 25.

Sex

There were 138 females and 96 males in the sample; 59.0% and 41.0%, respectively.

Marital Status

All but one of the participants were single; there was one married male in the sample.

Academic Average

Respondents were asked to indicate their overall academic average on the following scale: 1 = A- to A+, 2 = B- to B+, 3 = C- to C+, 4 = D- to D+, and 5 = less than D-. The median response on this item was 1.80; the range

was from 1 to 3. Four participants did not respond to this item. About one-half of the participants (50.6%) indicated that their overall average was from B- to B+ (see Table 2).

Table 2
Overall Academic Average of Participants

Academic Average	Number of Participants	Percent of Sample
A- to A+	83	33.9
B- to B+	124	50.6
C- to C+	34	13.9
D- to D+	0	--
Less than D-	0	--
No response	4	1.6

College

Current students were asked to indicate which college they were enrolled in. Entering freshmen were asked to indicate which college they were planning on enrolling in for the fall. The largest number of participants (29%) were currently enrolled or were planning to enroll in the college of Liberal Arts (see Table 3).

Place of Residence

Participants were asked to describe their place of residence on a scale ranging from "farm or rural" to "large city (above 500,000)." Table 4 presents the results of this item. The largest number of respondents (79) indicated

Table 3
College Affiliation of Study Participants

College	Number of Participants	Percent of Sample
Agriculture	11	4.5
Architecture	6	2.4
Business Administration	53	21.6
Communications	3	1.2
Education	37	15.1
Engineering	53	21.6
Home Economics	3	1.2
Liberal Arts	71	29.0
Nursing	0	--
Undecided	1	0.4
No Response	7	2.9

Table 4

Number and Percentage of Participants Indicating
Description of Place of Residence

Place of Residence	Number of Participants	Percent of Sample
Farm or rural	25	10.2
Small town (population under 10,000)	42	17.1
Average-sized town (popula- tion 10,000 to 100,000)	79	32.2
Suburb of a city	35	14.3
City (population 100,000 to 500,000)	32	13.1
Large city (population over 500,000)	32	13.1

that they were from an "average-sized town (population of 10,000 to 100,000)."

Religious Background

Over one-third of the participants (37.1%) indicated that "Baptist" best described their religious background. The results of this item are summarized in Table 5.

The mean number of times which participants indicated they had attended religious services in the past month was 3.00 and the standard deviation was 3.49. Thirty-five percent of the participants had not attended religious services at all during the past month.

Drug Use Inventory

Results of the Drug Use Inventory indicated that the drug of choice for most students was alcohol—85.7% of the sample have used alcohol at some time. Marijuana has been used by almost one-half of the participants (47.8%). Tranquilizers have been used by only 9.8% of the sample. Table 6 gives results for prior use of all ten categories of drugs. Table 7 reports the means and standard deviations for the number of times participants have used each type of drug in the past week, month, and six months. Again, alcohol elicited the highest rates of use—1.29 times in the past week.

Table 5
Number and Percentage of Participants Endorsing
Each Religious Affiliation

Religious Affiliation	Number of Participants	Percent of Sample
Roman Catholic	27	11.0
Orthodox (Greek or Russian)	2	0.8
Jewish	7	2.9
Baptist	91	37.1
Methodist	50	20.4
Lutheran	7	2.9
Presbyterian	14	5.7
Episcopalian	7	2.9
United Church of Christ	9	3.7
Agnostic	7	2.9
Other	17	6.9
None	5	2.0
No Response	2	0.8

Table 6

Number and Percentage of Participants Who Have
Ever Used Each Type of Drug

Type of Drug	Number of Participants	Percent of Sample
Alcohol	210	85.7
Amphetamines	34	13.9
Barbiturates	15	6.1
Cocaine	16	6.5
Hallucinogens	12	4.9
Marijuana	117	47.8
Opiates	17	6.9
Tranquilizers	24	9.8
PCP	13	5.3
Methaqualone	19	7.8

Table 7

Means and Standard Deviations of Number of Times Each Type of Drug
Was Used in the Past Week, Month, and Six Months

Type of Drug	Number of Times Used					
	Past Week		Past Month		Past 6 Months	
	<u>Mean</u>	<u>S.D.</u>	<u>Mean</u>	<u>S.D.</u>	<u>Mean</u>	<u>S.D.</u>
Alcohol	1.29	1.82	5.05	7.29	29.64	69.08
Amphetamines	0.03	0.28	0.11	1.05	0.51	2.79
Barbiturates	.004	0.06	.004	0.06	0.12	0.89
Cocaine	0.01	0.14	0.02	0.13	0.36	3.46
Hallucinogens	0.00	0.00	0.03	0.33	0.21	2.16
Marijuana	0.63	1.70	2.45	6.42	13.88	41.35
Opiates	0.01	0.13	0.03	0.34	0.12	0.89
Tranquilizers	.004	0.06	0.12	1.31	0.24	1.58
PCP	0.00	0.00	0.00	0.00	0.03	0.22
Methaqualone	.004	0.06	0.07	0.84	0.35	3.90

Model Components

Means and standard deviations of each variable used in the following multiple regression analyses are reported in Table 8. The number of cases for each variable is also reported. The number of cases in each case is less than the total sample size because only cases used in the multiple regression analyses were included. Cases were not included if one or more measures was not obtained from that individual.

Table 9 presents the intercorrelations among all of the Fishbein and Triandis model components for the intention to use marijuana.

Table 10 presents the correlation matrix of all model components for the intention to use tranquilizers.

The Fishbein Model

Data were analyzed using stepwise multiple regression in two ways: by using the expectancy-value component and the subjective norm measure as predictors, and also by using the attitude-toward-the-act and the subjective norm component as predictors. Each of the two pairs of predictors was regressed with both intention to use marijuana and intention to use tranquilizers.

Components of the Fishbein model were computed for each of the two target drugs as follows:

Table 8

Means and Standard Deviations of Fishbein
and Triandis Models Components

Variables	Mean	Standard Deviation	Number of Cases
Intention to Use Marijuana	2.39	2.29	207
Expectancy-Value	117.90	73.00	207
Subjective Norm	7.01	3.63	207
Personal Normative Belief	4.93	2.39	207
Social Normative Belief	9.64	5.30	207
Attitude-toward-the-Act	-4.02	8.97	207
Intention to Use Tranquilizers	1.17	.82	198
Expectancy-Value	86.03	62.66	198
Subjective Norm	4.98	3.18	198
Personal Normative Belief	6.32	1.39	198
Social Normative Belief	6.28	4.06	198
Attitude-toward-the-Act	-10.09	6.04	198

Table 9

Intercorrelations Among Components from Fishbein and
Triandis Models and Intention to Use Marijuana

Variables	1	2	3	4	5	6
1. Intention	--	.498	.524	-.766	.579	.752
2. Expectancy-Value		--	.459	-.571	.503	.656
3. Subjective Norm			--	-.636	.561	.642
4. Personal Normative Belief*				--	-.636	-.808
5. Social Normative Belief					--	.650
6. Attitude-toward- the-Act						--

Note: All correlations were significant ($p < .01$) and were based on a sample size of 207.

*Personal normative belief is negatively correlated with other components because anchors on the scale were reversed on the survey instrument.

Table 10

Intercorrelations Among Components from Fishbein
and Triandis Models and Intention
to Use Tranquilizers

Variables	1	2	3	4	5	6
1. Intention	--	.214	.195	-.480	.350	.502
2. Expectancy-Value		--	.217	-.371	.343	.489
3. Subjective Norm			--	-.306	.353	.341
4. Personal Normative Belief*				--	-.534	-.485
5. Social Normative Belief					--	.388
6. Attitude-toward- the-Act						--

Note: All correlations were significant ($p < .01$) and were based on a sample size of 198.

*Personal normative belief is negatively correlated with other components because anchors on the scale were reversed on the survey instrument.

1. The expectancy-value component was computed by summing the products of the expectancies and values for each of the nine consequences.

2. The subjective norm was computed by summing the three items, "My (close friends, parents, classmates) think that I should use marijuana."

3. The attitude-toward-the-act was computed by summing the four semantic differential items, "I would describe using marijuana as: good-bad/unpleasant-pleasant/rewarding-punishing/boring-interesting/safe-dangerous."

Intention to Use Marijuana

Both forms of the Fishbein model yielded significant multiple R 's with intention to use marijuana as the criterion variable (see Table 11). Attitude-toward-the-act and subjective norm accounted for more of the variance (56%) than did subjective norm and the expectancy-value component (37%). However, when attitude-toward-the-act and subjective norm were entered, only the regression coefficient for the former was significant ($p < .01$). When subjective norm and expectancy-value were entered, both predictors had significant regression coefficients ($p < .01$).

Intention to Use Tranquilizers

The results of applying the Fishbein model to intention to use tranquilizers were somewhat similar to results found with intention to use marijuana (see Table

Table 11
 Summary of Results of Stepwise Multiple Regression Analysis for Fishbein
 Model Components to Predict Intention to Use Marijuana

Variables	<u>R</u>	<u>R</u> ²	Change in <u>R</u> ²	<u>r</u>	Beta
<u>Intention to Use Marijuana</u>					
Attitude-toward-the-act	.745	.555	.555***	.745	.177***
Subjective Norm	.748	.559	.004	.531	.517
Multiple <u>R</u> = .748; Standard error = 1.52; <u>F</u> = 126.87 (<u>p</u> < .001)					
<u>Intention to Use Marijuana</u>					
Subjective Norm	.531	.282	.282***	.531	.238***
Expectancy-Value	.604	.365	.083***	.499	.101***
Multiple <u>R</u> = .604; Standard error = 1.82; <u>F</u> = 57.58 (<u>p</u> < .001)					

***p < .001.

12). In this case, however, the multiple R 's were smaller. Using attitude-toward-the-act and subjective norm yielded a multiple $R = .50$ ($p < .001$), with the regression coefficient for attitude-toward-the-act being significant ($p < .001$) and that for subjective norm not reaching significance. When expectancy-value and subjective norm were entered in the stepwise procedure, the multiple R was equal to .262 ($p < .001$), with both predictors having significant regression coefficients ($p < .05$).

The Triandis Model

Data were analyzed for the Triandis model by regressing the following predictors on the criteria of intention to use marijuana and tranquilizers: attitude-toward-the-act, expectancy-value component, social normative beliefs, and the personal normative belief. The attitude and expectancy-value components were computed in the same way as described above for the Fishbein model. The personal normative belief was measured by a single item: "I personally think it is okay for me to use" The social normative belief component was computed by summing the scores for three items: "It is socially acceptable for (high school students, college students, other members of my family) to use"

Table 12
Summary of Results of Stepwise Multiple Regression Analysis for Fishbein
Model Components to Predict Intention to Use Tranquilizers

Variables	<u>R</u>	<u>R</u> ²	Change in <u>R</u> ²	<u>F</u>	Beta
<u>Intention to Use Tranquilizers</u>					
Attitude-toward-the-act	.502	.252	.252***	.502	.067***
Subjective Norm	.503	.253	.001	.195	.007
Multiple <u>R</u> = .503; Standard error = .710; <u>F</u> = 33.04 (<u>p</u> < .001)					
<u>Intention to Use Tranquilizers</u>					
Expectancy-Value	.214	.046	.046**	.214	.002*
Subjective Norm	.262	.069	.023**	.195	.040*
Multiple <u>R</u> = .262; Standard error = .792; <u>F</u> = 7.21 (<u>p</u> < .01)					

*p < .05.

**p < .01.

***p < .001.

Intention to Use Marijuana

Sixty-four percent of the variance of intention to use marijuana was accounted for by the Triandis model (see Table 13). The regression coefficients for personal normative belief and attitude-toward-the-act were significant ($p < .001$). Social normative beliefs and the expectancy-value component were entered in the stepwise procedure but did not yield significant regression coefficients.

Intention to Use Tranquilizers

The Triandis model accounted for 34% of the variance in intention to use tranquilizers (see Table 14). The multiple R was .58 ($p < .001$). Attitude-toward-the act and personal normative belief had significant regression coefficients at the $p < .001$ level and the regression coefficient for expectancy-value was significant at the $p < .05$ level. Social normative belief was entered into the stepwise procedure but the regression coefficient was not significant.

The "Hybrid" Model

In order to attempt to account for the largest amount of the variance of intention to use marijuana and tranquilizers, a stepwise multiple regression analysis was

Table 13
Summary of Results of Stepwise Multiple Regression Analysis for Triandis
Model Components to Predict Intention to Use Marijuana

Variables	$\underline{R}$	$\underline{R}^2$	Change in $\underline{R}^2$	$\underline{t}$	Beta
<u>Intention to Use Marijuana</u>					
Personal Normative Belief	.766	.586	.586***	-.766	-.416***
Attitude-toward-the-act	.799	.638	.052***	.752	.096***
Social Normative Belief	.800	.641	.003	.579	.033
Expectancy-Value	.801	.641	.001	.498	-.001
Multiple $\underline{R}$ = .80; Standard error = 1.39; $\underline{F}$ = 90.27 ($p < .001$)					

*** $\underline{p} < .001$.

Table 14
 Summary of Results of Stepwise Multiple Regression Analysis for Triandis
 Model Components to Predict Intention to Use Tranquilizers

Variables	$\underline{R}$	$\underline{R}^2$	Change in $\underline{R}^2$	$\underline{r}$	Beta
<u>Intention to Use Tranquilizers</u>					
Attitude-toward-the-act	.502	.252	.252***	.502	.052***
Personal Normative Belief	.571	.326	.073***	-.480	-.171***
Expectancy-Value	.577	.333	.007	.214	-.001
Social Normative Belief	.581	.338	.005	.350	.017
Multiple $\underline{R}$ = .581; Standard error = .672; $\underline{F}$ = 24.62 ($p < .001$)					

*** $p < .001$.

performed for each drug using all of the combined components of both the Fishbein and the Triandis models.

Table 15 shows the results of the analysis on intention to use marijuana. About 64% of the variance was accounted for, with personal normative belief and attitude-toward-the-act having significant regression coefficients ($p < .001$). The other components—social normative beliefs, subjective norm, and expectancy-value—did not yield significant regression coefficients.

Table 16 presents the results of the stepwise multiple regression of all components on the intention to use tranquilizers. A multiple R of .582 was obtained ($p < .001$). Attitude-toward-the-act and personal normative belief yielded significant regression coefficients at the $p < .001$ level and expectancy-value had a significant coefficient at the $p < .10$ level.

Predictions

Table 17 provides a summary of the results of applying the different models to intention to use marijuana and intention to use tranquilizers. There was no difference between the multiple correlations obtained with the Triandis model and those obtained with the "hybrid" model. The Triandis model is, however, a more parsimonious means of prediction, requiring only four components. In addition,

Table 15
Summary of Results of Stepwise Multiple Regression Analysis for All
Components to Predict Intention to Use Marijuana

Variables	$\bar{R}$	R^2	Change in R^2	$\bar{r}$	Beta
<u>Intention to Use Marijuana</u>					
Personal Normative Belief	.766	.586	.586***	-.766	-.426***
Attitude-toward-the-act	.799	.638	.052***	.752	.098***
Social Normative Belief	.800	.641	.003	.579	.037
Subjective Norm	.801	.641	.001	.524	-.023
Expectancy-Value	.801	.642	.001	.498	-.001
Multiple $\bar{R}$ = .801; Standard error = 1.39; $\bar{F}$ = 72.01 ($p < .001$)					

*** $p < .001$.

Table 16

Summary of Results of Stepwise Multiple Regression Analysis for All
Components to Predict Intention to Use Tranquilizers

Variables	$\bar{R}$	$\bar{R}^2$	Change in $\bar{R}^2$	$\bar{r}$	Beta
<u>Intention to Use Tranquilizers</u>					
Attitude-toward-the-act	.502	.252	.252***	.502	.053***
Personal Normative Belief	.571	.326	.073***	-.480	-.173***
Expectancy-Value	.577	.333	.007	.214	-.001
Social Normative Belief	.581	.338	.005	.350	.019
Subjective Norm	.582	.339	.001	.195	-.010
Multiple $\bar{R}$ = .582; Standard error = .673; $\bar{F}$ = 19.69 ($p < .001$)					

*** $p < .001$.

Table 17

Summary of Regression Equations for Explaining
Intention to Use the Target Drugs

Model	<u>R</u>	<u>R</u> ²	<u>F</u>
<u>Intention to Use Marijuana^a</u>			
Fishbein E-V & SN	.604	.365	57.58***
Fishbein <u>A</u> -act & SN	.748	.559	126.87***
Triandis	.801	.641	90.27***
"Hybrid"	.801	.642	72.01***
<u>Intention to Use Tranquilizers^b</u>			
Fishbein E-V & SN	.262	.069	7.21**
Fishbein <u>A</u> -act & SN	.503	.253	33.04***
Triandis	.581	.338	24.62***
"Hybrid"	.582	.339	19.69***

^aAnalyses performed on sample size of 207.

^bAnalyses performed on sample size of 198.

** $p < .01$.

*** $p < .001$.

the Triandis model yielded a higher multiple correlation coefficient than did either form of the Fishbein model, in the case of both drugs. And finally, using the attitude-toward-the-act and subjective norm components resulted in a higher multiple correlation than did using the expectancy-value and subjective norm components, for intention to use marijuana and intention to use tranquilizers.

The first prediction was upheld; both the Fishbein and Triandis models yielded significant multiple correlation coefficients. All coefficients were significant at the $p < .001$ level, except for the coefficient resulting from the use of Fishbein's expectancy-value and subjective norm formulation in predicting intention to use tranquilizers ($p < .01$).

The second prediction was that Fishbein's model would be a better predictor (i.e., yield higher multiple correlation coefficients) than would be the Triandis model. This prediction was not borne out by the results. In fact, the Triandis model correlation coefficients were larger in every case than were the Fishbein model coefficients.

When examining the intention to use marijuana as well as the intention to use tranquilizers, the Triandis model was a slightly better predictor than the A-act and subjective norm formulation of Fishbein. The Triandis model accounted for 65% and 34% of the variance, respectively, whereas the attitude and subjective norm approach

accounted for 56% and 25% of the variance, respectively. The alternative Fishbein model (expectancy-value and subjective norm) accounted for only 37% and 7% of the variance, respectively.

The third prediction was concerned with the relative importance of cognitive, affective, and normative factors in determining intentions to use the two target drugs: marijuana and tranquilizers. Prediction 3 (a), that cognitive factors would be most important for predicting intention to use marijuana, received no support. In every case where regression coefficients were significant, the coefficient for subjective norm was largest (for the Fishbein model) and the coefficient for personal normative belief was largest (for the Triandis model).

Prediction 3 (b) did receive support from the results of this study, however. The pattern of relative weights for the different factors used in predicting intention to use tranquilizers was highly similar to the pattern obtained for marijuana. Again, normative factors had the largest coefficients in every case where significant coefficients were obtained.

As previously stated, the "hybrid" model, using the combined components from both the Triandis and Fishbein models, resulted in significant multiple correlation coefficients. The predictors were entered in the same order

with results similar to those obtained by using the Triandis model. The component which is not common to both models, the subjective norm, did not add any additional explanatory power to the "hybrid" model over the Triandis model.

CHAPTER IV

DISCUSSION

Overview and Interpretations

The results of the present study indicate that social psychological models, such as those proposed by Fishbein (1967) and by Triandis et al. (1972), are very useful in predicting intentions to use two drugs: marijuana and tranquilizers. The results obtained from data collected from a sample of college students and entering college freshmen are encouraging. Quite a bit of the variance found in intentions to use these two drugs can be explained by attitude and belief measures such as those proposed in the two social psychological models examined in this study.

The present study lends support to the preference of the Triandis model over the Fishbein model, when studying the behavioral domain of drug use. By examining the results of the two alternative formulations of Fishbein's model, it is apparent that the most amount of variance may be accounted for in intentions by simply using a measure of attitude. The normative beliefs, as measured by Fishbein's model, are the degree to which the individual believes that reference group members think the person should perform the

behavior. These beliefs did not add significantly to the attitude in predicting intentions.

The personal normative beliefs as measured by the Triandis model, however, were of substantial importance in explaining the variance of drug use intentions. The personal normative belief has the largest weight of all components, for both marijuana and tranquilizers. The personal normative belief, in combination with the attitude-toward-the-act, results in the best means of predicting drug use intentions.

There were two other components used in this study to conceptualize the Triandis model: social normative beliefs and the sum of the expectancy-value products. Neither of these components added significantly to the multiple correlation coefficient. Although each was highly correlated with intentions, neither contributed uniquely to the variance in intentions after considering the other components.

A caution should be added to this interpretation. The high correlations among the predictors in this study result in a "problem of multicollinearity" (Cohen & Cohen, 1975). Multicollinearity among predictors may lead to instability in the regression coefficients. Therefore, a cross validation of the stepwise multiple regression analyses should be done to assure that the personal normative belief

is of greater importance than the social normative beliefs and the expectancy-value component.

The small unique contribution of social normative belief measures is particularly perplexing. Not only have there been studies supporting the use of the social component in the Triandis model (Davidson, Jaccard, Triandis, Morales, & Diaz-Guerrero, 1976; Jaccard & Davidson, 1972), but the research of Jessor and Jessor (1977) has shown that a social normative component may account for as much as 50% of the variance in marijuana use.

One explanation of this inconsistency is that, in previous applications of the Triandis model, the personal and social normative beliefs were summed to provide a single social component. The present study did not combine the measures in that way; personal and social beliefs were entered into the stepwise multiple regression procedure separately. This leads to the conclusion that personal normative beliefs are more important and should be considered separately.

If indeed the personal normative belief is as important as the present study indicates, this finding contradicts much of the previous research on marijuana users. Early studies (cf. Becker, 1963) as well as more recent research (cf. Jessor et al., 1973) have determined that marijuana users are influenced to a very great extent by social

factors. Marijuana users of 1979 may be influenced differently, however. As the use of the drug widens, it is reasonable to suspect that social factors such as subculture identification become less salient. The typical user is possibly more influenced by things such as self-concept or personal values. The relative significance of personal and social normative beliefs of marijuana users (and users of other drugs) should be studied further to replicate the findings of this study.

The three reference groups used in this study to determine social normative beliefs (high school students, college students, and family) may not be the most important in influencing behavioral intentions with respect to the target drugs, marijuana and tranquilizers. It is possible, particularly given the religious background and behavior of this sample, that members of the individual's religious group may be a highly appropriate reference group to include. Because of the social nature of the behaviors surrounding drug use, another important reference group to include would be the close circle of friends with which the individual is associated.

The results of the present study also indicate that the cognitive component, as measured by the expectancy-value formulation, is not a significant predictor of drug use, when applying the Triandis model in this sample. The expectancy-value component is highly correlated with the

attitude-toward-the-act (for marijuana, $r = .646$, $p < .001$; for tranquilizers, $r = .489$, $p < .001$) and is also highly correlated with the personal normative belief (for marijuana, $r = .570$, $p < .001$; for tranquilizers, $r = .470$, $p < .001$). The high correlations indicate that the cognitive component, as measured in this study, shares a great deal of variance with the affective and normative components, and does not add any new information when entered into the stepwise regression.

There is another explanation for the lack of utility of the expectancy-value component which should be considered. The consequences of drug use which were used to obtain expectancies and values in this study were gleaned from the social psychological literature on drug use. These consequences were determined in a large number of studies by grouping a number of different drugs together. It is likely that different drugs are seen as resulting in somewhat different consequences.

A related problem with the expectancy-value component is that non-drug users may expect very different consequences than do users. And indeed, Shearn and Fitzgibbons (1973) found that there were some differences in expectations of outcomes of drug use as measured by asking users why they use drugs, and by asking nonusers why they do not use drugs. About 50% of the sample in the present study

were marijuana users (current or former) and about 10% of the sample were current or former tranquilizers users.

In summary, the Triandis model seems to be a particularly good approach to conceptualizing drug use intentions. For both the intention to use marijuana and the intention to use tranquilizers, the most important factor is personal normative belief, followed by the attitude toward the behavior. Social normative beliefs and cognitions, as measured by an expectancy-value formulation, were not found to be very important in predicting drug use intentions. There are alternative ways of conceptualizing these components which might be more useful.

Limitations of the Present Research

A major limitation of the present study is a result of the sample of subjects used. First, the sample was not representatively chosen from a given population. The constraints of availability of subjects during the summer semester at a university lead to an almost catch-as-one-can sample. Although the dormitory residents were chosen in a representative manner by using a systematic sample, summer dormitory residents may very well be unrepresentative of the regular full-time university student population. The freshman orientation participants may also not be representative of the university population.

Another sample-related limitation of this study is that, even given a representative sample of college students, the findings could only be generalized to other populations with great caution. Of particular interest in the area of drug use intentions would most certainly be adolescents, who are more likely to be targets of drug education and prevention efforts. The relative naiveté of adolescents and younger children in the area of drug use may imply that there would be differences in the relative importance of affective versus normative factors (e.g., social normative beliefs would be more important than personal normative beliefs or attitudes, both of which may be less well-developed).

The sample used in the present study may be compared with a national sample of high school seniors in 1978 (Johnston, Bachman, & O'Malley, 1979). Johnston et al. found that about 59% of their sample had ever used marijuana and about 17% had ever used tranquilizers. When they broke their sample down by region, about 52% of the subjects from the South had ever used marijuana, and 17% of the southern participants had ever used tranquilizers. This compares favorably to the sample used in the present study; 48% had ever used marijuana and 10% had ever used tranquilizers. At least with respect to ever having used the two target drugs, the present sample is not very different from a

national probability sample of high school seniors (Johnston et al., 1979).

There were several problems related to the methods used to collect the data for the present study. Of foremost concern is that all of the data used in this study were collected by using a single self-report questionnaire. This could possibly result in inflated relationships between predictors and criteria due to common method variance. Because of the nature of the behavioral domain of this study, it is very difficult, if not impossible, to obtain measures of criteria other than by self-reports.

Another difficulty with the data collection method was that the questionnaire was a difficult task for a number of individuals to complete. A review of the answers to some of the open-ended items on the questionnaire revealed that some participants had difficulty completing the questionnaire because they had little or no experience with drugs or drug use. Some individuals indicated that they had no knowledge of what type of consequences to expect from the use of the target drugs. Others felt that other possible consequences were more important. This raises the issue of soliciting possible consequences directly from the sample rather than the researcher imposing a set of consequences on the individuals being surveyed.

A third problem with the present study which limits the interpretations which can be made is that measures were

taken at only one point in time. It would be of greater theoretical and practical interest if it were possible to predict future intentions and behaviors related to drug use from present attitudes and beliefs. This could only be done, of course, with the use of a longitudinal design.

A final limitation of the present study is that intentions to use drugs were the criterion measures, rather than actual drug use. A number of studies have found high correlations between intentions and behavior; there is no evidence, however, that this is the case with drug use. Future research should be undertaken to determine how strong the relationship might be.

A Cognitive Social Learning Approach to Drug Use

The findings of the present study lend support to the Triandis model of interpersonal behavior. There may be alternative interpretations of these findings, however. The results fit rather nicely with a different strategy for studying drug use—the application of Walter Mischel's cognitive social learning approach (Mischel, 1973, 1979). Mischel has hypothesized that individual differences in behavior may be understood in terms of five classes of person variables (Mischel, 1973). These are: construction competencies, encoding strategies and personal constructs, behavior-outcome and stimulus-outcome expectancies,

subjective stimulus values, and self-regulatory systems and plans.

Construction competencies are the capabilities that an individual has to perform particular behaviors. Competency is close to the concept of Rotter's behavior potential (1954) in that it represents a learned behavior that has the potential to be emitted. In many cases, individuals learn (develop the capability to construct and enact behavior) through observing events and attending to live and symbolic models (Bandura, 1969; Mischel, 1973).

An important question to ask of drug users is how the behavior is learned. Three possibilities come to mind: the influences of peers, modeling of parental behavior, and observation of symbolic models through viewing media messages. Individuals who have been exposed to such influences will have the drug-taking behavior, to a greater or lesser degree, in the range of their behavioral repertoire. The development of the competency to enact the behavior would probably be an early event in the individual's drug use history, preceeding actual use of a drug. It also seems reasonable to hypothesize that different drugs would be associated with different sources of learning. For example, marijuana use is more likely to be learned from peers. Tranquilizer use may be traced to modeling from parents or the effects of media. And the use of

alcohol is a behavior which is more likely to be learned through interaction with all three of these sources. The construction of behavioral competencies for use of a variety of substances are likely to be a consequence of a generalized message promulgated by media such as advertising in print, television, radio, and movies.

Once the individual has become competent to perform the behavior, Mischel emphasizes the importance of encoding strategies and personal constructs (Mischel, 1973). In general, this refers to the meaning or interpretation which the individual assigns to a stimulus and the degree to which the interpretation is consistent with the individual's self-perception. With respect to drug use, we would be interested, for example, in relating the individual's interpretation of drug use as a behavior reflecting low or high self-esteem, with a measure of the individual's self-esteem. The individual should be cognitively consistent, i.e., someone with low self-esteem who is a drug user should perceive drug use as a behavior reflecting low self-esteem. The converse would be true as well, that is, an individual who has high self-esteem and uses a drug should perceive the use of the drug as unrepresentative of individuals with low self-esteem. We may also be interested in how people view themselves, whether as "pot heads," "dopers," "freaks," or "straights," and whether their

interpretation of their behavior is consistent with their self-perception. It would be important to assess these personal constructs (Kelly, 1955) in order to determine how the person views him/herself—as a drug user or nonuser.

If the interpretation of the stimulus (e.g., drug using situation) is consistent with the person's self constructs, and the behavior is in the person's repertoire, then what other factors determine if the person will perform the behavior? Mischel (1973) emphasized the importance of expectancies, much in the same way as the present study applied this concept. In addition to behavior-outcome expectancies which are similar to the expectancies as measured in this study, Mischel introduced the idea of stimulus-outcome expectancies. These are expectancies associated with a specific situation (e.g., outcomes of using marijuana at a party versus using it alone). The hypothesis that different stimuli lead to different outcomes could be tested in the domain of drug use in two ways. One would be whether the use of different drugs leads to the perception of different consequences. The second test would be to look for differences in the expectancies of outcomes for the use of a particular drug in different situations, such as at a party, at home alone, or with a mate or partner.

Mischel has stated that the relative differences in expectancies for different situations would mediate the

degree of cross-situational consistency of a behavior which would be found (Mischel, 1968, 1973). In other words, individuals who perceive very different consequences for use of a drug in different situations would show little consistency in drug use behavior across situations. If the individual did not discriminate among situations when using a drug, it is likely that this resulted from not discriminating among situations with respect to possible consequences

Another cognitive person variable which is included in Mischel's (1973) conceptualization is stimulus value. This is a subjective value associated with behavior or stimulus outcomes. Stimulus value should also be situation specific (e.g., value of "approval of friends" at a party). In the present study, the measures of expectancy and value for each consequence were specific to a particular stimulus drug, but not specific to a particular drug-taking situation. It may be important, however, to specify the situation more clearly when assessing expectancies and values.

Another point with respect to expectancies and values is that it would be important (as Mischel, 1973, indicates) to begin the study of drug use with individually determined consequences, rather than typical consequences elicited from a sample or derived from diverse literature. It would require a set of measures which solicit possible consequences of a behavior (e.g., marijuana use, tranquilizer

use) and then solicit a subjective expectancy and value for each consequence. This ideographic approach, favored by Mischel, should increase the predictive validity of the expectancy-value component. Vroom's model of work motivation (Vroom, 1964) used a similar approach by soliciting subject-generated outcomes.

The final class of person variables which Mischel has considered are self-regulatory systems and plans. Much of Mischel's research has been centered around the development of self-regulatory systems dealing with the delay of gratification in young children (e.g., Mischel, 1974; Moore, Mischel, & Zeiss, 1976). The importance of self-regulatory systems for drug-taking behavior is obvious. We would want to be able to answer the question: how does the individual regulate his/her drug use? What types of internal controls exist; and how do the individual's personal goals and standards develop?

To summarize the importance of self-regulatory systems for understanding drug use, first the individual must have a set of rules which specify his/her performance standards in a given situation. These may be represented by statements similar to the personal normative belief measured in the present study—"I personally think it is okay to use marijuana." These rules develop from normative influences on the individual. Next, there should be rules

for determining the self-imposed consequences of achieving or failing to achieve these standards. These rules would also be normative or social in origin. The present study did not address the issue of self-imposed consequences of drug use (e.g., "I feel guilty after spending an evening using marijuana").

Most of the research in the area of self-regulatory systems has been done with delay of gratification and resistance to deviation in young children (c.f., Karoly & Briggs, 1978; Mischel, 1974; Moore et al., 1976; Toner, Parke, & Yussen, 1978). The issue of the generalizability of self-regulatory mechanisms from one class of behaviors to another class of behaviors has only recently been studied by Karoly and Briggs (1978). They demonstrated that children who are taught to employ a strategy that facilitates self-control in a delay of gratification situation can also employ that strategy in a resistance to deviation setting. All of the studies in this area have been done with young children and the question remains if these strategies persist into adolescence and beyond, and how they would operate in a drug-taking situation.

This cognitive social learning approach to drug use seems to be a very comprehensive approach in that it encompasses all of the factors which have been found to be important for understanding drug use. Of particular

relevance to the present study are personal normative beliefs (personal constructs), attitudes-toward-the-act (interpretation of the stimulus), and expectancies and values (behavior-outcome expectancies and behavior-outcome values). Some recommendations for future research are given in the following section.

Suggestions for Future Research

The findings of the present study leave a number of questions concerning the social psychology of drug use unanswered. This section presents a number of possible areas, both theoretical and methodological, where future research would be fruitful.

There are a number of ways in which the limitations of the present study may be redressed. First, this type of study should be replicated to cross-validate the results of the regression analyses. In addition to replication with a similar sample (although one which would be more representatively chosen from the college population), it is extremely important to replicate the findings of this study with other types of samples. These could include different age groups (e.g., high school students, grade school students, and elderly individuals), as well as different settings (e.g., industrial workers, housewives, and institutionalized individuals). Samples from different socioeconomic groups may also display results of interest.

Future research should also examine the utility of the Triandis and Fishbein models in a longitudinal design. Measures of attitudes and beliefs taken at one point in time should be correlated with measures of intentions and use of drugs at a second, third, and fourth point in time. In addition to applying these models to predicting actual future behavior, it would be important to find out what other types of variables affect whether or not individuals actually carry out their intentions to use drugs (e.g., drug availability, changes in living situation).

There should be attempts in future research to find better measures of drug use intentions and drug use. Ethical problems are very limiting in the area of drug use. It is difficult to satisfy both human subject regulations with respect to confidentiality and risk to the subject; and the doubt and concern of the research participant who is asked to report possible legal and normative violations of behavior. One possible means of measuring drug use without violating the confidentiality of the respondent and without subjecting them to legal risk would be to use a naturally-occurring event such as imprisonment or institutionalization for drug use as a criterion measure of use of the drug. In this case, a sample of adolescents who were at risk (such as those in a probation or parole program, or being treated at a community facility) would be

surveyed to collect measures of attitudes and beliefs about drug use. This data could then be correlated with archival data collected at a later time, such as arrest for drug use, return to institutional setting for drug abuse treatment, and so forth. Although these measures are on a grosser level than responses to seven-point scales, they have greater relevance to real-world situations.

Another possible study in this area would be to combine a self-report questionnaire with an interview format for collecting data. This would enable the researcher to address a number of the deficiencies of the present study. First, by using different methods to collect data, the researcher would be better able to ensure the construct validity of the variables in the study. A problem with the present study was that the use of a single method for measuring predictors and criterion may have resulted in common method variance accounting for high correlations.

An interview format for collecting data on attitudes and beliefs about drug use would make it easier to assess individuals' preferences for expected consequences of drug use. The current study was limited because some individuals felt that consequences of importance were not mentioned in the survey instrument. Other individuals did not understand the meaning of some of the consequences. An interview would be an excellent method for determining what the significant

consequences of drug use are for each participant in the study.

The earlier discussion of the cognitive social learning approach (Mischel, 1973) led to the conclusion that it may be a useful framework for conceptualizing drug use. A number of areas of research in drug use would be consonant with this approach. For example, much correlational research has been done to show the relationship between drug use and the use of drugs by peers and family. Ethical considerations would forbid experimental studies of modeling of drug-taking. However, case studies of individuals at the initiation stage of drug use would provide more data on modeling influences.

Further research should also be done to study the encoding strategies and personal constructs of individuals, with respect to drug use. The self-report format could be used to measure beliefs about drug users, beliefs about self, and intentions and behavior. As discussed earlier, it would be predicted that an individual who believes that high self-esteem is related to nonuse of drugs would not use drugs if that person had high self-esteem. If the individual did use drugs, it would be important to determine in what way their self-concept had been altered to allow this to occur.

Encoding strategies also relate to how the individual assigns a meaning to the stimulus situation (drug-taking).

The most obvious method to use for initiating research into this area would be to ask individuals what influences their interpretations, attitudes, and beliefs about various drug-taking situations. If the 12-year-old believes that smoking cigarettes at school is "okay" but drinking alcohol in any situation is "bad," it would be important to determine what strategy he or she has used to assign these different meanings to two different drug-taking situations.

Another dimension of the research in this area which should be pursued is the examination of stimulus-outcome expectancies and values, in addition to behavior-outcome expectancies and values. As was mentioned earlier, research should determine, via self-report, what individuals believe the consequences to be of using different drugs, as well as using a particular drug in different situations. This has obvious importance because some individuals may be willing to use a drug in one situation but not in another situation. The prediction would be that this difference in behavioral intention would be due to different expectations with regard to possible positive or negative consequences for the behavior in the different situations.

A final area of research which I would recommend is the study of self-regulating systems for drug-use behavior. There has been some research already in this area; studies of the application of cognitive behavior modification for

treating alcoholics (Intagliata, 1978; Marlatt & Gordon, 1979) have indicated some success in changing alcoholics' means of self-regulating their drinking behavior. It would be important in the context of drug use to interview drug users (occasional, moderate, and heavy users) to determine what kinds of self-regulation systems or plans they use (or do not use) to control their behavior.

Implications for Education and Prevention

It was hoped at the outset of this research effort that the results of the study would have implications for the conduct of education and prevention activities in the area of drug use. The ineffectiveness of these activities is well documented (cf. Dorn & Thompson, 1976; Goodstadt, 1974). However, a tremendous amount of money and energy has been devoted to the areas of drug education and drug abuse prevention. Drug education programs typically involve the dissemination of information about drugs to individuals considered "at risk" (Richards, 1970). The goals of such programs, although many times not clear, or difficult to define (Wald & Abrams, 1972), usually include either attitude change, behavior change, or both. The use of programs designed to increase factual knowledge concerning the consequences of drug use have had little impact on attitudes or behavior (cf. Stenmark, Kinder, & Milne, 1977).

The implication of the present study for drug education is that a viable approach may be one which deals with the process of developing values in the young person. In other words, a program which addresses the social and personal influences on values might be more successful than purely informational approaches to drug education. This might involve some form of values clarification, or group experiences or discussions oriented towards understanding social influences on decisions and behavior. This type of intervention would be aimed at personal normative beliefs, i.e., "Is it okay for me to use this drug?"

A study by Clark, Kowitz, and Duckworth (1975) found that many potential and actual users of marijuana appeared to be unaware of the social and personal influences which may affect their decisions to use the drug. They recommended that drug education ought to address these issues rather than use the informational approach. Schaps, Sanders, and Hughes (1974) found that students favored process rather than content drug education programs. They also found that opportunities for students to assess their attitudes and experiences in informed, personalized, and supportive environments seemed to be more influential in reducing abuse of drugs than did the more traditional informational approach.

CHAPTER V

SUMMARY

Drug use, both in terms of illicit drug use and abuse of socially approved drugs, continues to be a serious social concern as we enter the final two decades of the twentieth century. Marijuana has been used for centuries, the earliest reference considered to be a Chinese treatise on pharmacology in 2737 B.C. The Marijuana Tax Act of 1937 represents the formal beginning of a federal policy in the United States to treat marijuana use as a "problem." Since that time, both marijuana use and efforts to eradicate its use have increased manyfold. Tranquilizer use is a more recent phenomenon, originally becoming popular as a legitimate alternative to legal use of the more dangerous barbiturates in the early forties. Since their introduction as a legitimate prescription drug, tranquilizers have become a widely abused drug. Only recently has this abuse problem been publicly acknowledged in such places as U.S. Senate hearings and popular television programs.

A number of reviews of the research in the area of drug use have concluded that the literature is sadly lacking, both in methods used and in theory. Also, few studies were also found which view drug use from a social psychological theory or model, or which attempt to draw

conclusions across two or more drugs. The purpose of the present study was to apply two expectancy-value models of behavior, those of Fishbein and Triandis, to the use of two different drugs: marijuana and tranquilizers.

The Fishbein model uses the attitude toward a behavior and subjective norm to predict behavioral intentions. The attitude toward the behavior (A-act) may be measured directly with evaluative semantic differential items, or it may be measured by multiplying the expectancy and subjective value for each consequence of the behavior and summing these products. The Triandis model includes the expectancy-value component and A-act, in addition to a personal normative belief and social normative beliefs. Each component is again summed to predict behavioral intentions.

Several hypotheses were proposed based on the research in the area of drug use and on the Fishbein and Triandis models. First, it was predicted that both the Fishbein and Triandis models would yield significant multiple correlation coefficients. It was also predicted that the Fishbein model would explain more of the variance in intentions to use both marijuana and tranquilizers. Finally, it was predicted that normative factors would contribute more to explaining the variance of use of tranquilizers than the cognitive factor; and that normative factors would contribute less to explaining the variance of use of marijuana than the cognitive factor.

Attitudes, beliefs, and behavioral intentions toward the use of marijuana and tranquilizers were measured by administering a questionnaire to a sample of 484 college students and entering freshmen at The University of Tennessee, Knoxville. The response rate was 57.3%. Attitudes toward the use of the two target drugs were measured by four semantic differential items. Expectancies and values were measured with respect to nine possible consequences of drug use which were found in the literature.

Each model was tested by entering the components into a stepwise multiple regression analysis for each target drug. The Fishbein model, using the expectancy-value measure of attitude toward the behavior, yielded multiple R 's of .60 ($p < .001$) and .26 ($p < .01$) for intentions to use marijuana and tranquilizers, respectively. When the semantic differential items were used in the Fishbein model to measure attitudes toward use of the target drugs, the multiple R 's were higher; .75 ($p < .001$) and .50 ($p < .001$), respectively. The Triandis model resulted in multiple correlations which were higher in both cases; .80 ($p < .001$) and .58 ($p < .001$), respectively. A "hybrid" model was created by entering the components from both models into a single stepwise multiple regression. This analysis did not differ from the results obtained from the Triandis model.

The measure of personal normative belief had the largest significant regression coefficient of the components

used to predict both intention to use marijuana and intention to use tranquilizers. The semantic differential measure of attitude toward the behavior had the next largest significant regression coefficient. The cognitive component, the expectancy-value sum, did not add significantly to the amount of explained variance in drug use intentions, when entered with the above two components.

The results confirmed the utility of the Triandis and Fishbein models in studying drug use. A number of explanations for the relative insignificance of the expectancy-value component were discussed, along with other limitations of the study. A cognitive social learning approach to drug use was introduced and discussed in terms of possible future research. Finally, implications for drug education and drug abuse prevention were presented.

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APPENDICES

APPENDIX A

SURVEY INSTRUMENT

Drug Use Attitude Survey

This questionnaire has been designed by a psychology research group at The University of Tennessee. The general purpose of the research is to investigate factors related to drug use and nonuse. That is, the researchers are interested in the attitudes and opinions of people who use drugs, as well as attitudes and opinions of people who do not use drugs.

All students living in the residence halls at U.T. this summer will receive a copy of this questionnaire. We would greatly appreciate your participation in our study by taking some time to complete the questionnaire.

All of the information which will be collected from you will remain anonymous. Please do not put your name anywhere on this questionnaire as we do not wish to know who you are. It should take you about twenty minutes to complete.

There are no "correct" or "incorrect" answers. Please be as honest and accurate as you can to help us achieve a realistic picture. Remember, we are interested in your attitudes and opinions, whether or not you have ever used

any drugs. Please be sure to read the instructions at the top of each page carefully.

This survey is strictly for research purposes. If you are interested in the results of this study, you will be given the opportunity this fall to attend a meeting where the results will be presented.

When you have completed the questionnaire, please return it to us by using the attached, pre-addressed envelope. You may place the envelope in CAMPUS MAIL by using the mail drops at your dormitory or at the Student Center. We would appreciate it if you would complete and return the survey within the next week.

Thank you very much for your cooperation. Please feel free to contact us if you would like any further information.

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and
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DRUG USE ATTITUDE QUESTIONNAIREA. BACKGROUND INFORMATION

How old are you? _____ years

Sex: _____ Male
_____ FemaleMarital Status: _____ Single
_____ Married
_____ Separated
_____ Divorced
_____ WidowedWhat will be your major this fall?
(If undecided, leave blank)

Overall

Average: _____ A- to A+

_____ B- to B+

_____ C- to C+

_____ D- to D+

_____ Less than D-

Which college will you be enrolling in this fall?

_____ Agriculture

_____ Architecture

_____ Business Administration

_____ Communications

_____ Education

_____ Engineering

_____ Liberal Arts

_____ Nursing

_____ Undecided

Which of the following best describes your place of residence?

_____ farm or rural

_____ small town (population under 10,000)

_____ average-sized town (population of 10,000 to 100,000)

_____ suburb of a city

_____ city (population of 100,001 to 500,000)

_____ large city (above 500,000)

Which of the following best describes your religious background?

_____ Roman Catholic

_____ Orthodox (Greek or Russian)

_____ Jewish

_____ Baptist

_____ Methodist

_____ Lutheran

_____ Presbyterian

_____ Episcopalian

_____ United Church of Christ

_____ Agnostic

_____ Other (please specify _____)

_____ None

About how many times have you attended religious services in the past month?

_____ times

In this section, we are interested in your future intentions with regard to two particular types of drugs: marijuana and tranquilizers (such as Thorazine, Librium, Valium, Equanil, Stelazine, and others). Please answer each item, even though you may never have used the drug, or do not currently use it.

For example, if you were given the following statement: "If I have my way, I intend to go to college this fall," you would probably answer by placing a check on the scale like so...

1. If I have my way, I intend to use marijuana in the next six weeks.

2. If I have my way, I intend to go to a party where marijuana is being used, in the next six weeks.

3. If I have my way, I intend to purchase some marijuana in the next six weeks.

4. If I have my way, I intend to take tranquilizers with a doctor's prescription in the next six weeks.

5. If I have my way, I intend to take tranquilizers without a doctor's prescription in the next six weeks.

6. If I have my way, I intend to purchase non-prescribed tranquilizers in the next six weeks.

Please answer the following six questions in the same way as those above. When answering, however, please take into account factors in addition to your own intentions, such as whether or not you can get the drug, or whether or not you will be in a situation that allows (or encourages) you to use the drug.

Very Unlikely Very Likely

Very Unlikely Very Likely

Very Unlikely _____ Very Likely

Very Unlikely Very Likely

Very Unlikely _____ Very Likely

Very Unlikely Very Likely

Questions in this section ask you to indicate how you feel about using two types of drugs: marijuana and tranquilizers. Please try to answer each item, even if you have never tried the drug. We would like your opinions, whether or not you have had any personal experience with these drugs.

For example, you might rate, "I would describe going to college," like so.. .

1. I would ~~describe~~ using marijuana as:

2. I would describe going to a party where marijuana is being used as:

3. I would describe purchasing marijuana as:

4. I would describe taking tranquilizers with a doctor's prescription as:

5. I would describe taking tranquilizers without a doctor's prescription as:

6. I would describe purchasing non-prescribed tranquilizers as:

BORING	___	___	___	___	___	___	INTERESTING
SAFE	___	___	___	___	___	___	DANGEROUS
GOOD	___	___	___	___	___	___	BAD
UNPLEASANT	___	___	___	___	___	___	PLEASANT
REWARDING	___	___	___	___	___	___	PUNISHING

For the following items, there are again nine possible consequences listed for the use of each type of drug. For these items, please rate the value that each consequence would have for you, if it happened to you while using the drug. In other words, we want you to indicate how "good" or "bad" you feel each consequence is. Indicate the value of each consequence, whether or not you think that consequence is likely to occur.

For example, if you were asked to rate the value of "feeling good" while drinking alcohol, if you felt that "feeling good" had a great deal of value to you, you would probably answer like so...

GOOD 1 2 3 4 5 6 7 BAD

1. How would you value each of the possible consequences of using marijuana, if it happened to you while you were using the drug?

(a) feeling good	GOOD	___	___	___	___	___	___	BAD
(b) escaping from problems	GOOD	___	___	___	___	___	___	BAD
(c) getting arrested	GOOD	___	___	___	___	___	___	BAD
(d) physical damage to the body	GOOD	___	___	___	___	___	___	BAD
(e) psychological problems	GOOD	___	___	___	___	___	___	BAD
(f) reducing tension	GOOD	___	___	___	___	___	___	BAD
(g) satisfy your curiosity	GOOD	___	___	___	___	___	___	BAD
(h) self awareness or insight	GOOD	___	___	___	___	___	___	BAD
(i) approval of friends	GOOD	___	___	___	___	___	___	BAD

2. How would you value each of the possible consequences of taking non-prescribed tranquilizers, if it happened to you while you were using the drug?

(a) feeling good	GOOD	___	___	___	___	___	___	BAD
(b) escaping from problems	GOOD	___	___	___	___	___	___	BAD
(c) getting arrested	GOOD	___	___	___	___	___	___	BAD
(d) physical damage to the body	GOOD	___	___	___	___	___	___	BAD
(e) psychological problems	GOOD	___	___	___	___	___	___	BAD
(f) reducing tension	GOOD	___	___	___	___	___	___	BAD
(g) satisfy your curiosity	GOOD	___	___	___	___	___	___	BAD
(h) self awareness or insight	GOOD	___	___	___	___	___	___	BAD
(i) approval of friends	GOOD	___	___	___	___	___	___	BAD

E. Opinions of Those Around You About Drug Use

Most people have opinions about drug use, whether they are positive or negative. This section includes questions about the opinions of those around you, such as your close friends, your parents, and your classmates.

Please answer the following six items by placing a check on the seven-point scale following each statement. For example, if the statement were: "my close friends think that I should drink alcohol," you would place a check on the scale like so, if you felt that your close friends definitely did think that way.

- | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | |
|--|-------------------|-----|-----|-----|-----|-----|-----|-------------------------------------|---------------|
| | Definitely Do Not | ___ | ___ | ___ | ___ | ___ | ___ | ☒ | Definitely Do |
| 1. My close friends think that I should use marijuana. | Definitely Do Not | ___ | ___ | ___ | ___ | ___ | ___ | ___ | Definitely Do |
| 2. My parents think that I should use marijuana. | Definitely Do Not | ___ | ___ | ___ | ___ | ___ | ___ | ___ | Definitely Do |
| 3. My classmates think that I should use marijuana. | Definitely Do Not | ___ | ___ | ___ | ___ | ___ | ___ | ___ | Definitely Do |
| 4. My close friends think that I should take <u>non</u> -prescribed tranquilizers. | Definitely Do Not | ___ | ___ | ___ | ___ | ___ | ___ | ___ | Definitely Do |
| 5. My parents think that I should take <u>non</u> -prescribed tranquilizers. | Definitely Do Not | ___ | ___ | ___ | ___ | ___ | ___ | ___ | Definitely Do |
| 6. My classmates think that I should take <u>non</u> -prescribed tranquilizers. | Definitely Do Not | ___ | ___ | ___ | ___ | ___ | ___ | ___ | Definitely Do |

Please answer the following eight items by placing a check on the seven-point scale which follows each item. For example, if the statement were: "it is socially acceptable for college students to drink alcohol," if you strongly agreed with that statement, you would place a check on the scale like so...

- | | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | |
|---|----------------|-------------------------------------|-----|-----|-----|-----|-----|-----|-------------------|
| | Strongly Agree | ☒ | ___ | ___ | ___ | ___ | ___ | ___ | Strongly Disagree |
| 1. It is socially acceptable for high school students to use marijuana. | Strongly Agree | ___ | ___ | ___ | ___ | ___ | ___ | ___ | Strongly Disagree |
| 2. It is socially acceptable for college students to use marijuana. | Strongly Agree | ___ | ___ | ___ | ___ | ___ | ___ | ___ | Strongly Disagree |
| 3. It is socially acceptable for other members of my family to use marijuana. | Strongly Agree | ___ | ___ | ___ | ___ | ___ | ___ | ___ | Strongly Disagree |
| 4. It is socially acceptable for high school students to take <u>non</u> -prescribed tranquilizers. | Strongly Agree | ___ | ___ | ___ | ___ | ___ | ___ | ___ | Strongly Disagree |
| 5. It is socially acceptable for college students to take <u>non</u> -prescribed tranquilizers. | Strongly Agree | ___ | ___ | ___ | ___ | ___ | ___ | ___ | Strongly Disagree |
| 6. It is socially acceptable for other members of my family to take <u>non</u> -prescribed tranquilizers. | Strongly Agree | ___ | ___ | ___ | ___ | ___ | ___ | ___ | Strongly Disagree |
| 7. I personally think it is okay for me to use marijuana. | Strongly Agree | ___ | ___ | ___ | ___ | ___ | ___ | ___ | Strongly Disagree |
| 8. I personally think it is okay for me to take <u>non</u> -prescribed tranquilizers. | Strongly Agree | ___ | ___ | ___ | ___ | ___ | ___ | ___ | Strongly Disagree |

F. Drug Use Inventory

In this section, we would like to ask you questions about your past and present use of drugs. Please indicate only drug use which was without medical approval (that is, without a doctor's prescription).

For each type of drug listed below, there are two questions. The first question, "Have you ever used each of these types of drugs," should be answered by circling either "Yes" or "No." The second question, "How many times have you used each of these drugs during the past week, month, six months," should be answered by placing three numbers which estimate how often you have used each drug during these three time periods. If you have never used a particular drug, then you should circle "No" and leave the three spaces blank. Try and give estimates for how often you have used each of these types of drugs in the past week, again in the past month, and again in the past six months.

TYPE OF DRUG	1. HAVE YOU EVER USED EACH OF THESE TYPES OF DRUGS? (CIRCLE ONE)		2. IF YES, HOW MANY TIMES HAVE YOU USED EACH OF THESE DRUGS DURING THE PAST.....		
	YES	NO	WEEK?	MONTH?	6 MONTHS?
(a) Alcohol (beer, wine, liquor)	YES	NO	_____	_____	_____
(b) Amphetamines ("speed," "white crosses," "meth," Ritalin, Dexedrine, etc.)	YES	NO	_____	_____	_____
(c) Barbiturates ("downs," Seconal, Tuinal, Phenobarbital, "reds," etc.)	YES	NO	_____	_____	_____
(d) Cocaine ("coke," "snow")	YES	NO	_____	_____	_____
(e) Hallucinogens (LSD, mescaline, peyote, psilocybin, "mushrooms")	YES	NO	_____	_____	_____
(f) Marijuana ("grass," "pot")	YES	NO	_____	_____	_____
(g) Opiates (heroin, codeine, morphine, Demerol, methadone, Percodan, opium, etc.)	YES	NO	_____	_____	_____
(h) Tranquilizers (Thorazine, Librium, Valium, Equanil, Stelazine, etc.)	YES	NO	_____	_____	_____
(i) PCP ("angel dust")	YES	NO	_____	_____	_____
(j) Methaqualone (Quaalude, "sopers")	YES	NO	_____	_____	_____
(k) Any other drug? (specify _____)			_____	_____	_____

(l) On the average, how many cigarettes do you smoke each day?

- ☐ Never smoked cigarettes ☐ 1/2 pack a day
☐ Used to smoke but have quit ☐ 1 pack a day
☐ Smoke less than one a day ☐ 1 1/2 packs a day
☐ 1 to 5 cigarettes a day ☐ 2 packs a day or more

G. Your Reactions to the Questionnaire

Please answer the following questions so that we may find out how you felt about this questionnaire.

Which section was the most difficult for you to complete?

☐ A

☐ B

☐ C

☐ D

☐ E

☐ F

Why was the section which you indicated above difficult to complete for you?

Were the instructions to questions easy to follow?

☐ Yes

☐ No

If no, why?

How much confidence do you have in the accuracy of your answers?

☐ Very much confidence ☐ Some confidence ☐ Little confidence

Do you expect to attend the session this fall to hear about the results of this study?

☐ Probably will attend ☐ Not sure ☐ Probably will not attend

Did you find this questionnaire to be interesting?

☐ Not at all ☐ A little ☐ Somewhat ☐ Very much so

Did you enjoy completing this questionnaire?

☐ Not at all ☐ A little ☐ Somewhat ☐ Very much so

Do you have any other comments about this questionnaire or about drug use in general?

THANK YOU

APPENDIX B

REMINDER LETTER

Dear Student:

About a week ago you received a Drug Use Attitude Questionnaire in your mailbox. If you have already completed and returned the questionnaire, please disregard this notice. If you have not completed it as yet, we would appreciate it very much if you would do so as soon as you can. Every response is important to the success of our study. If you have any questions or if you have lost your questionnaire and would like another, please give us a call.

Thank you.

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974-3423

VITA

Michael Paul Cook was born in Brooklyn, New York, on November 17, 1950. He attended schools in Lynbrook, New York, and Danbury, Connecticut, and graduated from Danbury High School in June 1968. During high school, he played tuba in the band and sang in the chorus. He was also a member of the National Honor Society.

In September 1968 he entered the University of Chicago as a physics major. After a year and a half, he returned to Connecticut where he was employed as a counselor for Danbury Area Unified Social Services. He attended the University of Bridgeport from 1973 to 1975, at which time he received a Bachelor of Science degree in Psychology, graduating with high honors. He entered the Graduate School of The University of Tennessee, Knoxville, August 1975 and continued studying psychology.

He was employed by the Tennessee Valley Authority, Training and Development Staff, from June 1978 to July 1979. In August 1979 he was appointed to the faculty of the University of North Carolina at Charlotte as a Lecturer in Psychology. Cook realized one of his fondest dreams in December 1979 when he was awarded the Doctor of Philosophy degree in Psychology.

He is a member of Sigma Xi, the American Psychological Association, and the Evaluation Research Society.